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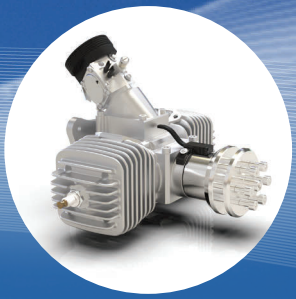

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ABOVE: Ghost 4 is modular, portable, waterproof and combines long endurance, high payload capacity and a near-silent acoustic signature for a wide variety of mission capabilities. (Photo: Anduril)

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FEATURE PIECE

BAYRAKTAR TB2 MARKET

After showcasing its value in the 2020 Nagorno-Karabakh conflict, the Bayraktar TB2 has been in high demand. *Shephard Defence Insight* analyses the platform's recent market performance and highlights future opportunities.

ABOVE: The Bayraktar TB2's effectiveness in the second Nagorno-Karabakh war amplified its popularity and led to several export contracts. (Photo: Baykar)

MARKET ANALYSIS

The impact of Baykar's Bayraktar TB2 in use with the Azerbaijani Armed Forces during the second Nagorno-Karabakh war was profound, according to *Shephard*'s Air Editor Tim Martin. The performance of the UAV showed that regional conflicts could be decided by a low-cost platform that is quick to produce. Although Azerbaijan, Qatar, Turkey and Ukraine purchased the system before the conflict, the TB2's effectiveness in the South Caucasus amplified its popularity and market share.

At the end of 2020, according to *Shephard Defence Insight* data, the TB2's share of the MALE UAV market was estimated as being worth $1.586 billion. By the end of 2021, this had grown 89% to an estimated $2.993 billion, 5.5% of the $54.35 billion overall market. This share is split across ten contracted programmes, covering 279 units, and ten forecasted programmes, comprising an additional 134 units.

FLYAWAY UNIT COST

An important reason for the platform's success is its relatively low unit cost. According to the Polish Government's TB2 contract announcement from 24 May 2021, one bespoke system costs $67 million, giving each unit a gross cost of $11.17 million and an estimated flyaway unit cost of $8.94 million.

One month after that contract announcement, the head of the Polish MoD, Mariusz Błaszczak, clarified that these TB2s were to be configured to Polish requirements and would feature a myriad of unique subsystems, additional GCS and support elements.

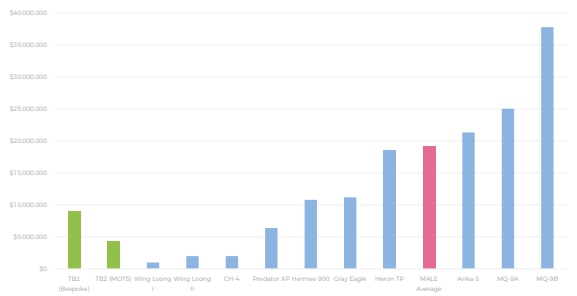
According to *Shephard*'s data, an average MALE UAV costs $19.11 million. Consequently, as demonstrated by **Table 1** and Poland's TB2 purchase, a country can acquire a bespoke MALE TB2 for 47% ($10.17 million) less than the cost of an average MALE UAV.

More specifically, a bespoke TB2 can be acquired for 36% of the cost of General Atomics' MQ-9A Reaper and 48% of an IAI Heron-TP's cost. The two platforms have a flyaway unit cost of $25.04 million and $18.59 million respectively.

Customers also have the option to acquire a MOTS version of the TB2. Although users cannot configure these UAVs to their specific needs, they are cheaper to acquire and quicker to produce. For example, in April 2021, the Royal Moroccan Armed Forces signed a $70 million contract with Baykar for 13 MOTS UAVs, giving them an estimated flyaway unit cost of $4.3 million.

As illustrated by Table 1, if this unit cost is adopted, a MOTS TB2 costs 48% less than its bespoke counterpart. In addition, it costs just 17% of the MQ-9A Reaper, 23% of the Heron-TP and 23% of the average MALE UAV cost. With

Table 1 – MALE UAV flyaway unit costs



A bespoke and MOTS Bayraktar TB2 can be purchased for $8.94 million and $4.31 million respectively. These prices are considerably lower than the estimated average MALE UAV cost of $19.11 million. (Source: *Shephard Defence Insight*)

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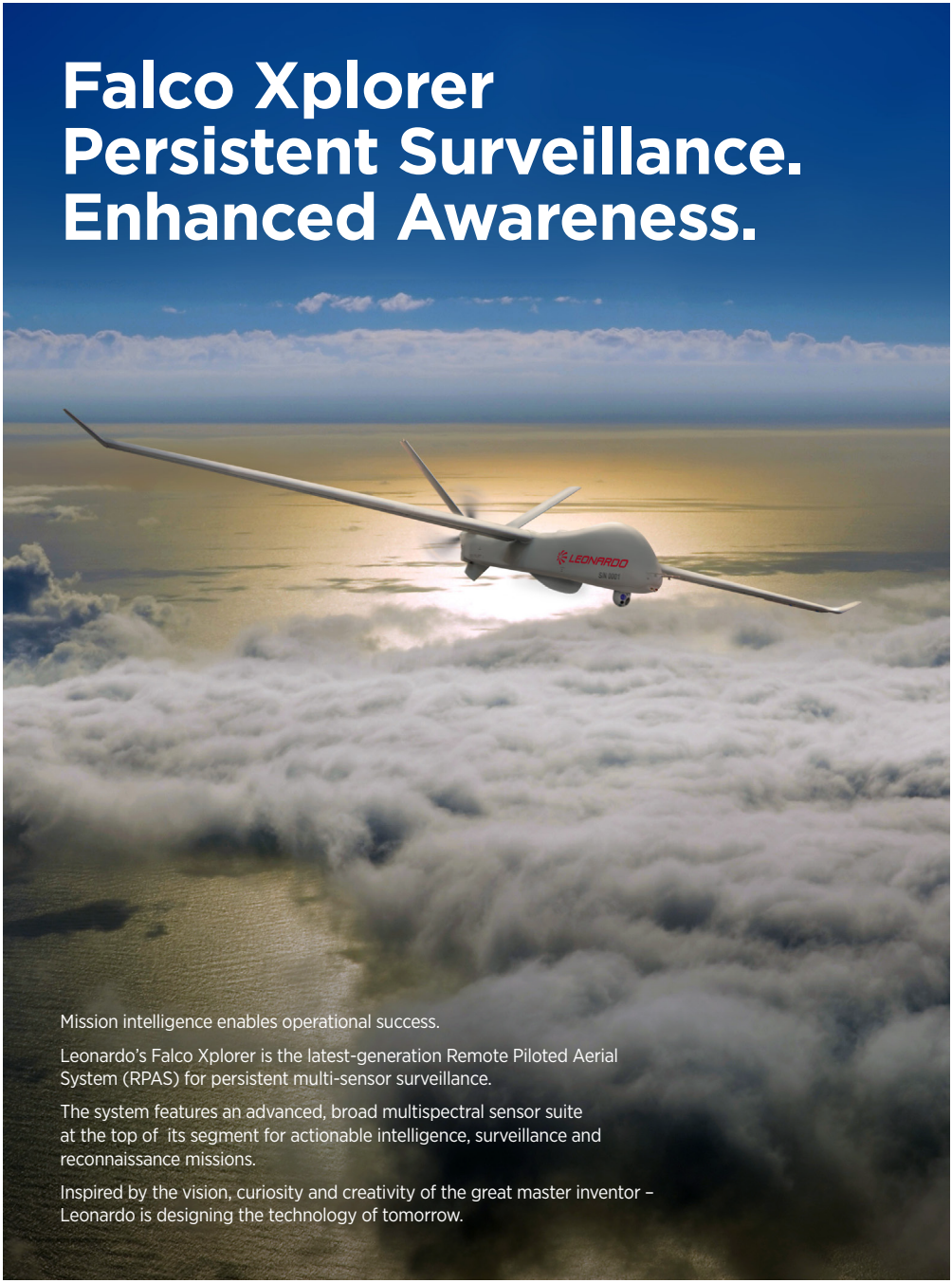

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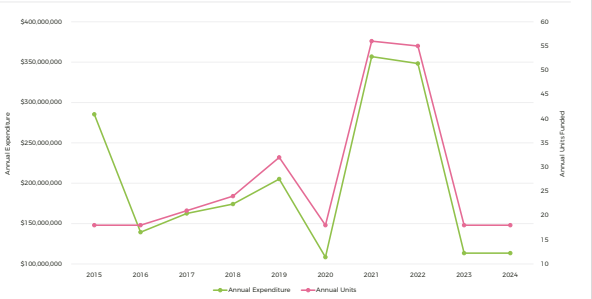
Table 2 – Contracted/completed programmes: TB2 annual expenditure and annual units funded



Annual expenditure on the TB2 rose 229% from $108.42 million in 2020 to $356.83 million in 2021, accounting for 23% of global expenditure on all MALE UAVs that year. (Source: *Shephard Defence Insight*)

a flyaway unit cost between $1 and 2 million, only the Chinese-manufactured Wing Loong I, Wing Loong II and CH-4 platforms have a lower flyaway unit cost among comparable aircraft.

CONTRACTED PROGRAMMES

By the end of 2021, 279 TB2 UAVs had been officially contracted, accounting for $2.325 billion (78%) of the TB2's estimated $2.993 billion market share.

Table 2 shows that the first TB2s were funded in 2015 as part of Turkey's estimated $1.46 billion acquisition of 151 units. This programme remains the largest TB2 contract in terms of financial value and overall numbers. Despite around 20 aircraft being funded annually between 2015 and 2017, Turkey's annual expenditure was much more significant in 2015 due to the costs involved in establishing the production line.

As shown, the global annual expenditure on TB2s gradually increased from 2016-19. This occurred for two reasons. First, from 2017, it is estimated Baykar produced 21 examples annually for Turkey, increasing from the 18 it had produced in each of the previous two years.

Secondly, between 2016 and 2019, Baykar signed three export contracts. Qatar contracted six units for an estimated $29.16 million in 2018, the Ukrainian Army acquired 12 for a reported $69 million in early 2019 and, later that year, Azerbaijan purchased an estimated six aircraft.

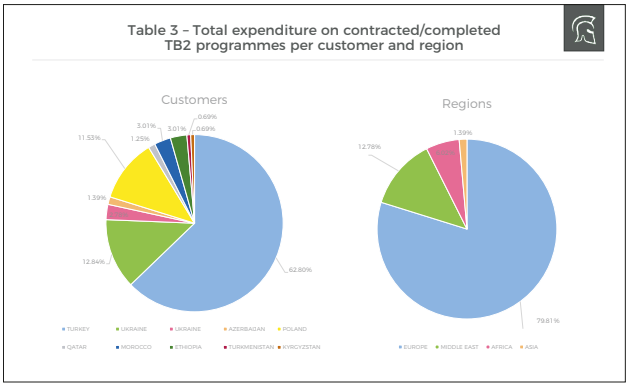
In 2020, as the COVID-19 pandemic hit, according to *Defence Insight* data, annual expenditure on the TB2 declined 89.26% from $205.2 million in 2019 to $108.42 million, with the quantity of units funded reducing from 32 in 2019 to 18 in 2020.

However, the UAV's performance in the South Caucasus in late 2020, combined with the reducing impacts of COVID-19 on the global economy, revitalised demand, with six contracts being officially awarded in 2021.

In Africa, as noted previously, the Royal Moroccan Armed Forces announced they had acquired 13 UAVs for a reported $70 million. Reuters reported in October that Ethiopia had also acquired 13, confirmed by the delivery of TB2 aircraft in November.

In Central Asia, both Kyrgyzstan and Turkmenistan revealed they had acquired the platform from Baykar. In Europe, the Ukrainian Navy announced it would join the country's army in operating the UAV, and Poland – disillusioned with the apparent lack of viable contenders for its indigenous MALE UAV Gryf programme – announced it had acquired 24 bespoke TB2 units.

Because of these contracts, as shown in Table 2, annual expenditure on the TB2 rose 229% from $108.42



Turkey's mammoth $1.46 billion TB2 programme has been responsible for 62.80% of the funds committed to the TB2 since its launch. (Source: *Shephard Defence Insight*)

million in 2020 to $356.83 million in 2021, accounting for 23% of global expenditure on all MALE UAVs that year. This figure is expected to remain high at $348.26 million in 2022.

Regarding units, from the estimated 18 funded in 2020, 56 were funded in 2021 and 55 are estimated to be funded in 2022. From 2023 onwards, annual expenditure and annual units funded for contracted TB2s are expected to decline since only the Polish and Ukrainian navies' contracts will remain uncompleted out of the currently contracted programmes.

Table 3 shows, in percentage terms, where the TB2's contracted market share of $2.325 billion has been spent, underlining three crucial points.

First, Turkey's mammoth $1.46 billion TB2 programme has been responsible for 62.80% of the funds committed to the TB2 since its launch.

Secondly, it highlights Baykar's success in selling its platform in Europe.

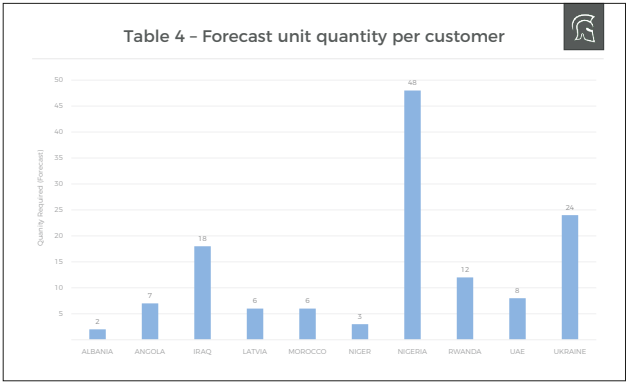
With sales to the continent accounting for 28.54% – or $663.4 million – of the UAV's contracted market share, deals with Poland and Ukraine have primarily driven this success.

Lastly, Table 3 illustrates that contracted TB2 sales to non-European and Middle Eastern customers represent a small portion of the platform's existing market, accounting for a combined 7.41% ($172.22 million) of committed spending.

FORECASTS AND OPPORTUNITIES

Examining the programmes in which the TB2 has won a contract award highlights most, but not all, of its estimated $2.993 billion market share; $667.84 million (22%) remains in ten

$667.84 million (22%) of the TB2's estimated $2.993 billion market share is accounted for by ten unawarded programmes *Shephard* forecasts the TB2 will win. Nigeria is forecast to be the biggest customer, requiring 48 units. (Source: *Shephard Defence Insight*)



unawarded programmes *Shephard* forecasts the TB2 will win. The quantity of aircraft each of these ten customers is forecast to acquire is show in **Table 4**.

Table 5 shows that most of this $667.84 million will be spent in 2022 and 2023, with $160 million due to be spent in those years on 45 and 39 units respectively. This is because most forecast programmes had their inception in 2021, and *Shephard* expects several contract awards in 2022.

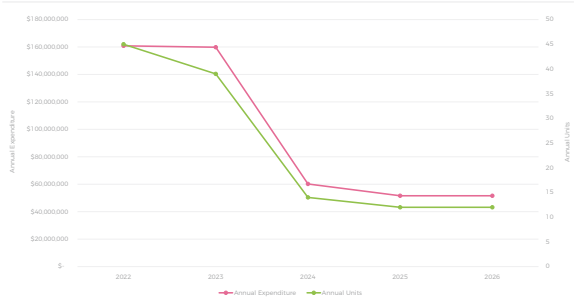
Out of the ten forecast customers, only four – Iraq, Nigeria, Rwanda and Ukraine – are expected to acquire more than ten aircraft. Consequently, as shown by Table 5, since these programmes are likely to begin in 2022, annual expenditure on the TB2 is forecast to decline by more than half in 2024 and remain at a low of $51.60 million in 2025 and 2026.

However, these figures are unlikely to remain static. The quantity of TB2 contracts has increased from four at the start of 2021 to ten, with an additional ten forecast contracts at the end of 2021. Consequently, it is likely additional deals, still to be announced, will be made public in future, adding to the global expenditure on the TB2.

When the forecast $667.84 million is spent is not as important as who is spending it. In June, the Latvian Minister of Defence and Albania's Interior Minister separately visited TB2 facilities in Turkey. Following these trips, the Latvian minister posted online suggesting the Baltic nation would acquire the platform, while the Albanian government is also interested in buying it, having reportedly allocated funds for such a deal.

Elsewhere in Europe, personnel in the Ukrainian Armed Forces confirmed in

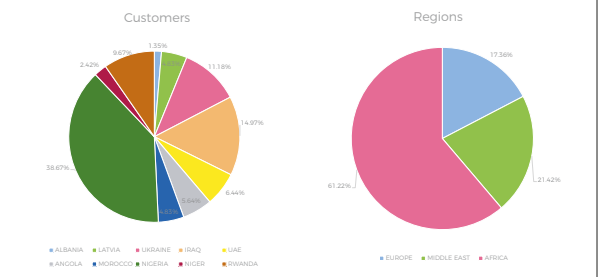
Table 5 – Forecast: TB2 annual expenditure and annual units funded

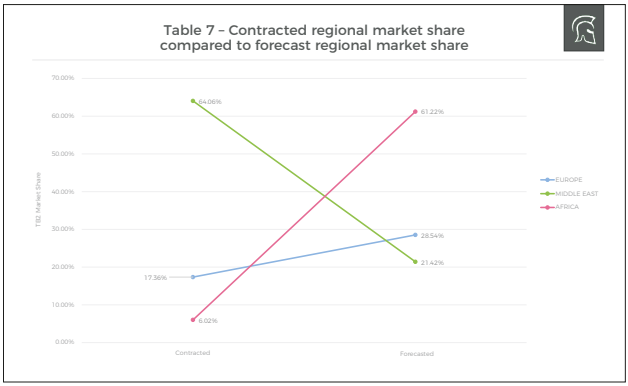


Most of the $667.84 million will be spent in 2022 and 2023, with $160 million forecast to be spent in 2022 and 2023 on 45 and 39 aircraft respectively. (Source: *Shephard Defence Insight*)

The three forecast European programmes account for only 17.36% ($115.92 million) of the TB2's projected market share. By comparison, forecast African programmes account for 61.22% ($408.88 million) of that market share. (Source: *Shephard Defence Insight*)

Table 6 – Total expenditure on forecast TB2 programmes per customer and region





On contracted programmes, Africa is responsible for just 6.02% ($139.94 million) of the TB2's $2.325 billion market share. However, it accounts for 61.22% ($408.88 million) of forecast market share. (Source: *Shephard Defence Insight*)

late 2021 that the army would be procuring an additional batch of TB2s to accompany the aircraft already operated by the army and navy.

As shown by Tables 6 and 7, these three forecast European programmes account for only 17.36% ($115.92 million) of the TB2's forecast market share when compared to Europe's 28.54% share of contracted TB2 programme values, as shown in Table 3.

Similarly, due to Turkey's $1.56 billion procurement ending in 2022, the Middle East's TB2 market share has declined from 64.06% of contracted programmes to 21.42% of forecast ones. This smaller latter share, worth an estimated $143.04 million, mainly comprises the reported $100 million Iraq's government has allocated for acquiring the TB2.

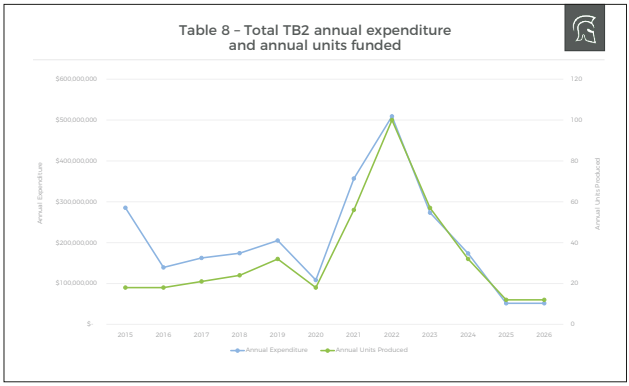
AFRICAN INTEREST

As shown in **Table 6**, most of the TB2's forecast market value comes from Africa. In late October, Turkish President Recep Tayyip Erdoğan conducted what he called a 'productive' four-day tour of the continent, generating four possible contracts for the TB2.

Shephard anticipates Angola will acquire seven units for $37.7 million, Niger three for $16.1 million, Nigeria 48 for $258.2 million and Rwanda 12 for $64.6 million, adding up to a possible $376.6 million of sales to new African customers. In addition, according to various reports, Morocco is preparing to purchase a second batch of at least six TB2s for an estimated $32.28 million.

Concerning contracted programmes, Africa was responsible for just 6.02% – or $139.94 million – of the TB2's $2.325 billion market share, with half this value only being confirmed in November 2021 after Erdoğan's tour. However, as noted above, and in **Table 7**, the appetite for the TB2

The success of the TB2 will result in Baykar receiving an estimated $509.12 million in 2022 for production of 100 units. (Source: *Shephard Defence Insight*)

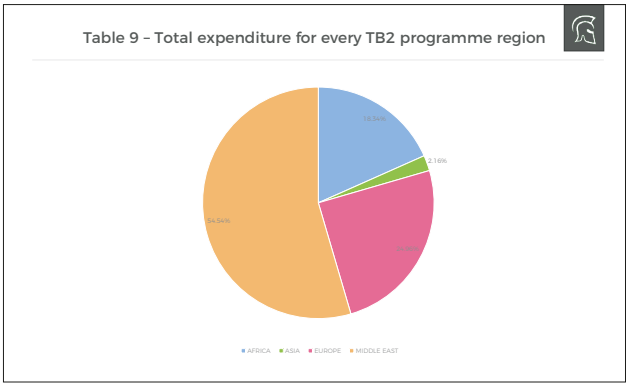


in Africa is substantial, with the continent's demand accounting for 61.22% ($408.88 million) of the UAV's forecast market share, representing a growth of 917%.

Africa's growing and Europe's declining market share suggests that demand for capable, reasonably priced UAVs will be stronger in developing, non-European, nations in the future.

Europe will become less important for these types of aircraft, a trend partly fuelled by many European nations favouring programmes that offer some level of domestic industrial participation. Therefore, offering offset work will significantly increase the likelihood of gaining market share in Europe.

Baykar has evidently realised this. Ukraine, its largest European TB2 customer, signed a deal in late 2021 to establish joint TB2 training and maintenance centres in the country, paving the way towards Ukrainian-Turkish production of the platform.



54.54% of the TB2's total market value sits in the Middle East. Geographical shifts in popularity have resulted in 18.34% of total market share being spent in Africa, compared to 24.96% in Europe. (Source: *Shephard Defence Insight*)

TOTAL MARKET SHARE

As shown in **Table 8**, the popularity of the TB2 will result in Baykar receiving an estimated $509.12 million in 2022 for the production of 100 aircraft. Although annual expenditure and units funded is expected to decline in 2023 and 2024 to $273.24 million (57 units) and $173.6 million (32 units) respectively, these amounts remain firmly above the 2020 figures. As noted above, this decline is due to no data existing for future contracts.

Geographically, due to Turkey's large TB2 contract, 54.54% of the platform's total market value is accounted for by the Middle East (see **Table 9**). The UAV's growing popularity in Africa and declining popularity in Europe has resulted in 18.34% ($548.82 million) of total market share being spent in Africa, compared to 24.96% ($747.04 million) in Europe.

In summary, due partly to its comparatively low unit cost and successful deployment in the 2020 Nagorno-Karabakh conflict, the Bayraktar TB2 dominated the MALE UAV market in 2021 and is positioned to do so for the coming years.

The platform's market share increased from $1.586 billion in 2020 to an estimated $2.993 billion in 2021. This growth shows no immediate signs of abating. Just one month into 2022, *Shephard* reported that, according to industry insiders, Pakistan had acquired the TB2 in 2021, increasing its estimated market share to $3.154 billion.

With interest in Europe and the Middle East declining and being replaced by new African customers, the geography of demand may be changing, but that demand will remain high for years to come.

By Matthew Todhunter, UAS Analyst

SPECIFICATIONS

UAVs

This section includes most military UAVs and UCAVs that are currently under development or in production worldwide.

Entries are split into fixed-wing systems, rotary-wing systems and loitering munitions, arranged alphabetically by manufacturer and product name. The specifications are supplied by the OEMs. Further information can be obtained by contacting these companies directly.

In accordance with current thinking, ballistic or semi-ballistic vehicles, cruise missiles and artillery projectiles are not considered to be UAVs and are therefore not included.

If you think your product should be listed, please contact the team at insight@shephardmedia.com to ensure it appears in the *Shephard Defence Insight* online database (plus.shephardmedia.com) and is included in the next handbook edition.

ABOVE: The MQ-9A Reaper, or Predator B in UK nomenclature, is a long-endurance UAV that has entered service with the USAF, USN, US Department of Homeland Security and several European armed forces. (Photo: GA-ASI)

Fixed-wing UAVs ▸ 558 ARP JSC ▸ 102VR Grif-100

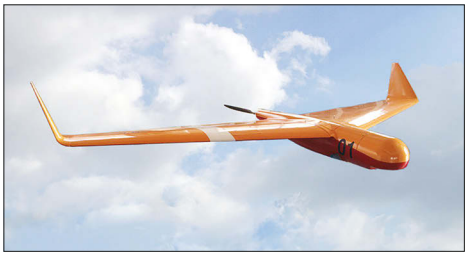
The 102VR Grif-100 UAS is designed for EO and radiation terrain reconnaissance missions and radio-electronic countermeasures against enemy interference. It can be used for search and detection of ground targets, automatic tracking of ground targets, determination of an object's speed and trajectory, level of an area's radiation contamination, radio-electronic jamming countermeasures and the determination of target objects' coordinates. **Length:** 4m **Wingspan:** 7m **Height:** 1.5m **MTOW:** 192kg **Payload:** 18kg **Max speed:** 86.39kt **Cruise speed:** 64.79kt **Ceiling:** 7,874.02ft **Endurance:** 5h

558 ARP JSC ▸ Bekard-1

The Bekard-1 UAS is designed for EO terrain reconnaissance missions. It provides photo and television coverage of a target area and can carry out search and detection of ground targets to provide its crew with target coordinates. The feed of intelligence is in real-time. **Length:** 1.25m **Wingspan:** 2.3m **MTOW:** 6kg **Payload:** 0.35kg **Max speed:** 59.4kt **Cruise speed:** 29.7kt **Range:** 15km **Endurance:** 1.17h

558 ARP JSC ▸ Bekard-2

The Bekard-2 UAS is designed for EO terrain reconnaissance missions. It provides photo and television coverage of a target area and can carry out search and detection of ground targets to provide its crew with target coordinates. The feed of intelligence is in real-time. The Bekard-2 has an extended range compared to the Bekard-1, with a maximum range of 25km compared to 15km. **Length:** 1.3m **Wingspan:** 2.9m **Height:** 0.32m **MTOW:** 10kg **Payload:** 0.8kg **Max speed:** 59.4kt **Cruise speed:** 37.8kt **Range:** 25km **Endurance:** 1.5h



558 ARP JSC ▸ Grif-K

The Grif-K UAS has been designed for 24h aerial electronic reconnaissance in all weather conditions. The frame is made of composite materials in accordance with fixed-pitch pusher tailplane configuration, whilst it is powered by an internal combustion engine. **Length:** 4m **Wingspan:** 6m **Height:** 1.5m **MTOW:** 155kg **Payload:** 10kg **Max speed:** 75.59kt **Cruise speed:** 59.4kt **Ceiling:** 7,874.02ft **Endurance:** 3h

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558 ARP JSC ▸ Kondor

The Kondor UAS is designed for use in training air defence and missile system crews. It has an operational endurance time of up to four hours and a maximum range of 100km from its GCS. The Kondor UAV is powered by a Pusher internal combustion engine using AI-95 fuel. **Length:** 4m **Wingspan:** 6m **MTOW:** 150kg **Payload:** 0.43kg **Max speed:** 75.59kt **Cruise speed:** 59.4kt **Range:** 100km **Ceiling:** 7,874.02ft **Endurance:** 4h

558 ARP JSC ▸ VR-12 Mosquito

The VR-12 (BP-12) Mosquito is a UAS designed for EO terrain reconnaissance. It can detect a target object's coordinates and transfer real-time footage of ground objects through the observation and receiving of photo and video footage. It can carry out an operation using a pre-developed automatic mode with immediate changes being made from the ground control station when needed. **Length:** 0.58m **Wingspan:** 1m **Height:** 0.18m **MTOW:** 2.8kg **Payload:** 0.35kg **Cruise speed:** 37.8kt **Range:** 12km **Ceiling:** 4,921.26ft **Endurance:** 0.75h

ADASI ▸ QX-4

Manufactured by ADASI, the QX-4 is the largest member of the original QX family that includes the QX-1, QX-2 and QX-3; before the addition of the QX-5 and QX-6. The platform follows a different configuration from its other siblings, featuring a longer fuselage instead of the QX-1, QX-2 and QX-3's smaller, more circular body. Transportable by light vehicle, the system offers a stand-off range of 40km and an endurance of up to 90min for extended mission scenarios. **MTOW:** 20kg **Payload:** 5kg **Range:** 40km **Ceiling:** 6,561.68ft **Endurance:** 1.5h

ADASI ▸ QX-5

Unveiled at the Dubai Airshow 2021, the QX-5 is a fixed-wing UAV manufactured by ADASI, a subsidiary of the EDGE Group. The QX-5 is VTOL capable and features an autopilot system. It has been built for ISR applications, border security, and other military operations. The QX family consists of six platforms of various sizes, the QX-1, QX-2, QX-3, QX-4, QX-5 and QX-6. **MTOW:** 110kg **Payload:** 25kg **Range:** 100km **Ceiling:** 15,000ft **Endurance:** 16h

Adcom Systems ▸ United 40 Block-5

The United 40 was unveiled at the Dubai Airshow 2011 and is a MALE UAV with a twin-wing configuration and a hybrid turbine-electric engine. The United 40 has been designed with improved aerodynamics so the EO/IR sensor is retractable. **Length:** 11.13m **Wingspan:** 17.53m **Height:** 4.38m **MTOW:** 1,000kg **Payload:** 100kg **Max speed:** 108kt **Cruise speed:** 108kt **Ceiling:** 23,000ft **Endurance:** 25h

Aero Surveillance ▸ ASF 50

The ASF 50 is a twin-boom composite aircraft with an endurance of up to 15h. It integrates an airborne EO/IR mission system. Custom payloads are also available. It is fully operational and autonomous with a portable GCS and a rugged transportation system. **Length:** 2.45m **Wingspan:** 3.9m **Height:** 1m **MTOW:** 25kg **Payload:** 10kg **Max speed:** 72kt **Cruise speed:** 60kt **Range:** 50km **Ceiling:** 16,000ft **Endurance:** 15h

Aeromarine Intelligent Equipment Company ▸ HK-5000G

The HK-5000G is a medium to high-altitude, long-endurance UAV. It is designed for both reconnaissance and strike missions, with a hardpoint for weapons mounting on each wing. It is manufactured by Aeromarine Intelligent Equipment Company, a subsidiary of the China Shipbuilding Industry Corporation. **Wingspan:** 17m **MTOW:** 5,000kg **Payload:** 500kg **Endurance:** 12h

Aeronautics ▸ Aerostar

The Aerostar UAS has been designed to carry out civil and military applications, including short- and medium-range ISR, battlefield and border control, target designation and artillery missions. It has a high-wing design with a pusher propeller. It is equipped with a large payload bay and capable of carrying a range of payloads, including day and night EO/IR sensors, radars and various electronic intelligence sensors. **Length:** 4.5m **Wingspan:** 8.7m **Height:** 1.2m **MTOW:** 230kg **Payload:** 50kg **Max speed:** 110kt **Cruise speed:** 155.51kt **Range:** 250km **Ceiling:** 18,000ft **Endurance:** 12h

Aeronautics ▸ Dominator XP

The Dominator XP is a MALE platform based on Diamond Aircraft's DA42 Twinstar commercial aircraft. Designed for ISR missions in different domains of communications, signals and visual intelligence at BLoS ranges, the system carries multiple sensors and payloads and is capable of performing a range of civilian and military operations. **Length:** 8.6m **Wingspan:** 13.5m **Height:** 2.5m **MTOW:** 1,910kg **Payload:** 373kg **Max speed:** 188kt **Cruise speed:** 188kt **Range:** 300km **Ceiling:** 30,000ft **Endurance:** 24h

Aeronautics ▸ Orbiter 1K

The Orbiter 1K is a UAS and loitering munition with the same structure as the Orbiter 2 but with a warhead with kinetic force. Given a specific waypoint, the loitering Orbiter 1K can detect and destroy a moving or a stationary target. The system can also operate based on a given area range. Israel-based defence company Aeronautics used the 2015 Paris Air Show to publicly unveil the new Orbiter 1K UAV. **Length:** 1m **Wingspan:** 2.9m **MTOW:** 13kg **Payload:** 3kg **Max speed:** 70kt **Cruise speed:** 40kt **Range:** 120km **Ceiling:** 8,000ft **Endurance:** 2.5h

Aeronautics ▸ Orbiter 2

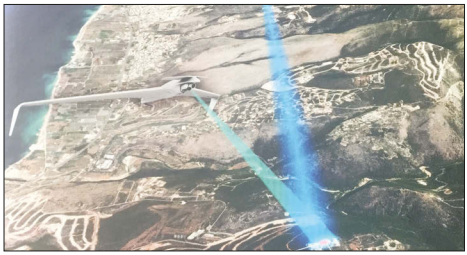
The Orbiter 2 is a lightweight, compact, man-portable mini-UAS with tactical capabilities, designed to support civilian and military missions, including border protection, homeland security, ISTAR, low-intensity conflict, maritime surveillance and urban warfare operations. Azerbaijan, Finland, Indonesia and Turkmenistan are confirmed customers of the platform. **Length:** 1m **Wingspan:** 3m **Height:** 0.2m **MTOW:** 13kg **Payload:** 1.5kg **Max speed:** 70kt **Cruise speed:** 70kt **Range:** 100km **Ceiling:** 18,000ft **Endurance:** 4h

Aeronautics ▸ Orbiter 3

The Orbiter 3 is a small UAS with SIGINT capabilities, extended operational coverage and a reduced logistical footprint. The Orbiter 3 has been designed to carry out land and maritime ISTAR missions and can operate below cloud base in harsh weather conditions. The latest variant of the Orbiter 3 is fitted with a digital data link and can carry payloads of up to 6kg. **Length:** 1m **Wingspan:** 4.4m **Height:** 0.2m **MTOW:** 32kg **Payload:** 6kg **Max speed:** 70kt **Cruise speed:** 50kt **Range:** 100km **Ceiling:** 18,000ft **Endurance:** 7h

Aeronautics ▸ Orbiter 3 CIS

The Orbiter 3 Cellular Intelligence System (CIS) is an airborne ISR system integrating active cellular intelligence and visual intelligence based on the Orbiter 3 small TUAS. The CIS payload is used for remote detection, identification, location and interception of cellular targets. The system has an EO/IR payload for target interrogation. **Length:** 1m **Wingspan:** 4.4m **Height:** 0.2m **MTOW:** 30kg **Payload:** 5.5kg **Max speed:** 70kt **Range:** 80km **Ceiling:** 19,685.04ft **Endurance:** 5h



Aeronautics ▸ Orbiter 4

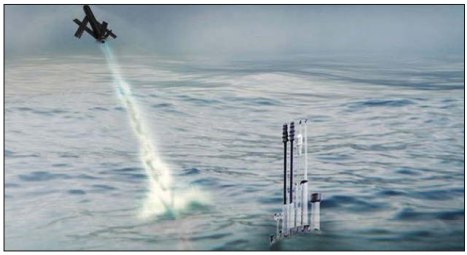
Manufactured by Aeronautics, the Orbiter 4 is the latest in a long line of Orbiter-series UAS. It is an advanced, multi-mission platform with the ability to carry and operate two different payloads simultaneously. The Orbiter 4 has an open architecture and is designed to carry out a range of naval missions, including deep-sea and maritime reconnaissance. **Wingspan:** 5.4m **MTOW:** 50kg **Payload:** 12kg **Max speed:** 70kt **Cruise speed:** 70kt **Ceiling:** 18,000ft **Endurance:** 25h

Aerospace Industries Organization (AIO) ▸ Fotros

The Fotros is an armed UCAV developed by Iran Aviation Industries Organization. It was unveiled in November 2013. Promoted as the 'biggest' Iranian UAS, the Fotros is fitted with four Sadid-1 air-to-surface missiles and has an endurance of 24h. **Length:** 8.6m **Wingspan:** 16.5m **Height:** 2.2m **MTOW:** 1,200kg **Payload:** 300kg **Max speed:** 124.19kt **Cruise speed:** 107.99kt **Range:** 2,000km **Ceiling:** 30,000ft **Endurance:** 24h

AeroVironment ▸ Blackwing

Manufactured by AeroVironment and based on the Switchblade loitering munition, the Blackwing is a tube-launched UAV designed to deliver rapid ISR capabilities through its EO/IR sensor which provides operators with real-time video for information gathering and feature/object recognition. The system can be deployed from an underwater submarine using an underwater-to-air delivery canister or ship surface/mobile ground vehicle via a tube or Multipack Launcher. **Length:** 0.5m **Wingspan:** 0.69m **Height:** 0.08m **MTOW:** 1.8kg



AeroVironment ▸ Puma AE

The Puma All Environment (AE), or RQ-20A in US nomenclature, is the first generation of AeroVironment's small UAS. Succeeded by the Puma 2 AE, which the Puma 3 AE then followed, the Puma AE is typically used for mounted and dismounted platoon/battalion-level organic ISTAR, force protection/fixed-base security and organic convoy support/route clearance. It is believed to have been procured by at least 17 different customer nations. **Length:** 1.4m **Wingspan:** 2.8m **MTOW:** 6.3kg **Payload:** 0.85kg **Max speed:** 45kt **Cruise speed:** 25kt **Range:** 20km **Ceiling:** 500ft **Endurance:** 3h

AeroVironment ▸ Puma 2 AE

The Puma 2 All Environment (AE), or RQ-20B in US nomenclature, is the second generation of AeroVironment's small UAS. The Puma 2 AE is sometimes referred to as the Puma AE II or Block II. The platform has a stronger airframe, a more powerful engine and a longer endurance battery than the original Puma AE. **Length:** 1.4m **Wingspan:** 2.8m **Range:** 20km **Endurance:** 3.5h

AeroVironment ▸ Puma 3 AE

The Puma 3 All Environment (AE), or RQ-20 in US nomenclature, is the third generation of AeroVironment's small UAS. The UAS is designed for reconnaissance and surveillance operations and is equipped with the Mantis i45 gimbal. The Puma 3 can provide high-resolution images during the day, night, low-light, and extreme conditions as an all-environment system. **Length:** 1.4m **Wingspan:** 2.8m **MTOW:** 14.6kg **Max speed:** 44.82kt **Cruise speed:** 25.38kt **Range:** 60km **Ceiling:** 498.69ft **Endurance:** 2.5h

AeroVironment ▸ Puma LE

The Puma Long Endurance (LE) is a mini UAS manufactured by AeroVironment. The UAS comes equipped with AeroVironment's Mantis i45 gimbaled payload featuring EO/IR cameras and an NVG-visible laser illuminator. The aircraft has a secondary payload bay that can host several third-party payloads. Puma LE can be equipped with several parts from the Puma AE family of UAS that AeroVironment also manufacturers. **Length:** 2.2m **Wingspan:** 4.6m **MTOW:** 12.2kg **Payload:** 2.5kg **Max speed:** 41.04kt **Cruise speed:** 25.38kt **Range:** 60km **Endurance:** 6.5h

AeroVironment ▸ Quantix Recon

Quantix Recon is a fully autonomous reconnaissance and mapping UAS manufactured by AeroVironment. These capabilities are provided by the platform's 18MP RGB and Militpsectral camera, both of which can capture data simultaneously. In addition, the Quantix has a fixed-wing/multirotor hybrid design that allows the aircraft to launch vertically and transition to horizontal flight. **Length:** 1m **Wingspan:** 1m **Height:** 0.2m **MTOW:** 2.3kg **Payload:** 0.5kg **Max speed:** 48kt **Cruise speed:** 34.8kt **Range:** 0.5km **Ceiling:** 800ft **Endurance:** 0.75h

AeroVironment ▸ Raven B/RQ-11

The Raven B, RQ-11B, UAS provides a low-altitude ISR capability for commercial and military applications. The system offers day/night aerial observation at line-of-sight ranges of up to 10km. The aircraft can be operated manually or programmed for autonomous operation. More than 20,000 Raven UAVs are in service worldwide, and the RQ-11B remains in production, with earlier variants having ceased production. The aircraft first entered service with the US forces in 2005. **Length:** 0.9m **Wingspan:** 1.4m **Height:** 0.2m **MTOW:** 1.9kg **Max speed:** 50kt **Cruise speed:** 44kt **Range:** 10km **Ceiling:** 15,000ft **Endurance:** 1.5h

AeroVironment ▸ T-20

The T-20 is a catapult-launched UAV that was originally produced by Arcturus UAV before AeroVironment purchased the company. The T-20 is powered by a MOGAS 190cc EFI engine, the T-20 has an endurance of 24h+, a range of 185km and can land autonomously. It can be fitted with a range of EO/IR payloads that can be easily interchanged with one another. **Length:** 2.9m **Wingspan:** 5.7m **Height:** 1m **MTOW:** 102kg **Payload:** 22.68kg **Max speed:** 50.4kt **Cruise speed:** 50kt **Range:** 185km **Ceiling:** 25,000ft **Endurance:** 24h

AeroVironment ▸ Wasp AE

The Wasp AE is a hand-launched micro-UAS designed by AeroVironment for both land-based and maritime operations. It is a replacement for the previous Wasp III capable of landing in saltwater or on land. The proposed customer uses include tactical-level ISTAR utilising the platforms Mantis i22 sensor, force protection, fixed-base security and organic convoy support/route clearance. **Length:** 0.76m **Wingspan:** 1m **Height:** 0.3m **MTOW:** 1.3kg **Payload:** 0.27kg **Max speed:** 45kt **Cruise speed:** 20kt **Range:** 5km **Ceiling:** 500ft **Endurance:** 0.8h

Aertec Solutions ▸ TARSIS 25

The TARSIS 25 platform is a TUAV designed to be used for observation, surveillance and light weapons integration. It is proposed as a high-performance, versatile system that allows for many configurations and missions. It is designed to be operated conventionally from runways, but can also be used with catapults for launch and parachute or airbag for emergency recovery. **Length:** 2.5m **Wingspan:** 3.2m **Height:** 0.89m **MTOW:** 25kg **Payload:** 4kg **Max speed:** 72kt **Cruise speed:** 74kt **Range:** 50km **Ceiling:** 9,843ft **Endurance:** 7h

Aertec Solutions ▸ TARSIS 75

The Aertec Solutions TARSIS 75 platform is a fixed-wing TUAV designed to be used for observation, surveillance and light weapons integration. It is proposed as a versatile system that allows for different configurations and missions. **Length:** 3.8m **Wingspan:** 5.2m **Height:** 0.96m **MTOW:** 74.5kg **Payload:** 12kg **Max speed:** 81kt **Cruise speed:** 59kt **Range:** 750km **Ceiling:** 18,045ft **Endurance:** 14h

Airbus Defence & Space (Germany) ▸ Barracuda

The Barracuda is a flying testbed for developing technologies and procedures to be used by next-generation UAVs, specifically a UCAV. The demonstrator first flew in April 2006. The results of simulations carried out during the Agile UAV programme are being assessed by the technology demonstrator during real flights. The design is all-electric, with the exception of the landing gear. **Length:** 8.25m **Wingspan:** 7.22m **MTOW:** 3,250kg **Payload:** 300kg **Max speed:** 387kt **Endurance:** 2h

Airbus Defence & Space (Germany) ▸ DRAC

The fixed-wing Tracker – called DRAC (Drone de reconnaissance au contact) by the French Army – is designed to increase the situational awareness of frontline army units. Airbus Defence and Space has developed a Ground Control Station (GCS) as well as a high-rate secure data link, while Survey Copter – its tactical and mini-UAS subsidiary – is providing the UAVs and cameras. **Length:** 1.4m **Wingspan:** 3.6m **MTOW:** 7.5kg **Payload:** 1.8kg **Max speed:** 32.5kt **Cruise speed:** 49kt **Range:** 25km **Ceiling:** 6,500ft **Endurance:** 2h

Airbus Defence & Space (UK) ▸ Zephyr

Airbus Defence and Space is developing a family of Zephyr solar-powered, high-altitude pseudo-satellites that are capable of flying at 65,000ft. The Zephyr is a world-record-holding aircraft that flew constantly for two weeks. The ultra-lightweight Zephyr 8 is uniquely capable of providing persistent surveillance over land or sea and hosting communications links, over the same area, for months at a time without landing. **Length:** 7.5m **Wingspan:** 18m **Height:** 1m **MTOW:** 32kg **Payload:** 3kg **Max speed:** 35kt **Cruise speed:** 30kt **Ceiling:** 70,000ft

Airbus Defence & Space (UK) ▸ Zephyr S

The Zephyr S is a solar-electric stratospheric UAS manufactured by Airbus Defence & Space. Designed to run on solar power, the Zephyr S can fly at altitudes of up to 70,000ft (where it is above the weather and other air traffic) for days at a time and has set several world records relating to long-duration flights. Alongside the larger Zephyr T, the Zephyr S is intended to fulfil civil and military applications, ranging from surveillance to environmental monitoring. **Wingspan:** 25m **MTOW:** 75kg **Payload:** 5kg **Ceiling:** 70,000ft **Endurance:** 720h

Airbus Defence & Space (UK) ▸ Zephyr T

The Zephyr T is a larger variant of the Zephyr S, a solar-electric stratospheric UAS manufactured by Airbus Defence & Space. Due to its greater dimensions, the Zephyr T can cope with heavier payloads than its smaller counterpart, including active ISR equipment such as a synthetic aperture radar. **Wingspan:** 32m **MTOW:** 140kg **Payload:** 20kg **Ceiling:** 70,000ft

Airbus Defence & Space (UK)/Airbus Defence & Space Military Aircraft (Spain) ▸ Atlante

Atlante is a fixed-wing MALE TUAV designed by Airbus Defence and Space in Spain, following high-level customer technical requirements from the Spanish MoD. It has been awarded Category II certification, enabling it to operate in civil airspace. **Length:** 5.47m **Wingspan:** 8m **Height:** 1.99m **MTOW:** 570kg **Payload:** 100kg **Max speed:** 108kt **Cruise speed:** 73kt **Range:** 400km **Ceiling:** 20,000ft **Endurance:** 10h

Airbus Defence & Space Military Aircraft/Dassault Aviation/Leonardo Aircraft ▸ Eurodrone

The Eurodrone, or the European Medium-Altitude Long-Endurance Remotely Piloted Aircraft System, is a MALE UAV developed by Airbus, Dassault Aviation and Leonardo for Germany, France, Italy and Spain. The platform features an open architecture design and is intended to conduct ISTAR missions using its SAR, EO/IR and tactical SIGINT payloads. **Length:** 16m **Wingspan:** 30m **Height:** 6m **MTOW:** 11,000kg **Payload:** 2,300kg **Cruise speed:** 269.98kt **Ceiling:** 13,685.52ft **Endurance:** 40h

Airbus DS Airborne Solutions ▸ KZO

The KZO is a TUAV suited for high-speed reconnaissance missions. It has been designed to operate in most weather conditions by day and night. It can provide reconnaissance results in real time and operate to a a distance of up to 140km. Proposed missions for the platform include land surveillance, search and rescue and convoy protection. **Length:** 2.25m **Wingspan:** 3.4m **Height:** 0.9m **MTOW:** 172kg **Payload:** 35kg **Max speed:** 119kt **Range:** 100km **Ceiling:** 11,483ft **Endurance:** 5.5h

Alcore Technologies ▸ Azimut Mk 2

Azimut Mk 2 is a close-range UAS for close-in surveillance, customs, parachute groups, paramilitary operations and task forces. **Length:** 1.82m **Wingspan:** 2.9m **Height:** 0.3m **MTOW:** 9kg **Payload:** 2kg **Max speed:** 65kt **Cruise speed:** 27kt **Range:** 15km **Ceiling:** 6,000ft **Endurance:** 2h

Alcore Technologies ▸ Azimut Mk 3

Azimut Mk 3 is a short-range UAV system with VTOL capabilities and four tilting rotors. It has been designed for various civil and military users and missions, including close-in surveillance, customs, paramilitary operations, platoons and task forces. **Length:** 1.82m **Wingspan:** 2.9m **Height:** 0.3m **MTOW:** 8kg **Payload:** 1kg **Max speed:** 60kt **Cruise speed:** 50kt **Range:** 10km **Ceiling:** 6,000ft **Endurance:** 2h

Alcore Technologies ▸ Biodrone

The Biodrone is a short-range UAS for close-in surveillance, customs, parachute groups, paramilitary operations and task forces. Performance comes from an aerodynamic design and optimisation, associated with a high-tech composite materials structure and a low-level power input for cruise speed. **Length:** 1.8m **Wingspan:** 3.4m **Height:** 0.3m **MTOW:** 9kg **Payload:** 3kg **Max speed:** 70kt **Cruise speed:** 32kt **Range:** 20km **Ceiling:** 6,000ft **Endurance:** 2h

Alcore Technologies ▸ Epsilon 1

Part of a family of small UAVs, Epsilon 1 is a hand-launched platform developed for surveillance and short-range reconnaissance. It flies using electric power, although pneumatic motor propulsion has also been experimentally fitted. **Length:** 0.38m **Wingspan:** 0.48m **Height:** 0.1m **MTOW:** 0.45kg **Payload:** 0.1kg **Max speed:** 40kt **Cruise speed:** 27kt **Range:** 1km **Ceiling:** 300ft **Endurance:** 0.1h

Alcore Technologies ▸ Futura UCAV-UAV

The Futura UCAV-UAV is a tactical surveillance and target acquisition UAV that can also act as a UCAV platform. The gas turbine-powered aircraft is ready to launch with a minimal checklist and no assembly. **Length:** 2m **Wingspan:** 2m **Height:** 0.6m **MTOW:** 70kg **Payload:** 10kg **Max speed:** 220kt **Cruise speed:** 184kt **Range:** 50km **Ceiling:** 25,000ft **Endurance:** 0.5h

Alpi Aviation ▸ Strix-C

Strix-C is a military-certified, modular, rugged, electric-powered mini-UAV for close- to medium-range surveillance, force protection, special operations and law enforcement. A backpack holding one ready-to-fly UAV, day and IR payloads and a ground control station weighs approximately 25kg. A backpack carrying a launcher and ground power supply weighs approximately 12kg. **Length:** 1.2m **Wingspan:** 3m **Height:** 0.3m **Max speed:** 35kt **Ceiling:** 7,500ft **Endurance:** 3h

Alpi Aviation ▸ Strix-D

Strix-D is a military-certified, modular, rugged, electric-powered mini-UAV for close- to medium-range surveillance, force protection, special operations and law enforcement. A backpack holding one ready-to-fly UAV, day and IR payloads and a ground control station weighs approximately 25kg. A backpack carrying a launcher and ground power supply weighs approximately 12kg. **Length:** 1.2m **Wingspan:** 3m **Height:** 0.3m **Max speed:** 35kt **Ceiling:** 7,500ft **Endurance:** 4.5h

American Aerospace Technologies (AATI) ▸ Resolute Eagle

The Resolute Eagle is a tactical Group 3 UAS with fuselage and underwing payload bays, which is able to carry multiple sensors. The UAS has been designed for a range of commercial and military applications and is available in VTOL and standard versions. The runway-independent UAS can be rapidly deployed to remote locations worldwide and is also Internal Airlift/ Helicopter Slingable-Container Unit 90 container transportable. **Length:** 2.9m **Wingspan:** 5.5m **Height:** 1m **MTOW:** 84kg **Payload:** 34kg **Max speed:** 100kt **Cruise speed:** 50kt **Range:** 92.6km **Ceiling:** 17,000ft **Endurance:** 18.5h

Applied Aeronautics ▸ Albatross UAV RTF

Manufactured by Applied Aeronautics, the Albatross UAV Ready to Fly (RTF) is a fixed-wing MOTS UAV. A user can configure it for applications ranging from long-range ISR to precision agriculture and surveying. The Albatross UAV RTF can fly for up to four hours, boasts a 10kg maximum take-off weight and is entirely modular and customisable. **Wingspan:** 3m **MTOW:** 10kg **Payload:** 4.4kg **Max speed:** 73.87kt **Cruise speed:** 34.99kt **Range:** 100km **Endurance:** 4h

Arcturus UAV ▸ Jump 20

Manufactured by Arcturus UAV, a wholly-owned subsidiary of AeroViromennt, the Jump 20 is a VTOL capable variant of the T-20 platform. The platform has an open architecture, allowing for the quick integration of several payloads, communications equipment and easier maintenance. The platform is involved two American programmes, the MEUAS IV and the FTUAS. **Length:** 2.9m **Wingspan:** 5.7m **MTOW:** 97.5kg **Payload:** 13.61kg **Max speed:** 72kt **Cruise speed:** 65kt **Ceiling:** 15,000ft **Endurance:** 14h

Area-I ▸ ALTIUS-500

The smallest platform in the ALTIUS family, the ALTIUS-500 is an air-launched, tube-integrated, uncrewed system that Area-I, a subsidiary of Anduril, designed to meet a requirement from the USN. It is equipped with a Magnetic Anomaly Detector sensor that can be deployed by the platform to detect the magnetic influence of a submarine. **MTOW:** 6.8kg **Range:** 250km **Endurance:** 0h

Area-I ▸ ALTIUS-600

Part of the ALTIUS family, the ALTIUS-600 is an air-launched, tube-integrated, unmanned system that has been designed by Area-I to conduct ISR, SIGINT collection, electronic warfare and strike missions. It can accomplish these missions due to its modular payload bay which has a capacity of 3.7kg. The platform has been successfully launched from a number of land, maritime and aerial crewed and uncrewed platforms. **Length:** 1m **Wingspan:** 2.54m **MTOW:** 12.25kg **Payload:** 3.17kg **Max speed:** 48.6kt **Cruise speed:** 32.4kt **Range:** 440km **Endurance:** 4h

Area-I ▸ ALTIUS-900

Part of the ALTIUS family, the ALTIUS-900 is an air-launched, tube-integrated, uncrewed system. The platform is the latest member of the family to be unveiled. It has the ability to carry a variety of payloads and has an endurance of 15h+ thanks to its hybrid IMPULSE propulsion system. **Wingspan:** 6.1m **MTOW:** 36.29kg **Range:** 1,000km **Endurance:** 0h

Aselsan ▸ MUAS-1

The MUAS-1 is a fixed-wing mini-UAV offered in two configurations to perform reconnaissance and surveillance missions. The system can operate autonomously according to a mission plan that can be loaded before or during flight. **Length:** 1.32m **Wingspan:** 1.8m **Height:** 0.3m **MTOW:** 4.5kg **Payload:** 1kg **Max speed:** 59kt **Cruise speed:** 49kt **Range:** 5km **Endurance:** 0.5h

Aselsan ▸ MUAS-2

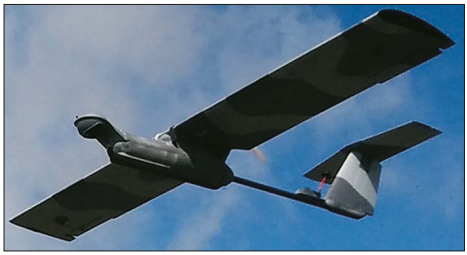
The MUAS-2 is a fixed-wing mini-UAS available in two configurations to perform reconnaissance and surveillance missions. The system can operate autonomously according to a mission plan that can be loaded before or during flight. **Length:** 1.32m **Wingspan:** 3m **Height:** 0.35m **MTOW:** 8kg **Max speed:** 70kt **Cruise speed:** 60kt **Range:** 15km **Ceiling:** 16,404.2ft **Endurance:** 2h

Athlon Avia/Ukrinmash/Ukroboronprom ▸ A1-S Furia

Designed for target acquisition and adjusting of artillery fire, Furia UAS is manufactured by Ukrainian start-up Athlon Avia. The system was developed in response to events that started in Donbass in June 2014 and has since been successfully deployed in Ukraine. There is a strong indication that there is more than one version of the UAS. Furia was on display at the 14th edition of the Arms and Security exhibition in Kiev, Ukraine, in 2017. **Length:** 0.9m **Wingspan:** 2.05m **MTOW:** 5.5kg **Payload:** 1.2kg **Max speed:** 54kt **Cruise speed:** 35.1kt **Range:** 120km **Ceiling:** 8,202.1ft **Endurance:** 3h

Aurea Avionics/GMV ▸ Seeker

The Seeker is a lightweight, small fixed-wing UAV designed to operate quietly`which is hand-launched and recovered by belly landing or net recovery. The system is compliant with the Multi-sensor Aerospace-ground Joint Intelligence, Surveillance and Reconnaissance Interoperability Coalition (MAJIIC) and ITAR free. The company states that it can be deployed within five minutes. **Length:** 1.2m **Wingspan:** 2m **Height:** 0.5m **MTOW:** 3.5kg **Range:** 15km **Ceiling:** 1,300ft **Endurance:** 1.5h

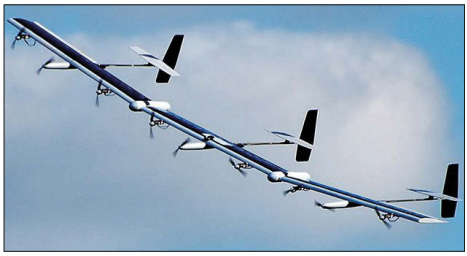


Aurora Flight Sciences ▸ Centaur

The Centaur is a twin-engine, optionally piloted aircraft designed for carrying various types of sensors. It provides interchangeable manned or unmanned flight operations capability. It is developed from the Diamond DA42 twin-engine aircraft. **Length:** 8.5m **Wingspan:** 13.4m **Height:** 2.5m **MTOW:** 1,999kg **Payload:** 363kg **Max speed:** 175kt **Cruise speed:** 150kt **Range:** 3,700km **Ceiling:** 27,500ft **Endurance:** 24h

Aurora Flight Sciences ▸ Odysseus

The Aurora Flight Sciences Odysseus fixed-wing UAV is a solar-powered, pseudo-satellite platform, which is designed to remain on station in the stratosphere for months at a time. The platform was unveiled in November 2018, and the first flight had been planned for April 2019, but in July 2019, it was announced this flight had been delayed indefinitely. The flight was planned to be battery powered with only a few solar panels installed. **Wingspan:** 74.06m **MTOW:** 1,300kg **Payload:** 25kg



Aurora Flight Sciences ▸ Orion

The Orion is a twin-engine UAS capable of flying for over 100h at a time with large payloads. The system has a length of 40.2m, a wingspan of 15.2m and a maximum take-off weight of 5,080kg. The Orion set the world record for the duration of flight for a remotely controlled UAV. The record was awarded based on a flight that took place in December 2014 and lasted more than 80h. **Length:** 40.2m **Wingspan:** 15.2m **MTOW:** 5,080kg **Payload:** 1,270kg **Max speed:** 120kt **Cruise speed:** 85kt **Range:** 4,828.03km **Ceiling:** 30,000ft **Endurance:** 120h

Aurora Flight Sciences ▸ Skate

The Skate is a small, man-packable VTOL UAV designed for performing short-range ISR at the tactical level. A thrust-vectoring system provides a near-VTOL capability, enabling the Skate to be launched and recovered in confined spaces. Once airborne, it can transition to horizontal flight and can provide autonomous overwatch for allied forces. **Length:** 0.66m **Wingspan:** 1m **Height:** 0.36m **MTOW:** 0.9kg **Payload:** 0.22kg **Max speed:** 50kt **Cruise speed:** 40kt **Range:** 5km **Ceiling:** 400ft **Endurance:** 1h

Aurora Flight Sciences ▸ XV-24A LightningStrike

The XV-24A LightningStrike, developed by Aurora Flight Sciences and its partners Rolls-Royce and Honeywell, was a project for a tilt-wing UAV powered by an electric-distributed propulsion system. It was to feature VTOL capabilities and would have had 24 variable-pitch ducted fans driven by electric motors, providing thrust for both hover and cruise. **Wingspan:** 18.59m **MTOW:** 5,443.1kg **Cruise speed:** 416kt

Avia Satcom ▸ Black Kite

The Black Kite began development in mid-2009 and is now flying with only two foreign subsystems: the engine and its payload. Avia has attempted to develop as many of the subsystems as possible as part of a self-sufficiency strategy. The Black Kite was displayed at Defense and Security 2013 in Bangkok. **Length:** 2.23m **Wingspan:** 4.32m **Height:** 0.82m **MTOW:** 60kg **Payload:** 20kg **Cruise speed:** 90kt **Range:** 180km **Ceiling:** 18,000ft **Endurance:** 6h

Avibras Indústria Aeroespacial ▸ Falcao

Developed by Avibras, Falcao is a TUAV. It is intended for reconnaissance missions, target acquisition, fire control, damage assessment, land and maritime surveillance. **MTOW:** 600kg **Payload:** 150kg **Range:** 2,500km **Ceiling:** 15,000ft **Endurance:** 16h

AVIC – Aviation Industry Corporation of China ▸ BZK-005

The BZK-005 is a Chinese-made HALE UAS that debuted at Airshow China in November 2018. Featuring a synthetic aperture radar radome and a mid-mounted ventral EO/IR turret, the platform is designed for wide-area ISR tasks. The export version of the UAS is called the BZK-005E. **Length:** 10.05m **Wingspan:** 18m **MTOW:** 1,500kg **Payload:** 370kg **Max speed:** 113.39kt **Cruise speed:** 90kt **Range:** 2,000km **Ceiling:** 24,606.29ft **Endurance:** 40h

AVIC – Aviation Industry Corporation of China ▸ Cloud Shadow

The Cloud Shadow UAV was developed by Aviation Industry Corporation of China's Chengdu Aerospace Corporation for long-range reconnaissance and strike missions. The jet-powered aircraft, which was unveiled at the Zhuhai Airshow in November 2016, has a configuration similar to the Wing Loong's V-tail and the thrust of the WJ-600 jet-powered UAV. The Cloud Shadow will be available in two variants: a pure reconnaissance platform and an armed version for reconnaissance strike missions.
Length: 9.05m **Wingspan:** 4m **Height:** 3.66m **MTOW:** 3,000kg **Max speed:** 335kt **Endurance:** 6h

AVIC – Aviation Industry Corporation of China ▸ Harrier

Aviation Industry Corporation of China displayed the Harrier MALE UAV at the Zhuhai Airshow in November 2012. The platform is believed to be in Chinese service after making its first flight in 2015. In addition to persistent military reconnaissance and surveillance tasks, it can be used for civil missions such as border/maritime surveillance, resource/infrastructure monitoring, aerial photography and disaster response. **Length:** 6m **Wingspan:** 10m **Height:** 2.2m **MTOW:** 700kg **Payload:** 100kg **Max speed:** 124kt **Cruise speed:** 97kt **Range:** 200km **Ceiling:** 24,600ft **Endurance:** 16h

AVIC – Aviation Industry Corporation of China ▸ Harrier III

Aviation Industry Corporation of China is developing the Harrier III, which it described at the Zhuhai Airshow 2012 as a medium/high-altitude, medium-speed and long-endurance general UAV system, meeting the demand of civil and military markets at home and abroad. **MTOW:** 2,000kg **Payload:** 700kg **Max speed:** 184kt **Cruise speed:** 173kt **Ceiling:** 26,000ft **Endurance:** 24h

AVIC – Aviation Industry Corporation of China ▸ Morning Star

Aviation Industry Corporation of China's Morning Star is a quasi-satellite, near-space, solar-powered platform. It is designed for both military and civilian applications, including reconnaissance, navigation and telecommunications. **Wingspan:** 20m **Ceiling:** 65,616.79ft **Endurance:** 720h

AVIC – Aviation Industry Corporation of China ▸ Nighthawk

Aviation Industry Corporation of China displayed its new Nighthawk UAV at the China International Aviation and Aerospace Exhibition in November 2012. Nighthawk is designed for tactical ISTAR missions. **Max speed:** 92kt **Cruise speed:** 81kt **Range:** 120km **Ceiling:** 11,500ft **Endurance:** 3h

AVIC – Aviation Industry Corporation of China ▸ SW-1

The fixed-wing SW-1 is designed to perform tactical ISTAR missions. It was displayed at the Airshow China exhibition in November 2012. **Length:** 2.76m **Wingspan:** 4.1m **MTOW:** 85kg **Payload:** 20kg **Max speed:** 91.79kt **Cruise speed:** 65kt **Ceiling:** 9,840ft **Endurance:** 3h

AVIC – Aviation Industry Corporation of China ▸ WZ-8

First shown in October 2019, the WZ-8 is HALE UAV. Two closed-cycle liquid-fuelled rocket engines power the WZ-8 to a claimed supersonic speed of Mach 3. It has been reported that the platform can be air-launched from an H-6N strategic bomber. **Max speed:** 2,000.22kt

AVIC/Chengdu Aircraft Design and Research Institute (CADI) ▸ Wing Loong I

Designed by Chengdu Aircraft Industry Group, a subsidiary of Aviation Industry Corporation of China, the Wing Loong I is the first variant of the Wing Loong (Pterodactyl) family. Designed for persistent ISTAR, electronic countermeasures and strike applications, the UAV was unveiled at the China International Aviation and Aerospace Exhibition in November 2012. The platform has two variants; the Wing Loong ID, an export variant of the platform, and the Wing Loong IE, an upgraded variant that conducted its maiden flight in January 2022. **Length:** 9m **Wingspan:** 14m **Height:** 2.7m **MTOW:** 1,200kg **Payload:** 200kg **Max speed:** 151kt **Cruise speed:** 120kt **Ceiling:** 30,000ft **Endurance:** 20h

Badan Pengkajian dan Penerapan Teknologi ▸ Wulung

The Wulung is an Indonesian tactical UAV. First displayed at the Indo Defence Expo and Forum in November 2014, the aircraft entered mass production in May 2016. The UAV has been designed to perform ISR missions and is powered by a single-piston engine. **Length:** 4.42m **Wingspan:** 6.34m **Height:** 1.48m **MTOW:** 125kg **Payload:** 35kg **Max speed:** 100kt **Cruise speed:** 60kt **Range:** 120km **Ceiling:** 8,000ft **Endurance:** 6h

BAE Systems ▸ PHASA-35

The Persistent High Altitude Solar Aircraft (PHASA-35) is a solar-electric, high-altitude, long-endurance UAV produced by BAE Systems and Prismatic. The solar panels give the platform the potential to remain airborne for up to one year. The platform is designed to provide a persistent, stable platform for monitoring, surveillance, communications and security applications. Depending on the payload attached, the platform can be used for disaster relief, border protection and surveillance at lower costs than conventional satellite systems. The first successful trials of PHASE-35 were carried out over the Royal Australian Air Force (RAAF) Woomera Test Range in South Australia in 2020. **Wingspan:** 35m **MTOW:** 150kg **Payload:** 15kg **Max speed:** 78kt **Cruise speed:** 65kt **Ceiling:** 65,000ft **Endurance:** 8,760h

BAE Systems/GE Aviation/QinetiQ/Rolls-Royce North America ▸ Taranis

Taranis is a UCAS demonstrator. The Taranis project aims to contribute to the understanding of strategic UCAS through the demonstration of relevant technologies and their integration into a representative system. The project brings together BAE Systems, Rolls-Royce, the systems division of GE Aviation, Qinetiq and the UK MoD. **Length:** 12.5m **Wingspan:** 10m **Height:** 4m **MTOW:** 8,000kg **Max speed:** 623kt **Cruise speed:** 550kt

Baykar ▸ Akinci

The Akinci is a high-altitude long-endurance armed UAS manufactured by Baykar. Sometimes known as Uçan Balık, the drone has a payload capacity of 1,350kg and can be fitted with a range of ISR or strike payloads. It can host many Turkish manufactured strike payloads, and it adheres to NATO standards for munition integration, allowing any customer to fit its own domestically produced strike payloads. In August 2021, the platform entered service with the Turkish Armed Forces. **Length:** 12.5m **Wingspan:** 20m **Height:** 4.1m **MTOW:** 4,500kg **Payload:** 1,350kg **Ceiling:** 40,000ft **Endurance:** 24h

Baykar ▸ Bayraktar Mini

The Bayraktar Mini UAS is used for short-range reconnaissance and surveillance applications and can be deployed in harsh environments. The system, which has been in operation since 2007, has recorded over 10,000 flight sorties. There are currently 200 systems in service. **Length:** 1.2m **Wingspan:** 2m **MTOW:** 5kg **Payload:** 1kg **Max speed:** 32kt **Cruise speed:** 30kt **Range:** 15km **Ceiling:** 12,000ft **Endurance:** 1.3h

Baykar ▸ Bayraktar TB2

The Bayraktar TB2, or Bayraktar-2, is a medium-altitude long-endurance UAV developed and manufactured by Baykar. The platform can conduct ISR and armed attack missions and has a payload capacity of 150kg. According to the Baykar website, 160 Bayraktar platforms are in service in Turkey, Qatar, Ukraine and Azerbaijan. Azerbaijan used the drones extensively in the 2020 Armenia–Azerbaijan conflict over Nagorno-Karabakh. Morocco, Poland and Turkmenistan became customers throughout 2021. **Length:** 6.5m **Wingspan:** 12m **MTOW:** 650kg **Payload:** 55kg **Max speed:** 120kt **Cruise speed:** 70kt **Range:** 150km **Ceiling:** 27,000ft **Endurance:** 24h

Baykar ▸ Bayraktar TB3

Announced in late 2020, the Bayraktar TB3, or TB-3, is a developmental UAS designed to land and take off from an LHD Anadolu carrier. The platform will be larger than its TB2 predecessor and will be powered by Tusaş Engine Industries' PD222ST engine. It is due to conduct its maiden flight in 2022. **MTOW:** 1,450kg **Endurance:** 24h

Baykar ▸ MIUS/Fighter

The MIUS (Muharip Insansiz Ucak Sistemi) or Fighter UAV is a fighter and loyal wingman UAS in development by Baykar. On 20 July 2021, the company shared conceptual design images of MIUS for the first time on Twitter. Its first flight is scheduled for 2023. Baykar will produce two variants of the platform, each with a different engine; Motor Sich's AI-25TLT and Ivchek-no-Progress' AI-322F. MIUS will contain AI and will be used on close air support, strategic attack, suppression/destruction, missile attack missions, and operate as a loyal wingman. MIUS is planned to operate from Turkey's in development TCG Anadolu landing helicopter dock. **MTOW:** 5,500kg **Payload:** 1,500kg **Max speed:** 933.43kt **Ceiling:** 40,000ft **Endurance:** 5h

BCB International ▸ W-101

The W-101 is an sUAS intended for close-range missions such as surveillance, patrol and search and rescue tasks. It is a compact and lightweight system that has been designed to prioritise agility and stability. Two different types of wings can be fitted to the W-101, offering either speed or endurance, and a range of sensors can be carried in a nose-mounted gimbal. **Wingspan:** 2m **MTOW:** 7kg **Payload:** 1.5kg **Max speed:** 46kt **Cruise speed:** 27kt **Range:** 30km **Endurance:** 2h

BCB International ▸ W-201

The W-201 is a medium-range, fixed-wing TUAV developed by BCB International for both civil and military applications. It features both a payload bay and an interchangeable nose, which allows for rapid reconfiguration of the UAV to suit the requirements of different missions. This system has been proposed for several uses, including battlefield surveillance, border control and gas pipeline monitoring. **Length:** 3m **Wingspan:** 3.9m **Height:** 0.5m **MTOW:** 25kg **Payload:** 5kg **Max speed:** 76kt **Cruise speed:** 38kt **Range:** 250km **Ceiling:** 10,000ft **Endurance:** 10h

Beijing Sagetown Technologies Co. ▸ CL-2

The Chilong or Red Dragon II (CL-2) is a fixed-wing UAV designed for commercial and military roles. The platform is available for purchase from commercial websites. **Length:** 2.53m **Wingspan:** 3.17m **Height:** 0.7m **MTOW:** 28kg **Payload:** 5kg **Max speed:** 65kt **Cruise speed:** 54kt **Range:** 80km **Ceiling:** 9,843ft **Endurance:** 3h

Beijing Sagetown Technologies Co. ▸ CL-4

The Beijing Sagetown Technologies CL-4 fixed-wing UAV is a runway-launched and -recovered platform, with the option for parachute recovery as well as being catapult-launched. The platform has a 28l fuel tank, providing an operational range of 480km, but this can be expanded with the addition of a 16l auxiliary tank to provide an operational range of 800km. **Length:** 3.67m **Wingspan:** 4.45m **Height:** 1.12m **MTOW:** 65kg **Payload:** 15kg **Max speed:** 92kt **Cruise speed:** 65kt **Range:** 100km **Ceiling:** 9,843ft **Endurance:** 4h

Beijing Sagetown Technologies Co. ▸ CL-5

The Beijing Sagetown Technologies CL-5 is a fixed-wing UAV driven by a pusher engine, which is runway-launched and -recovered, but which can also be landed using a parachute or launched via a catapult. **Length:** 3.4m **Wingspan:** 4m **Height:** 1m **MTOW:** 33kg **Payload:** 5kg **Max speed:** 70kt **Cruise speed:** 59kt **Range:** 900km **Ceiling:** 9,843ft **Endurance:** 9h

Beijing Sagetown Technologies Co. ▸ CL-6

The Beijing Sagetown Technologies CL-6 fixed-wing UAV has a dead weight of 44kg and can carry a payload –excluding fuel – of 20kg. According to the company, the platform has one-button runway take-off and autonomous landing with emergency parachute recovery. **Length:** 3m **Wingspan:** 4.6m **Height:** 0.97m **MTOW:** 86.5kg **Payload:** 41kg **Max speed:** 94kt **Cruise speed:** 65kt **Range:** 100km **Ceiling:** 9,843ft **Endurance:** 5.5h

Beijing Sagetown Technologies Co. ▸ CL-9

The CL-9 is a fixed-wing VTOL UAV. It is fitted with two underwing pylons with electric brushless motors at each end powering rotors to provide vertical movement and a nose propeller for horizontal motion. **Length:** 2.45m **Wingspan:** 3.2m **Height:** 0.7m **MTOW:** 34.5kg **Payload:** 5kg **Max speed:** 76kt **Cruise speed:** 57kt **Range:** 400km **Ceiling:** 9,843ft **Endurance:** 4h

Bell ▸ APT 70

Manufactured by Bell, A subsidiary of Textron Systems, the Autonomous Pod Transport (APT) 70 is a cargo-carrying UAS that can deliver critical medical supplies and military supplies to soldiers on the battlefield. The APT 70 is simultaneously both a rotary and fixed-wing platform. It has a VTOL capability before rotating 90˚ to operate as a fixed-wing system while airborne. **Wingspan:** 2.74m **Height:** 1.8m **MTOW:** 136kg **Payload:** 31kg **Max speed:** 110kt **Range:** 56km **Endurance:** 0.92h

Bell Helicopter Textron ▸ Bell V-247 Vigilant Tiltrotor

The Bell V-247 Vigilant Tiltrotor Group 5 UAV provides the vertical lift of a helicopter with the speed and range of a fixed-wing aircraft. The platform is scheduled to be available for production in 2023. **Wingspan:** 19.81m **MTOW:** 13,380kg **Payload:** 4,990kg **Max speed:** 350kt **Cruise speed:** 300kt **Range:** 834km **Ceiling:** 25,000ft **Endurance:** 17h

BelTechExport ▸ Berkut-1 and -2

Berkut-1 and -2 are short-range TUAS designed for optical and electronic terrain reconnaissance by day and night. The UAVs can operate in real-time mode, observing a predefined area to acquire photo, thermal and TV images of the terrain. Other tasks include search and detection of above-water objects, automated tracking of specified above-water objects and delivery of reconnaissance data to tactical commanders. **Range:** 35km **Ceiling:** 9,843ft **Endurance:** 2h

BelTechExport ▸ Burevestnik MB

Burevestnik MB is a long-range unmanned aerial special-purpose system developed by Beltech Export, Belarus. It is powered by a piston engine, which enables it to attain a maximum speed of 150 km/h. **MTOW:** 400kg **Payload:** 60kg **Max speed:** 80.99kt **Range:** 40km **Ceiling:** 16,404.2ft **Endurance:** 8h

BelTechExport ▸ Busel MB

Busel MB is an unmanned aerial special-purpose system developed by Beltech Export, Belarus. It is powered by two electric engines, which enable it to attain a maximum speed of 100km/h. It has a 3470mm wingspan and can fly at an altitude of up to 2000m. It is in service with the Belarusian armed forces, though the inventory count is unknown. **Wingspan:** 3.47m **MTOW:** 14kg **Payload:** 4.2kg **Max speed:** 54kt **Range:** 50km **Ceiling:** 6,561.68ft **Endurance:** 0.67h

BHE Bonn Hungary Electronics ▸ BXAP15

The BXAP15 is a reconnaissance system that can follow a pre-programmed route while sending real-time video signal and position information back to the GCS. Applications include security and maintenance control, combat reconnaissance, natural disaster monitoring, precision agriculture, wildlife monitoring and border control. **Length:** 1.7m **Wingspan:** 3.7m **MTOW:** 17kg **Payload:** 3kg **Max speed:** 54kt **Cruise speed:** 32kt **Range:** 15km **Ceiling:** 13,100ft **Endurance:** 1.7h

BlackBar Engineering ▸ Havoc

Havoc is a MALE modular payload UAS designed for customers with varying missions and payload requirements. Features include tool-less assembly, rolling take-off and landing and two removable payload bays for complete integration. The platform was developed with a small business innovation research grant from the US Air Force Research Laboratory. **Length:** 3.27m **Wingspan:** 4.9m **MTOW:** 79.4kg **Payload:** 20.4kg **Max speed:** 103kt **Cruise speed:** 50kt **Ceiling:** 15,000ft **Endurance:** 18h

BlackBar Engineering ▸ Spear

The Spear delivers flexibility, performance and capability to a broad range of operations. The platform is designed for rapid payload integration, portability and runway independence. In Q1 2010, the company conducted a series of flight demonstrations with the platform using payloads ranging from 2.27-5.9kg. **Length:** 1.8m **Wingspan:** 3.65m **MTOW:** 17.2kg **Payload:** 4.5kg **Max speed:** 50kt **Cruise speed:** 35kt **Ceiling:** 10,000ft **Endurance:** 2h

BlackBar Engineering ▸ Storm

Storm is a TUAV designed for agility, convenience and portability and can be set up in less than 15min. The system is deployable for aerial surveillance, over-the-hill ISR, battle damage assessment or data collection. It is launched by hand and recovered by stall or skid landing with automatic take-off and landing (ATOL) operation. **Length:** 0.8m **Wingspan:** 1.06m **MTOW:** 1.81kg **Payload:** 0.45kg **Max speed:** 56kt **Cruise speed:** 48kt **Range:** 10km **Ceiling:** 9,000ft **Endurance:** 0.8h

Blue Bear Systems Research ▸ Blackstart

The Blackstart is a fixed-wing micro-UAV designed for close-range surveillance. Able to be transported within two man-portable cases and capable of performing its mission fully autonomously, the entire Blackstart system is intended to be quick to deploy and simple to use. Marketed as a scalable system, it can be configured to suit specific customer requirements. **Length:** 0.98m **Wingspan:** 1.5m **Height:** 0.35m **MTOW:** 4kg **Max speed:** 40kt **Cruise speed:** 35kt **Range:** 4km **Endurance:** 1.5h

Blue Bear Systems Research ▸ iStart

The iStart is a fixed-wing micro-UAV designed for close-range surveillance. Able to fit within a backpack and be hand-launched by a single person, the iStart is quick and easy to deploy. It is therefore marketed as a throw-and-go system that requires minimal input from the operator in order to perform its mission. **Length:** 0.66m **Wingspan:** 0.75m **Height:** 0.24m **MTOW:** 1.5kg **Max speed:** 40kt **Cruise speed:** 20kt **Range:** 3km **Endurance:** 0.7h

Blue Bear Systems Research ▸ RedKite

The RedKite UAV has been designed to provide tactical ISR with a low training overhead. Blue Bear open systems architecture permits the user to tailor the package, including payloads, to individual requirements. **Length:** 2.27m **Wingspan:** 3.3m **Height:** 0.91m **MTOW:** 21.5kg **Payload:** 5kg **Range:** 50km **Endurance:** 6h

BlueBird Aero Systems ▸ Blueye

Blueye is a wheeled, soft-wing UAV designed for long-endurance ISTAR, tactical mapping on demand and various civil applications. **Length:** 1.7m **Wingspan:** 4.5m **MTOW:** 50kg **Payload:** 15kg **Max speed:** 30kt **Cruise speed:** 30kt **Range:** 50km **Ceiling:** 15,100ft **Endurance:** 10h

BlueBird Aero Systems ▸ Boomerang

Boomerang is a fuel-cell-powered tactical mini-UAV for long-endurance tactical ISTAR, persistent surveillance, battle damage assessment and tactical mapping on demand. In April 2011, an undisclosed number of units were purchased by Ethiopia. **Length:** 1.1m **Wingspan:** 2.8m **Height:** 0.4m **MTOW:** 10.8kg **Payload:** 1.3kg **Max speed:** 59kt **Cruise speed:** 59kt **Range:** 50km **Ceiling:** 15,100ft **Endurance:** 10h

BlueBird Aero Systems ▸ MicroB

The MicroB is a miniature UAS that has been designed by Bluebird to close the gap between micro-UAVs, which can be rapidly deployed within seconds, and mini-UAVs, which take longer to launch but have a greater operational range and can carry a heavier payload. Although primarily envisioned as a tactical system for providing surveillance on the battlefield, the MicroB can be configured for a wide variety of commercial, military and peacekeeping applications. **Length:** 1.02m **Wingspan:** 1.7m **Height:** 0.1m **MTOW:** 2.2kg **Payload:** 0.3kg **Max speed:** 65kt **Cruise speed:** 40kt **Range:** 10km **Ceiling:** 15,100ft **Endurance:** 2h

BlueBird Aero Systems ▸ ThunderB

The ThunderB is a tactical unmanned aerial system designed for missions that require long endurance. It is a modular system that can be configured to carry a variety of sensors for a range of different civil and military assignments, including ISTAR, border protection, SAR, disaster control and mapping on demand. In addition to this, the ThunderB can be loaded with cargo capsules that can be automatically released to deliver their payload to specific locations. **Length:** 1.8m **Wingspan:** 4m **Height:** 0.3m **MTOW:** 24kg **Payload:** 4kg **Max speed:** 72kt **Cruise speed:** 42kt **Range:** 150km **Ceiling:** 16,000ft **Endurance:** 24h

BlueBird Aero Systems ▸ WanderB

The WanderB, or WanderB-VTOL, is a hybrid UAV that is both a rotary and fixed-wing platform. The VTOL capable UAV is designed to conduct ISTAR missions, providing rapid GSP-marked HD video, photogrammetric tactical mapping-on-demand. **Length:** 1.6m **Wingspan:** 3m **Height:** 0.25m **MTOW:** 14kg **Payload:** 1.5kg **Max speed:** 65kt **Cruise speed:** 65kt **Range:** 50km **Ceiling:** 16,400ft **Endurance:** 2.5h

BlueBird Aero Systems/Cyient Solutions & Systems ▸ SpyLite

The SpyLite is a small UAS that BlueBird Aero Systems manufactured. It is now manufactured by Cyient Systems & Solutions, a JVC between BlueBird & Cyient. The UAS is a mature, combat-proven, electric platform that provides real-time ISTAR thanks to its payloads with an onboard video recording capability. The platform is operated by Chile, India, Isreal and Ethiopia. **Length:** 1.35m **Wingspan:** 2.75m **Height:** 0.25m **MTOW:** 9.5kg **Payload:** 1.3kg **Max speed:** 65kt **Cruise speed:** 43kt **Range:** 50km **Ceiling:** 30,000ft **Endurance:** 4h

Boeing Defence Australia ▸ Loyal Wingman/Airpower Teaming System (ATS)

Designed as a multirole system to escort crewed aircraft, the Airpower Teaming System, sometimes called the Loyal Wingman, began development in 2013 and took its first flight in February 2021. The system is the first indigenous developed military aircraft since the Boomerang of the 1940s. The Australian government invested A$40 million ($28.7 million) into the platform in 2013 for three systems. Upon the news of the first successful test flight of the system in early 2021, a further A$115 million ($89 million) was invested for an additional three systems for the Royal Australian Air Force. **Length:** 11.7m **Wingspan:** 7.3m **Height:** 3m **MTOW:** 3,000kg **Range:** 3,704km

Boeing Defense, Space & Security ▸ MQ-25 Stingray

The MQ-25 Stingray is a carrier-based, long-endurance UAS that is will conduct aerial refuelling as a primary mission and provide ISR capability as a secondary mission. The Stingray, once integrated into carrier fleets, will extend the range of US carriers' existing Boeing EA-18G Growler, F/A-18 Super Hornet and Lockheed Martin F-35C fighters. Boeing won the USN's Carrier-Based Aerial-Refueling System competition in August 2018. IOC is expected in 2024. On 4 June 2021, an MQ-25 UAV and a Navy F/A-18 conducted the first-ever aerial refuelling operation between a manned receiver aircraft and an unmanned tanker. **Length:** 15.54m **Wingspan:** 22.86m **Height:** 2.99m **Payload:** 6,000kg **Range:** 930km

BRVANT ▸ BRV-01

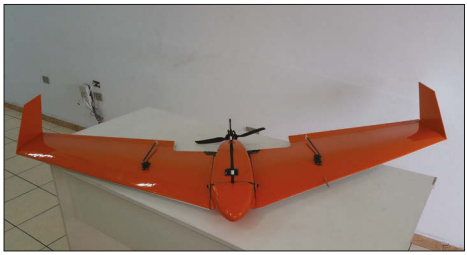
BRV-01 is a fixed-wing pusher UAV suitable for various civil and military roles, including reconnaissance and surveillance, communications relay and power line inspection. **Length:** 1.5m **Wingspan:** 2m **Height:** 0.4m **MTOW:** 10kg **Payload:** 0.5kg **Max speed:** 80kt **Cruise speed:** 54kt **Endurance:** 1h

BRVANT ▸ BRV-02

The BRV-02 is a fixed-wing UAV designed to carry out tactical surveillance and C4ISR missions. **Wingspan:** 1.2m **Cruise speed:** 32kt **Endurance:** 1h

BRVANT ▸ BRV-04C

The BRV-04C is a fixed-wing pusher UAV that can be used for civil and military missions, including agricultural inspection, power line inspection and monitoring, natural disaster response and reconnaissance and surveillance. **Length:** 0.6m **Wingspan:** 1.9m **Height:** 0.3m **Endurance:** 1.5h



BRVANT ▸ BRV-Cardeal-55

The BRV-Cardeal-55 is a petrol-engine, fixed-wing UAV that has been customised for Brazilian Navy operations. It was declared operational in April 2013. It can be used for surveillance and reconnaissance missions, or as a target drone, and is used by the navy for the latter in operations with the Brazilian Marine Corps and for training UAV pilots. **Length:** 1m **Wingspan:** 2.2m **Height:** 0.7m **MTOW:** 18kg **Payload:** 10kg **Max speed:** 108kt **Cruise speed:** 65kt **Range:** 2km **Endurance:** 1h

Bye Aerospace ▸ StratoAirNet

The StratoAirNet is a lightweight MALE UAV that is solar-powered and designed for commercial and military applications. It can accommodate multiple payloads weighing up to 31.8kg. The UAV is based on the company's initial StratoAirNet 15 prototype which has a 15m wingspan. **Length:** 7.5m **Wingspan:** 15m **Height:** 3m **Payload:** 31.75kg **Ceiling:** 35,000ft

Callen-Lenz ▸ Koios 55

Manufactured by Callen-Lenz, the Koios 55 is a small-UAS available in both a VTOL and non-VTOL variant. In September 2020, Koios 55 was teamed with a crewed helicopter during British Army's manned-unmanned teaming (MUMT) themed Army Warfighting Experiment 19. The event showcased a user could integrate the UAVs control system into the cockpit of a crewed aircraft, such as Leanardo's AW159 Wildcat. In addition, the event highlighted the ability of the Koios 55's Skycircutis SC3 autopilot system to manage complex autonomous and semi-autonomous flight patterns. **Length:** 4m **Wingspan:** 2.4m **Height:** 0.68m **MTOW:** 32kg **Payload:** 7kg **Cruise speed:** 50kt **Range:** 750km **Endurance:** 10h

Carbonix ▸ Domani

The Domani quadrotor, fixed-wing UAV is offered as an electric or hybrid platform. It is designed mostly for civilian or commercial roles, such as surveying, mapping and law enforcement, as well as military and security roles, such as defence surveillance and coast guard patrol. It has the capability to carry up to five kilograms of payloads, which, in tandem with its modular payload bay, allows it to host a wide range of payloads and sensors; such as LiDAR, photogrammetry, thermal, multispectral or gimballed sensors. **Length:** 3.2m **Wingspan:** 4.5m **Height:** 0.5m **MTOW:** 25kg **Payload:** 5kg **Max speed:** 54kt **Cruise speed:** 32kt **Range:** 40km **Endurance:** 10h

C-Astral Aerospace ▸ ATLAS C4EYE

The Advanced Technology Light Acquisition System (ATLAS) C4EYE is the smallest UAS developed by C-Astral Aerospace. Part of the Bramor family of UAS, the Atlas is a hand-launched drone designed to carry a stabilised gimbal camera. It is aimed at both the commercial and military markets. **Length:** 0.82m **Wingspan:** 1.55m **MTOW:** 2.6kg **Payload:** 0.3kg **Cruise speed:** 31kt **Range:** 15km **Ceiling:** 16,404ft **Endurance:** 1.2h

C-Astral Aerospace ▸ Bramor C4EYE/ppX

The Bramor fixed-wing UAV is a lightweight system developed by C-Astral Aerospace. It is available in two configurations: the C4EYE optimised for defence and security applications; and the Post-Processing Kinematic (PPX) designed for geographic information system surveying in the mining, agricultural, forest and oil and gas industries. **Length:** 0.96m **Wingspan:** 2.3m **MTOW:** 4.5kg **Payload:** 1kg **Max speed:** 58kt **Cruise speed:** 30kt **Range:** 40km **Ceiling:** 16,404ft **Endurance:** 3h

CEIEC – China National Electronics Import & Export/CPMIEC ▸ SH-1

The Sky Hawk 1 (SH-1) is characterised by its streamlined airframe, wing-body fusion, high aspect ratio and all-wing configuration. The system is mainly used for surveillance and reconnaissance but can support a variety of payloads for other applications. It was unveiled in 2008. **Length:** 2m **Wingspan:** 4.2m **MTOW:** 150kg **Payload:** 30kg **Max speed:** 80kt **Cruise speed:** 70kt **Range:** 180km **Ceiling:** 16,404.2ft **Endurance:** 6h

Chengdu Aircraft Design and Research Institute (CADI) ▸ Nimble Loong

Nimble Loong is a smaller version of the Wing Loong UAV, which is currently operational with the People's Liberation Army Air Force. It is designed for low- and medium-altitude military surveillance as well as civilian and commercial applications. The Nimble Loong made its maiden flight in May 2014. **Length:** 2m **Wingspan:** 3m **Height:** 0.5m **MTOW:** 35kg **Range:** 150km **Ceiling:** 32,808.4ft **Endurance:** 8h

Chengdu Aircraft Industrial Group (CAIG) ▸ Wing Loong II

Designed by Chengdu Aircraft Industry Group, a subsidiary of Aviation Industry Corporation of China, the Wing Loong II is the second variant of the Wing Loong (Pterodactyl) family. Depending on the customer's mission requirements, Wing Long II can host a range of ISR and strike payloads. Known customers of the platform include China, Nigeria, Serbia and Pakistan. **Length:** 11m **Wingspan:** 20.5m **Height:** 4.1m **MTOW:** 4,200kg **Payload:** 480kg **Max speed:** 199.78kt **Cruise speed:** 184kt **Range:** 200km **Ceiling:** 32,480.31ft **Endurance:** 32h

Chengdu Aircraft Industrial Group (CAIG) ▸ WZ-7

The WZ-7 Xianglong (Soaring Dragon) is the PLAAF's primary high-altitude long-endurance UAV for strategic reconnaissance. Designed by Chengdu Aircraft and debuted at the 13th China International Aviation and Aerospace Exhibition in Zhuhai, the WZ-7 is powered by a Guizhou WP-13 turbojet engine and is utilised for border reconnaissance and maritime surveillance missions. **Length:** 14m **Wingspan:** 22.8m **Height:** 3.9m

Chengdu JOUAV ▸ CW-007

The CW-007 lightweight VTOL UAS is part of the Chengdu Jouav Automation Technology Co CW series and is the smallest of the fleet. It is more portable than the CW-10 VTOL aerial surveying UAV, CW-20 VTOL hybrid power/large payload UAV and the TerraHawk CW-30. **Length:** 1.3m **Wingspan:** 2m **Height:** 0.5m **MTOW:** 6.8kg **Payload:** 0.8kg **Max speed:** 54kt **Cruise speed:** 35kt **Ceiling:** 16,400ft **Endurance:** 0.9h

China Aerospace Science and Technology Corporation (CASC) ▸ Caihong

The Caihong (Rainbow), also known as the Cai Hong or CH, is a solar-powered HALE platform designed for near-space flight. It is suitable for military and civilian applications as a quasi-satellite. It is based on the long-endurance CH-4 platform. **Wingspan:** 45m **Cruise speed:** 81kt **Ceiling:** 98,425ft

China Aerospace Science and Technology Corporation (CASC) ▸ CH-2

Intended for surveillance and reconnaissance missions, the CH-2 is the second member of the Rainbow series of UAVs and develops on the design of the CH-1. **MTOW:** 220kg **Payload:** 30kg **Max speed:** 118kt **Cruise speed:** 80kt **Range:** 200km **Ceiling:** 19,680ft **Endurance:** 8h

China Aerospace Science and Technology Corporation (CASC) ▸ CH-3A

Manufactured by the China Aerospace Science and Technology Corporation, the CH-3A is a fixed-wing UAS of the Rainbow series. The platform is a developed version of the CH-3. It features an increased payload capacity and a satellite data link that the CH-3 does not possess. The cost of this is reduced endurance. The platform is operated by Algeria, China, Myanmar, Nigeria, Turkmenistan and Pakistan. **MTOW:** 640kg **Payload:** 180kg **Cruise speed:** 119kt **Range:** 200km **Ceiling:** 19,680ft **Endurance:** 6h

China Aerospace Science and Technology Corporation (CASC) ▸ CH-3

Manufactured by the China Aerospace Science and Technology Corporation, the CH-3 is a fixed-wing UAS of the Rainbow series. Its manufacturer claims a cruising speed of 220km/h and endurance of 12h. It is a stealthy flying-wing design driven by a pusher propeller, with a maximum take-off weight of 640kg and a cruising altitude of 5,000m. **Length:** 7m **Wingspan:** 8m **Height:** 2m **MTOW:** 640kg **Payload:** 80kg **Max speed:** 136kt **Cruise speed:** 118kt **Range:** 960km **Ceiling:** 19,680ft **Endurance:** 12h

China Aerospace Science and Technology Corporation (CASC) ▸ CH-4

The CH-4 is a medium-altitude long-endurance UAV available in two variants, the CH-4A and CH-4B. The platform was developed by the China Academy of Aerospace Aerodynamics and is manufactured by the China Aerospace Science and Technology Corporation. It is known to be in the service of the PLA and a few other militaries. **Length:** 8.5m **Wingspan:** 18m **Height:** 3.4m **MTOW:** 1,330kg **Payload:** 345kg **Cruise speed:** 97kt **Range:** 250km **Ceiling:** 26,250ft **Endurance:** 14h

China Aerospace Science and Technology Corporation (CASC) ▸ CH-5

The CH-5 is a medium-altitude long-endurance UAS designed by China Aerospace Science and Technology Corporation to carry out a range of military missions. Applications of the CH-5 include ISTAR, command and control, EW, submarine detection, observation, security, patrol, and is strike missions. **Length:** 11m **Wingspan:** 21m **MTOW:** 2,721.55kg **Payload:** 1,200kg **Range:** 8,250km **Ceiling:** 23,600ft **Endurance:** 60h

China Aerospace Science and Technology Corporation (CASC) ▸ CH-6

The CH-6, or Cai Hong 6 or Rainbow-6, is a UCAV unveiled by China Aerospace Science and Technology Corporation (CASC) on 19 April 2021. Shown again at the 13th China International Aviation and Aerospace Exhibition in Zhuhai, the CH-6 is powered by two turbofan engines and will host a range of surveillance and attack payloads. The CH-6's first flight is slated for October 2022. **Length:** 15m **Wingspan:** 20.5m **Height:** 5m **MTOW:** 7,800kg **Payload:** 2,000kg **Max speed:** 431.97kt **Cruise speed:** 323.97kt **Range:** 12km **Ceiling:** 39,370.08ft **Endurance:** 20h

China Aerospace Science and Technology Corporation (CASC) ▸ CH-7

The CH-7 (Caihong-7) is a turbofan-powered stealth UAV designed for reconnaissance, support and strike missions. It is capable of collaborating with other CH-7s and manned assets to specifically target enemy airborne early warning aircraft. **Length:** 10m **Wingspan:** 22m **MTOW:** 13,000kg **Payload:** 7,000kg **Max speed:** 500kt **Cruise speed:** 399.57kt **Ceiling:** 41,994.75ft

China Aerospace Science and Technology Corporation (CASC) ▸ CH-10

The Chinese Academy of Aerospace and Aerodynamics, under the China Aerospace Science and Technology Corporation, revealed the CH-10 tiltrotor UAS at Airshow China 2018. The platform is capable of taking off and landing on medium- and large-sized destroyers and frigates, allowing it to perform ISTAR, communications relay and relay guidance missions for naval as well as ground forces.

China Aerospace Science and Technology Corporation (CASC) ▸ CH-91

The CH-91 has been designed by China Aerospace Science and Technology Corporation for tactical missions such as battlefield reconnaissance, target location, artillery fire correction and damage effect evaluation. It is capable of conducting aerial video reconnaissance, surveillance and high-resolution aerial photography of a range of targets, including ground vehicles, defensive positions, radar stations, missile launchers and communication stations. **Length:** 3.5m **Wingspan:** 4.4m **Height:** 1.4m **MTOW:** 110kg **Payload:** 20kg **Max speed:** 97kt **Range:** 150km **Ceiling:** 14,764ft **Endurance:** 5h

China Aerospace Science and Technology Corporation (CASC) ▸ CH-92

The CH-92 system is capable of carrying a range of payloads for reconnaissance and sensor detection tasks. Sensors used for IR target detection, temperature and humidity detection as well as hydrological detection can be integrated and their data can be collected and distributed in real time. The system can be launched in the field and rugged areas. **Length:** 4.1m **Wingspan:** 9m **Height:** 1.6m **MTOW:** 300kg **Payload:** 60kg **Max speed:** 103kt **Range:** 250km **Endurance:** 10h

China Aerospace Science and Technology Corporation (CASC) ▸ CH-96

The CH-96 is a small, long-endurance UAV featuring a twin tail boom. Capable of carrying a range of payloads, it is suitable for conducting tasks such as surveillance, reconnaissance, search and positioning and damage evaluation. It is designed for take-off and landing in narrow, rugged or high-altitude areas. The system has already been deployed for coastal reconnaissance and ocean patrol. **MTOW:** 30kg **Payload:** 4kg **Max speed:** 76kt **Range:** 100km **Ceiling:** 16,404ft **Endurance:** 24h

China Aerospace Science and Technology Corporation (CASC) ▸ CH-802

The China Aerospace Science and Technology Corporation CH-802 is a fixed-wing micro air vehicle intended for short-range surveillance and tactical reconnaissance missions in support of small units. **Length:** 1.8m **Wingspan:** 3m **MTOW:** 6.5kg **Payload:** 1kg **Max speed:** 49kt **Cruise speed:** 32.4kt **Range:** 30km **Ceiling:** 13,100ft **Endurance:** 2.5h

China Aerospace Science and Technology Corporation (CASC) ▸ CH-803

The CH-803 is a fixed-wing UAV designed for reconnaissance and surveillance missions. **Length:** 1.8m **Wingspan:** 3m **MTOW:** 18kg **Payload:** 3.5kg **Max speed:** 70kt **Cruise speed:** 59kt **Range:** 50km **Ceiling:** 11,400ft **Endurance:** 5h

China Aerospace Science and Technology Corporation (CASC) ▸ CH-805

The CH-805 is known for its stealthy design and is used for target practice in air defence exercises and equipment testing. It is sometimes mentioned along with the Star Glory SG-1 and/or Star Shadow UAS by China's Star UAV System OEM. **Length:** 4m **Wingspan:** 15m **Height:** 1.8m **Max speed:** 350kt **Cruise speed:** 324kt

China Aerospace Science and Technology Corporation (CASC) ▸ CH-902

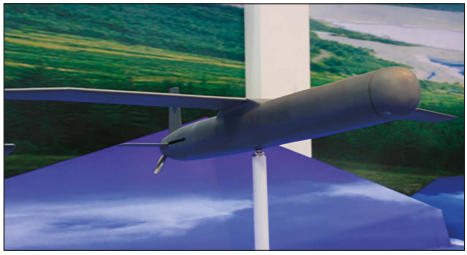
CH-902 is China Aerospace Science and Technology Corporation's hand-launched surveillance and reconnaissance UAV. Its capabilities include target positioning and border patrol. The UAV can be deployed in the context of urban combat, anti-terrorism campaigns, domestic order, traffic monitoring, weather and environmental detection. The system can be operated by one individual. **MTOW:** 3.7kg **Max speed:** 38kt **Range:** 15km **Ceiling:** 13,123ft **Endurance:** 1.5h

China Aerospace Science and Technology Corporation (CASC) ▸ FH-97

Visually similar to Kratos' XQ-58A Valkyrie, the FH-97 is a medium and long-range reconnaissance attack UAV. Debuted at the 13th China International Aviation and Aerospace Exhibition in Zhuhai in September and October 2021, the Chinese aircraft features an internal weapons bay, an EO sensor and can carry and deploy the FH-901 platform. It is believed the FH-97 can operate as a loyal wingman aircraft to crewed fighter aircraft. It is unclear if it is aimed for the PLAAF or export markets, nor is the status of its development known.

China Aerospace Science and Technology Corporation (CASC) ▸ FH-901

The FH-901 is a loitering munition and UAV. Formally known as the CH-901, the platform is capable of both reconnaissance and attack tasks. CASC displayed it during the 13th China International Aviation and Aerospace Exhibition in Zhuhai in September and October 2021. **Length:** 1.5m **Wingspan:** 2m **Height:** 0.6m **MTOW:** 9kg **Ceiling:** 4,921ft **Endurance:** 1h



China Aerospace Science and Industry Corporation (CASIC) ▸ Sky Hawk

CASIC's Sky Hawk (of Tianying) is a UAV designed for strategic and tactical close-in reconnaissance of targets in high-threat combat environments. It is capable of long flights and autonomous wheeled take-offs and landings, and it could be used in carrier operations. **Wingspan:** 11m **MTOW:** 3,000kg **Max speed:** 399.5kt **Ceiling:** 41,995ft **Endurance:** 15h

China Aerospace Science and Technology Corporation (CASC) ▸ WJ-100

Manufactured by the 3rd Academy Hiwing of CASIC, the WJ-100 is a simple Chinese UAV that is part of the WJ series. Kyrgyzstan displayed two WJ-100 units during its Independence Day Parade in late August 2021.

China Aerospace Science and Industry Corporation (CASIC) ▸ WJ-500

WJ-500 is a stealthy subsonic UAV with a low radar signature and the appearance of a cruise missile with very short mid-mounted control surfaces. It is capable of a variety of missions, including reconnaissance, acting as a target, targeting and damage assessment, and it can simulate the characteristics of cruise missiles and aircraft.

China Aerospace Science and Industry Corporation (CASIC) ▸ WJ-600

First revealed during the 2010 China Airshow, the WJ-600is a large-scale baseline UCAV manufactured by China Aerospace Science and Industry Corporation and is a maritime and ground attack platform. It is designed as a standalone weapons platform, or it can be integrated with the Chinese People's Liberation Army. **Length:** 5.3m **Wingspan:** 6.5m **MTOW:** 600kg **Payload:** 130kg **Max speed:** 389kt **Cruise speed:** 378kt **Range:** 2,100km **Ceiling:** 32,808ft **Endurance:** 4.25h

China Aerospace Science and Industry Corporation (CASIC) ▸ WJ-700

The WJ-700 is a jet-powered, long-range UCAV designed for both reconnaissance and strike missions. It is intended for land and maritime surveillance, airborne early warning, SIGINT and EW. The WJ-700 was unveiled at Airshow China in November 2018. **Length:** 10m **MTOW:** 3,500kg **Max speed:** 377.97kt **Ceiling:** 39,000ft **Endurance:** 20h

China Electronics Technology Group Corporation (CETC) ▸ JY-300 Tian Shao

The JY-300 Tian Shao (Sentinel of the Sky) is a MALE UAV designed for early warning applications. It features a radar system integrated into the airframe to allow for limited drag and larger antennas. The prototype is reported to have made its first flight from Pucheng Neifu airfield in Shaanxi province on 30 September 2018. It appeared at Airshow China in November of that year. **Length:** 3.1m **Wingspan:** 17m **Height:** 8m **MTOW:** 1,300kg **Payload:** 400kg **Max speed:** 108.62kt **Cruise speed:** 90kt **Range:** 1,000km **Ceiling:** 25,000ft **Endurance:** 15h

Colombian Aeronautical Industry Corporation (CIAC) ▸ Coelum

Manufactured by Corporación de la Industria Aeronáutica Colombiana (CIAC), the Coelum is a mini UAV that is fitted with a 40x zoom EO/IR camera payload for ISR missions. First tested in April 2021, the hand or catapult launched platform has entered service with the Columbian Air Force. **Length:** 1.3m **Wingspan:** 1.95m **MTOW:** 5.5kg **Cruise speed:** 38.88kt **Range:** 15km **Ceiling:** 10,498.69ft **Endurance:** 1h

CSIR ▸ Indiza

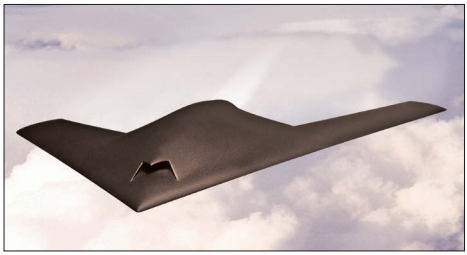
The Council for Scientific and Industrial Research (CSIR) Indiza small fixed-wing mini-UAV started its development in 2017 and was deployed to the Democratic Republic of Congo (DRC) by the South African National Defence Force (SANDF). **Length:** 1.5m **Wingspan:** 2m **Height:** 0.5m **MTOW:** 2.5kg **Payload:** 0.5kg **Range:** 10km **Endurance:** 1h

Dassault Aviation ▸ AVE-C/D

The AVE-C/D is a flight control system UAV demonstrator (AVE-C) and stealth UAV demonstrator (AVE-D), forming part of the R&D programme initiated by the French government to develop a European UCAV demonstrator – the nEUROn. **Length:** 2.4m **Wingspan:** 2.4m **MTOW:** 60kg

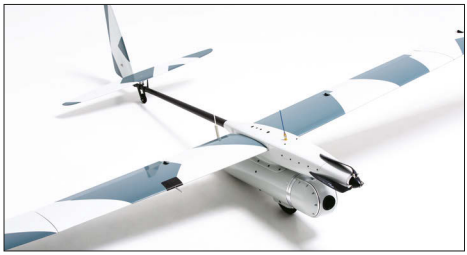
Dassault Aviation/Airbus Defence & Space Military Aircraft/Leonardo/RUAG/Saab ▸ nEUROn

The nEUROn is an experimental unmanned combat aerial vehicle (UCAV) developed with international cooperation to create a stealthy, autonomous UAV that can function in medium- to high-threat combat zones. Dassault Aviation, Saab Aerosystems, Hellenic Aerospace, Airbus, Ruag, Alenia Aeronautica and Leonardo were all involved in the platform. **Length:** 10m **Wingspan:** 10m **MTOW:** 2,268kg **Payload:** 500kg **Max speed:** 535kt **Cruise speed:** 389kt **Ceiling:** 32,800ft **Endurance:** 3h



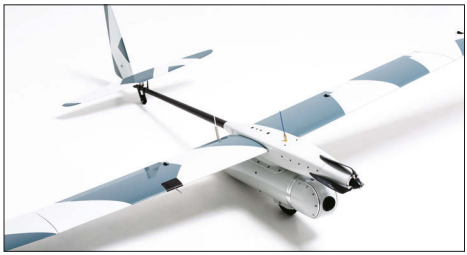
Def C ▸ Observer-S

The Observer-S is a UAV produced by Def C of the Intecracy Group in Ukraine. Its main purpose is aerial survey and reconnaissance. It is a fixed-wing aircraft with a single propeller motor. The State Research and Test Center of the Armed Forces of Ukraine has successfully tested the Observer-S and given it a statement of conformity to TUAV requirements. **Length:** 1.65m **Wingspan:** 3.4m **MTOW:** 6.5kg **Payload:** 1.5kg **Range:** 30km **Endurance:** 5h



Def C ▸ Observer-SM3

The Observer-SM3 is a UAV produced by Def C of the Intecracy Group in Ukraine. Its main purpose is aerial survey and reconnaissance. It is a fixed-wing aircraft with a single propeller motor. **Length:** 1.65m **Wingspan:** 3.4m **MTOW:** 6.8kg **Payload:** 1.5kg **Range:** 30km **Ceiling:** 4,921.26ft **Endurance:** 2.67h



Defence Research & Development Organisation ▸ Ghatak

Ghatak is a UCAV being developed by the Defence Research and Development Organisation for the Indian Air Force. In late 2021, the Stealth Wing Flying Testbed (SWiFT), a scaled-down technology demonstrator for the Ghatak UCAV, conducted low-speed taxi trails. The Ghatak is expected to conduct its maiden flight in 2025. **MTOW:** 6,000kg

Defence Research & Development Organisation ▸ Rustom-1

The Rustom-1 UAV is a swept-wing MALE UAV with a push engine and forward canards for control. The first flight was in October 2010, and in 2012, a prototype platform flew for more than 2h as part of its 14th test flight. A second type – Rustom-2 – has been redesignated as Tapas. **Length:** 5.1m **Wingspan:** 7.9m **Height:** 2.4m **MTOW:** 815kg **Payload:** 95kg **Max speed:** 81kt **Cruise speed:** 54kt **Range:** 250km **Ceiling:** 25,919ft **Endurance:** 12h

Defence Research & Development Organisation/HAL ▸ TAPAS BH-201

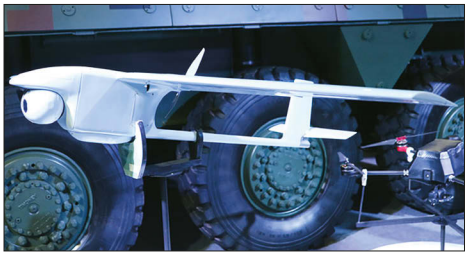
The Tactical Airborne Platform for Aerial Surveillance-Beyond Horizon 201 (TAPAS 201) is a fixed-wing MALE UAV designed to meet the requirements of the Indian Armed Forces. In the same class as the RQ-1 Predator UAV, the platform was formerly known as Rustom II or Rustom 2. It first flew in November 2016. **Length:** 9.5m **Wingspan:** 20.6m **Height:** 3m **MTOW:** 350kg **Max speed:** 121kt **Cruise speed:** 86kt **Range:** 250km **Ceiling:** 30,000ft **Endurance:** 25h

Defence Technology Institute ▸ D-Eyes 04

The D-Eyes 04 is a MALE UAV indigenously manufactured by Defence Technology Institute for the Royal Thai Army (RTA). Based on the Chinese CY-9 UAV, D-Eyes 04 bears visual similarities to the Wing Loong family and the CH-4 family of UAVs. An RTA statement evidenced that the platform will host various payloads, such as an EO/IR sensor, a Synthetic Aperture Radar and air-to-surface weapons. **Length:** 6.5m **Wingspan:** 13.4m **Height:** 2.5m **MTOW:** 750kg **Payload:** 150kg **Cruise speed:** 97.19kt **Range:** 200km **Ceiling:** 24,000ft **Endurance:** 20h

Defence Technology Institute ▸ TEagle Eye III

Thailand's state-owned Defence Technology Institute (DTI) unveiled the TEagle Eye III fixed-wing UAV in November 2015 at the country's Defence and Security (D&S;) exhibition. It is an update of previous designs used by the Thai military and development commenced in 2013. **Length:** 1m **Wingspan:** 1.8m **Height:** 0.2m **MTOW:** 2.5kg **Payload:** 0.5kg **Range:** 15km **Ceiling:** 3,000ft **Endurance:** 2h

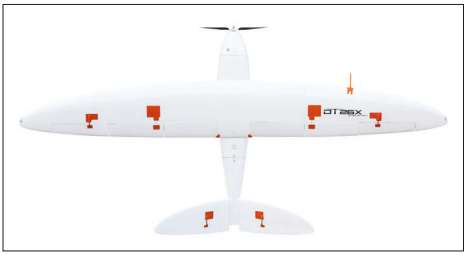


Defence Technology Institute ▸ Tiger Shark II

Tiger Shark II is a medium-range UAV that can operate in conjunction with manned aircraft to enhance operational capability. It is an upgraded version of the Tiger Shark, with an endurance greater than 10h and can operate in a radius of 100-2,000km. **Payload:** 40kg **Max speed:** 60kt **Cruise speed:** 54kt **Range:** 2,000km **Ceiling:** 10,000ft **Endurance:** 10h

Delair ▸ DT26E

The DT26E is a Mini-UAV manufactured by the French company Delair. The catapult-launched autonomous platform is silent and can be deployed in the field within minutes by single operators It comes in a number of variants that feature different payloads. These payloads include a gyro stabilised EO/IR video camera for ISR missions and a RIEGL miniVUX-1DL sensor for LiDAR operations. **Wingspan:** 3.3m **MTOW:** 15kg **Cruise speed:** 30.78kt **Range:** 55km **Ceiling:** 9,842.52ft **Endurance:** 2.83h



Delair ▸ UX11

The UX11 is a fixed-wing UAV designed for survey-grade photogrammetry, geographic information system and construction. One pilot can map 9.6 km2 in eight hours with 1.7cm GSD at 122m flight height. It combines an integrated onboard system, industry-grade sensors and communication systems to process captured imagery and send it to the operator in real-time. **Length:** 0.6m **Wingspan:** 1.1m **Height:** 0.15m **MTOW:** 1.4kg **Max speed:** 34.56kt **Cruise speed:** 29.16kt **Range:** 53km **Ceiling:** 19,685.04ft **Endurance:** 0.98h

Denel Dynamics ▸ Hungwe

Hungwe is an all-composite, low-drag, blended-wing UAV design that can be fitted with a day or night payload. It is catapult-launched and skid- or wheel-recovered, while the communications link onboard enables real-time communication up to 100km from base. **Length:** 2m **Wingspan:** 4m **Height:** 0.5m **MTOW:** 35kg **Payload:** 5kg **Max speed:** 65kt **Cruise speed:** 40kt **Range:** 100km **Ceiling:** 9,840ft **Endurance:** 6h

Denel Dynamics ▸ Seeker 200

Previously designated Seeker II, the Seeker 200 UAV is designed to conduct real-time surveillance, target location and acquisition, artillery fire correction and ELINT. Known users of the platform are Algeria and the UAE. **Length:** 4.43m **Wingspan:** 7m **Height:** 1.3m **MTOW:** 305kg **Payload:** 50kg **Max speed:** 120kt **Cruise speed:** 100kt **Range:** 250km **Ceiling:** 19,680ft **Endurance:** 10h

Denel Dynamics ▸ Seeker 400

An evolution of the Seeker II, the Seeker 400 is a tactical UAV manufactured by Denel Dynamics. The Seeker 400 can support dual mission payloads and can be utilised for a number of applications, including; ISTAR, ELINT, SAR, COMINT, SIGINT and communication. The platform is operated by an undisclosed customer, Saudi Arabia, South Africa and the UAE; the latter announced it had purchased six additional units of the platform at IDEX 2021. **Length:** 5.77m **Wingspan:** 10m **Height:** 1.85m **MTOW:** 450kg **Payload:** 100kg **Max speed:** 120kt **Range:** 250km **Endurance:** 16h

Drone Tech UAV ▸ AV-1 Albatross

The AV-1 Albatross is a fixed-wing UAV that can support payloads of up to 50kg, with additional space for sensors. The UAV is capable of VTOL via electric motors and has two independent fuel tanks, engines, fuel management systems, engine restart and redundant autopilot and flight controls. **Length:** 3m **Wingspan:** 5.4m **MTOW:** 125kg **Payload:** 50kg **Max speed:** 79.91kt **Cruise speed:** 64.79kt **Ceiling:** 16,000ft **Endurance:** 8h

DSO National Laboratories/ST Engineering Aerospace ▸ Skyblade III

The fixed-wing Skyblade III was developed and is produced in a collaboration between Singapore Technologies Aerospace and DSO National Laboratories. It is able to perform surveillance, reconnaissance and aerial photography missions for civil and military users. **Length:** 1.4m **Wingspan:** 2.6m **Height:** 0.6m **MTOW:** 5kg **Payload:** 1kg **Max speed:** 35kt **Cruise speed:** 25kt **Range:** 8km **Ceiling:** 1,500ft **Endurance:** 1h

DSO National Laboratories/ST Engineering Aerospace ▸ Skyblade 360

The fixed-wing Skyblade 360 was developed by Singapore Technologies Aerospace and DSO National Laboratories. It is designed for a variety of civil and military missions, including reconnaissance and surveillance, battle damage assessment, border patrol, law enforcement, environmental survey, aerial photography and perimeter security. **Length:** 1.8m **Wingspan:** 3m **Height:** 0.6m **MTOW:** 9kg **Payload:** 2kg **Max speed:** 35kt **Range:** 15km **Ceiling:** 3,000ft **Endurance:** 6h

Dynetics/Kratos Unmanned Systems Division ▸ X-61A Gremlin

Dynetics, a wholly-owned subsidiary of Leidos, is developing the X-61A Gremlin. This low-cost swarming drone can be outfitted with different payloads, launched by a mothership, recovered during flight and then reused. The platform has been in development since 2016, with the Defence Advanced Research Projects Agency (DARPA) becoming involved in its development in 2018. In November 2021, DARPA announced that during an October 2021 test flight, the Gremlin had, for the first time, been successfully recovered in the air by a Lockheed Martin crewed C-130 transport. **Length:** 4.2m **Wingspan:** 3.47m **Height:** 0.52m **MTOW:** 100kg

Ecarys ▸ S10-VTX

The S10-VTX is a UAV used by the French Aerospace Lab ONERA and other companies in Asia and the US for R&D purposes. It is fitted with two pods used for electronic development and camera systems. **Length:** 8.4m **Wingspan:** 23m **Height:** 1.8m **MTOW:** 980kg **Cruise speed:** 112kt **Ceiling:** 30,000ft **Endurance:** 20h

Ecarys ▸ S15 Condor II

The S15 Condor is a utility platform used by OHB System in Germany. It is fitted with two pods for electronic development and camera systems and can be operated in manned and unmanned mode. **Length:** 8.5m **Wingspan:** 18m **Height:** 2.5m **MTOW:** 1,000kg **Cruise speed:** 120kt **Ceiling:** 19,680ft **Endurance:** 10h

Ecarys ▸ S15-1

The S15-1 was developed as a research and utility platform for manned and unmanned operations and is the basis of the S15 Patroller, with both platforms based on the manned Stemme S15 aircraft. **Length:** 8.5m **Wingspan:** 18m **Height:** 2.5m **MTOW:** 1,100kg **Payload:** 300kg **Max speed:** 161kt **Cruise speed:** 121kt **Ceiling:** 20,000ft **Endurance:** 10h

EFA Group/Ucandrone PC/Hellenic Navy/Hellenic Aviation Industry ▸ Archytas

The Archytas is a developmental fixed-wing VTOL capable UAS. It is being developed by a collection between EFA Group, Ucandrone PC and research teams of the Hellenic Navy, Hellenic Aviation Industry, and the Universities of Thessaloniki, Thessaly, and Thrace. Planned to be a multi-role UAS, it is expected to be in production in Spring 2024.

Engine Development and Production/Yugoimport-SDPR J.P ▸ Mini ALECS VTOL UAS

Serbia's hybrid Mini ALECS VTOL UAS, manufactured by Engine Development and Production, was on display at IDEX in February 2019 with dummy rockets. Mini ALECS VTOLs are designed to conduct ISR and provide real-time data to a GCS. It is also designed for forward observation and target data collection for surface-to-surface fires. **Wingspan:** 4.5m **MTOW:** 60kg **Payload:** 6kg **Max speed:** 134.99kt **Cruise speed:** 97.19kt **Ceiling:** 16,404.2ft **Endurance:** 1h

EDGE Group ▸ Reach-S

The Reach-S is a MALE UAS manufactured by the EDGE Group. Debuted at the Dubai Airshow 2021, the UAV is powered by an Austrian Rotax 912 engine and can be fitted with a gimbaled ISR payload and up to four missiles. **Length:** 5.5m **Wingspan:** 10m **MTOW:** 400kg **Payload:** 120kg **Cruise speed:** 80kt **Range:** 200km **Ceiling:** 19,000ft **Endurance:** 24h

Industrial Complex Engineering Robots/Egyptian Ministry of Military Production ▸ EJ-30

Produced by Industrial Complex Engineering Robots in cooperation with the Egyptian Ministry of Military Production, the EJ-30 is a MALE UAV with visual similarity to the Yabhon United 40. **Length:** 8.9m **Wingspan:** 12m **MTOW:** 1,400kg **Payload:** 270kg **Max speed:** 140.39kt **Cruise speed:** 64.79kt **Ceiling:** 22,965.88ft **Endurance:** 24h

Elbit Systems ▸ Hermes 45

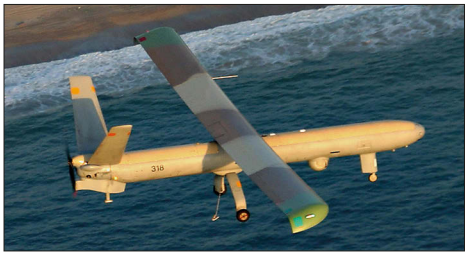
Hermes 45 is a TUAV developed by Elbit Systems to provide ISTAR capabilities at the brigade and division levels and also for naval squadron units. It is operated by a two-person crew, launched from a platform rail and is recovered by an automated spot landing system. The platform debuted at the Paris Air Show in June 2019. **Length:** 1m **Wingspan:** 5m **Height:** 0.8m **MTOW:** 70kg **Payload:** 20kg **Range:** 200km **Ceiling:** 18,000ft **Endurance:** 22h

Elbit Systems ▸ Hermes 90

The Elbit Systems Hermes 90 provides an optimised combination of a variety of quality payloads, point launch and recovery, exceptional mobility and rapid deployment. These high-end capabilities are significantly more cost-effective than comparable TUAVs. It is highly autonomous, with mission-effective flight modes and flexible deployment schemes. **Length:** 4m **Wingspan:** 5m **MTOW:** 125kg **Payload:** 25kg **Max speed:** 95kt **Cruise speed:** 80kt **Range:** 100km **Ceiling:** 14,800ft **Endurance:** 15h

Elbit Systems ▸ Hermes 450

The Hermes 450 is a fixed-wing UAV that is used for communications relay, ISTAR, SIGINT and other roles at the division-to-corps level. The Hermes 450 is the backbone of the IDF's operational UAV activity and has been used extensively by defence forces worldwide, including in active war zones, accumulating over 300,000 operational flight hours. **Length:** 6.1m **Wingspan:** 10.5m **Height:** 7m **MTOW:** 550kg **Payload:** 170kg **Max speed:** 84kt **Cruise speed:** 70kt **Range:** 300km **Ceiling:** 18,000ft **Endurance:** 17h



Elbit Systems ▸ Hermes 900

Based on the Hermes 450, the Hermes 900 is a multi-role MALE UAV manufactured by Elbit Systems. With a payload capacity of 350kg and multiple hardpoints, the platform can host numerous payloads simultaneously, which allow it to have, depending on its configuration, ISTAR, SIGINT and communications capabilities. Elbit has reported that the Hermes 900 UAS has been sold to 12 countries in total. **Length:** 9.1m **Wingspan:** 15.3m **Height:** 3m **MTOW:** 1,180kg **Payload:** 350kg **Max speed:** 120kt **Cruise speed:** 90kt **Range:** 2,500km **Ceiling:** 30,000ft **Endurance:** 36h

Elbit Systems ▸ Skylark I-LE

Skylark I-LE is a small UAV that can be used for various military and security roles, including tactical over-the-hill surveillance and reconnaissance, perimeter security and law enforcement. The system is currently in service with the Israel Defense Forces and has been delivered to more than 20 users worldwide. **Length:** 1.45m **Wingspan:** 2.9m **MTOW:** 7.5kg **Payload:** 1.2kg **Max speed:** 50kt **Cruise speed:** 50kt **Range:** 40km **Ceiling:** 15,000ft **Endurance:** 3h

Elbit Systems ▸ Skylark I-LEX

The Skylark I-LEX is a development of the Skylark I system and was unveiled at the Paris Air Show in 2015. It enables man-packed or vehicle-based deployment and allows for static or on-the-move operation. The company reports that the Skylark I-LEX serves as the IDF's standard battalion-level UAS and is used in various NATO countries and other countries. **Length:** 1.8m **Wingspan:** 3m **MTOW:** 7.5kg **Payload:** 1.2kg **Range:** 40km **Ceiling:** 15,000ft **Endurance:** 3h

Elbit Systems ▸ Skylark II

The Skylark II is a fixed-wing UAV that can be used for various military and security applications, including tactical covert surveillance and reconnaissance, perimeter security and law enforcement. **Length:** 3.2m **Wingspan:** 6.5m **MTOW:** 70kg **Payload:** 10kg **Max speed:** 60kt **Cruise speed:** 60kt **Range:** 60km **Ceiling:** 9,840ft **Endurance:** 4h

Elbit Systems ▸ Skylark 3

The Skylark 3 is a tactical small-UAS manufactured by Elbit Systems. It is designed for both dismounted and vehicle-based operations can perform a range of missions such as ongoing covert operations, over-the-hill intelligence collection, force and convoy protection, strategic infrastructure protection, border patrol, security operations and complex ISTAR in network-centric operations. **Length:** 3.5m **Wingspan:** 4.7m **Height:** 0.9m **MTOW:** 40kg **Max speed:** 80.99kt **Cruise speed:** 64.79kt **Range:** 100km **Ceiling:** 15,000ft **Endurance:** 6h

Elbit Systems ▸ Skylark 3 Hybrid

The Skylark 3 Hybrid is manufactured by Elbit Systems. Unlike the Skylark 3, which is fitted with an electric motor, the Skylark 3 is fitted with a hybrid propulsion system, with both an electric and an internal combustion engine combined. This system grants the UAV triple the endurance over its predecessor, with no change of size or weight. The UAV features dual payload capacity with a plug and play interface for a quick replacement of sensors in the field. **Length:** 4.7m **MTOW:** 50kg **Range:** 120km **Ceiling:** 12,000ft **Endurance:** 18h

Elbit Systems ▸ Skylark C

The Skylark C is a mini-UAV that has been designed for maritime applications. Based on Elbit Systems' Skylark I-LEX, which is in service with more than 30 countries, the Skylark C extends the operational capabilities of its land-based counterpart into an organic maritime ISTAR asset. The platform was unveiled in August 2016. **Length:** 1.2m **Wingspan:** 3.6m **Height:** 0.8m **MTOW:** 15kg **Payload:** 1.2kg **Max speed:** 35kt **Cruise speed:** 25kt **Range:** 40km **Ceiling:** 15,000ft **Endurance:** 7h

Elbit Systems ▸ SkyStriker

The SkyStriker is Elbit System's autonomous loitering munitions system and UAS. It is a cost-effective platform that is capable of long-range precise tactical strikes. The fully autonomous UAS can locate, acquire and strike operator-designed targets with its five or ten-kilogram warhead stowed inside its fuselage. Known customers of the platform are Azerbaijan and Turkmenistan. **Payload:** 10kg **Range:** 40km

Elimco Aerospace ▸ E100

The E100 is a small, lightweight, tactical micro-UAV with foldable swept wings for law enforcement and military applications. It is hand-launched and has belly recovery. **Length:** 0.8m **Wingspan:** 1.2m **Height:** 0.15m **MTOW:** 1kg **Payload:** 0.2kg **Max speed:** 27kt **Cruise speed:** 19kt **Range:** 5km **Ceiling:** 984ft **Endurance:** 1h

Elimco Aerospace ▸ E-200 Scan

The E-200 Scan is a lightweight, tactical mini-UAV designed for use by law enforcement and military operators for surveillance and training. **Length:** 1.5m **Wingspan:** 2.5m **Height:** 0.5m **MTOW:** 5kg **Payload:** 0.5kg **Max speed:** 49kt **Cruise speed:** 39kt **Range:** 50km **Endurance:** 1.5h

Elimco Aerospace ▸ E-300 Viewer

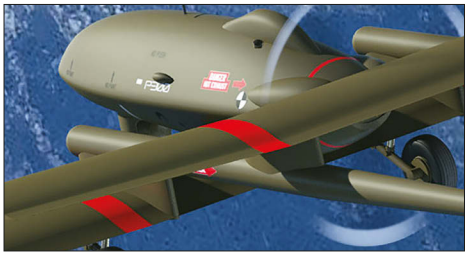
The E-300 Viewer is a fixed-wing Tactical Unmanned Aerial Vehicle (TUAV) for civil and military surveillance and similar missions. The platform is catapult-launched and recovered by belly landing or parachute. **Length:** 1.5m **Wingspan:** 4.8m **Height:** 0.5m **MTOW:** 18kg **Payload:** 2kg **Max speed:** 59kt **Cruise speed:** 45kt **Range:** 150km **Ceiling:** 9,843ft **Endurance:** 3h

Elroy Air ▸ Chaparral

The Chaparral is a VTOL capable cargo-carrying UAS manufactured by Elroy Air. In January 2022, Elroy unveiled the pre-production Charparrel C1's design, which can be utilised to conduct on-demand resupply to expeditionary teams, establish initial logistics footprints in contested areas, ISR, communications relay, forward-placement of fuel, generators, medevac and other non-military tasks. The UAV has received Phase 3 Small Business Innovation Research funding from the USAF's Agility Prime programme in 2020 and through a Tactical Funding Increase Award in Q4 2021. **Payload:** 226.8kg **Range:** 482.8km

Elytron Aeronautica ▸ P-300

The P-300 (Project 300) is a dual fixed-wing UAV designed for long-endurance missions. It can be fitted with a variety of different sensors within minutes or can carry and drop loads. **Length:** 4.8m **Wingspan:** 6.5m **Height:** 1.7m **MTOW:** 300kg **Payload:** 160kg **Max speed:** 100kt **Cruise speed:** 80kt **Ceiling:** 16,000ft **Endurance:** 10h



Elytron Aeronautica ▸ Explorer

The Elytron Explorer is a fixed-wing, tandem-wing UAV targeted towards military and civilian surveillance applications. It can carry loads to be ejected or dropped and is designed to be a flexible platform. The company describes it as 'optionally manned'. **Length:** 6.91m **Wingspan:** 8.59m **Height:** 3.05m **MTOW:** 750kg **Payload:** 350kg **Max speed:** 120kt **Cruise speed:** 90kt **Ceiling:** 22,965.88ft **Endurance:** 12h

ENICS JSC ▸ Eleron-10 (10SV)

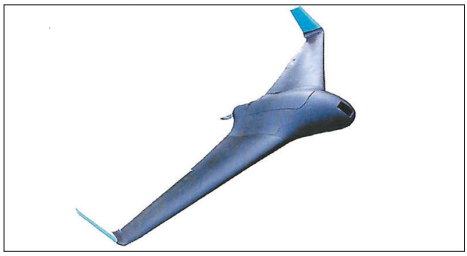
The Eleron series is manufactured by Russia's ENICS JSC and includes several variants: the Eleron-3 (T23E), Eleron-3SV, Eleron-B, Eleron-10 (T10D and 10E) and Eleron-10SV (T10). Eleron-10 aircraft are usually at least three times heavier than Eleron-3 aircraft and are used by Russian Armed Forces for local ISR as part of a complex reconnaissance system that includes two aircraft, one launcher (automatic or manual), a case and a Ground Control Station (GCS) with an antenna block. **Length:** 0.83m **Wingspan:** 2.2m **Height:** 0.38m **MTOW:** 12kg **Payload:** 4.5kg **Max speed:** 65kt **Cruise speed:** 49kt **Range:** 30km **Ceiling:** 16,404ft **Endurance:** 2h

ENICS JSC ▸ Eleron-3

The Eleron series comprises several variants, including Eleron-3 (T23E), Eleron-3SV, Eleron-B, Eleron-10 (T10D and 10E) and Eleron-10SV (T10). The Russian Armed Forces use Eleron-3 aircraft for local, short-range ISR as part of the T28 reconnaissance system, which includes two aircraft, one launcher (automatic or manual), a case and a ground control station with an antenna block. **Length:** 0.64m **Wingspan:** 1.47m **MTOW:** 5.3kg **Payload:** 1kg **Max speed:** 70kt **Ceiling:** 13,123ft **Endurance:** 1.7h

ERAP Korea ▸ Phoenix

The Phoenix UAV is a delta-wing platform designed largely for civilian applications such as policing, border patrol, coast guard, fire-fighting and surveillance, as well as military purposes. It was unveiled in June 2016. **MTOW:** 4.2kg **Payload:** 1.2kg **Cruise speed:** 46kt **Endurance:** 1h



ERAP North America ▸ EK 550C

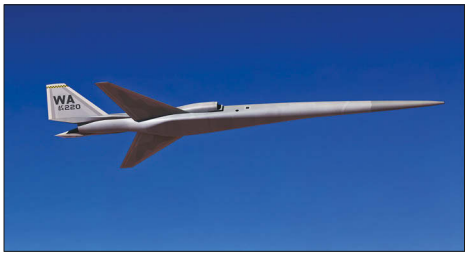
The EK 550C has a cabin capable of supporting other system installations. It has a fibreglass fuselage, reinforced balsa wood wing and a carbon-fibre tailpipe. **Length:** 1.8m **Wingspan:** 2m **Height:** 0.6m **MTOW:** 3.5kg **Payload:** 2.8kg **Max speed:** 25kt **Cruise speed:** 22kt **Range:** 1km **Ceiling:** 12,795ft **Endurance:** 1h

ERAP North America ▸ EK 550M

The EK 550M is a multipurpose, fixed-wing system for day/night surveillance and long-endurance missions in remote areas. **Length:** 1.3m **Wingspan:** 1.9m **MTOW:** 2.5kg **Payload:** 1kg **Cruise speed:** 27kt **Range:** 70km **Ceiling:** 13,123ft **Endurance:** 1.5h

Exosonic ▸ Supersonic UAV

The Supersonic UAV is a developmental fixed-wing aircraft being developed by Exosonic. As its name suggests, it is designed to fly supersonic overland with a muted sonic boom. The USAF awarded a Direct to Phase II Small Business Innovation Research contract to Exosomnic for the platform in October 2021. The UAV will be utilised in pilot training missions, acting as a low-cost near-peer adversary fighter to challenge fighter plots in live flight training.



EXPAL ▸ Shepherd-Mil

Shepherd-Mil is a hand-launched micro-UAV designed to look like a large bird for camouflage. The system has been developed for law enforcement and military users to provide silent day/night reconnaissance. **Length:** 0.85m **Wingspan:** 1.65m **Height:** 0.2m **MTOW:** 2.8kg **Max speed:** 40kt **Cruise speed:** 31kt **Range:** 20km **Ceiling:** 13,100ft **Endurance:** 1h

Flare Bright ▸ SnapShot

Flare Bright manufactures the SnapShot. It is a small, light, ruggedised, unpowered micro UAS designed to capture instant aerial images in wind, adverse weather and constrained aerospace. The platform flies at a single press of a button and autonomously returns to its user, without the soldier having to do anything or undergo any special training. **Range:** 0.63km

Free Horizons ▸ Argus VTOL

The Argus VTOL, currently in development, is part of the Argus family of UAVs manufactured by Free Horizons, which also features the Argus Predator Mk VII, the Argus Predator Mk VII Pro and the Argus Hercules Mk VII. This UAV will feature the highest speed within the family as it can reach up to 150km/h. **Wingspan:** 4m **MTOW:** 21.8kg **Payload:** 5kg **Max speed:** 80.99kt **Ceiling:** 8,202.1ft **Endurance:** 4h

FT Sistemas ▸ Horus FT-100

Manufactured by FT Sistemas, the Horus FT-100 is an electrically powered mini-UAS. With its ability to host an EO/IR camera and C4I systems, the aircraft is designed to act as a mobile command and control intelligence system that can perform aerial mapping, surveillance and monitoring operations. It is operated by the Brazilian Army, the Brazilian Navy and an undisclosed African customer. **Length:** 1.9m **Wingspan:** 2.7m **MTOW:** 8kg **Payload:** 3kg **Max speed:** 33kt **Range:** 20km **Endurance:** 2h

General Atomics Aeronautical Systems ▸ Gray Eagle ER

The Gray Eagle Extended Range (ER) is an improved derivative of the US Army's MQ-1C Gray Eagle. Compared to the original Gray Eagle, the Gray Eagle ER delivers greater range and endurance, allowing it to perform the same missions for extended periods. In October 2017, General Atomics Aeronautical Systems (GA-ASI) ceased producing the original Gray Eagle in favour of the Gray Eagle ER, which will fulfil the US Army's remaining requirements for a long-range multirole medium-altitude long-endurance UAV. **Length:** 9m **Wingspan:** 17m **Height:** 2.1m **MTOW:** 1,905kg **Payload:** 616kg **Max speed:** 167kt **Cruise speed:** 150kt **Range:** 370.4km **Ceiling:** 29,000ft **Endurance:** 42h

General Atomics Aeronautical Systems ▸ Heavily Armed Drone

In November 2021, multiple media outlets reported that GA-ASI had built and flown a prototype as yet unnamed UAV. With a design similar to the MQ-1C Gray Eagle, the heavy-armed drone can reportedly host up to 16 Hellfire missiles. GA-ASI are due to release more information on the platform before the end of 2021.

General Atomics Aeronautical Systems ▸ Mojave

Unveiled in December 2021, the Mojave is a MALE UAV in development from General Atomics Aeronautical Systems (GA-ASI). It is based on the avionics and flight control systems of MQ-9 Reaper and MQ-1C Gray Eagle-ER but is focused on short-takeoff and landing capabilities and increased firepower. **Length:** 9m **Wingspan:** 16m **MTOW:** 3,175kg **Payload:** 1,633kg **Endurance:** 25h

General Atomics Aeronautical Systems ▸ MQ-9A Reaper

MQ-9A Reaper, or Predator B in UK nomenclature, is a long-endurance UAV that has entered service with the USAF, USN, US Department of Homeland Security, and several European armed forces. It is the successor to the original Predator UAS and is intended to carry out the same types of missions, including ISTAR and striking targets with munitions. **Length:** 11m **Wingspan:** 20.1m **Height:** 3.81m **MTOW:** 5,307kg **Payload:** 386kg **Max speed:** 240kt **Cruise speed:** 180kt **Range:** 8,519km **Ceiling:** 50,000ft **Endurance:** 27h

General Atomics Aeronautical Systems ▸ MQ-9B SkyGuardian/SeaGuardian

Manufuted by General Atomics Aeronautical Systems (GA-ASI), the MQ-9B is an upgraded variant of the MQ-9A. The platform is designed to perform over-the-horizon long-endurance, medium-altitude ISR missions. The MQ-9B is split into two variants, the SkyGuardian and SeaGuardian. These are mostly indistinguishable, with certain payloads outfitting the SkyGuardian for over-land operations and the SeaGuardian for maritime operations. In RAF nomenclature, the MQ-9B SkyGurdian is called the Protector RG1. **Length:** 12m **Wingspan:** 24m **MTOW:** 5,670kg **Payload:** 2,721kg **Max speed:** 210kt **Cruise speed:** 180kt **Range:** 11,112km **Ceiling:** 40,000ft **Endurance:** 40h

General Atomics Aeronautical Systems ▸ MQ-20 Avenger

The MQ-20 Avenger, or Predator C, is a long-endurance, unmanned system designed to perform high-speed, covert ISR and precision-strike missions over land or sea. Manufactured by General Atomics Aeronautical Systems, the platform conducted its first flight in April 2009. It was involved in a test flight of the USAF's Skyborg autonomous system in June 2021. **Length:** 13m **Wingspan:** 23.16m **Height:** 3.8m **MTOW:** 8,255kg **Payload:** 2,948kg **Max speed:** 400kt **Cruise speed:** 349.89kt **Ceiling:** 50,000ft **Endurance:** 20h

General Atomics Aeronautical Systems ▸ Predator XP

The Predator XP is an updated version of the original Predator UAV that the US government has licensed for sale to a broader customer base, including the Middle East, North African and South American regions. In February 2013, it was announced the UAE had signed a $197 million contract for the Predator XP. The US Congress approved this FMS sale in early 2015; deliveries were completed by February 2017. **Length:** 8m **Wingspan:** 17m **Height:** 2m **MTOW:** 1,157kg **Payload:** 147kg **Max speed:** 120kt **Cruise speed:** 100kt **Ceiling:** 25,000ft **Endurance:** 35h

General Atomics Aeronautical Systems ▸ Sparrowhawk

The Sparrowhawk is a UAS being developed by General Atomics Aeronautical Systems (GA-ASI). The platform can be air-launched from a larger UAS, such as an MQ-9, and can be recovered in-air once its mission is completed. Powered by a hybrid-electric propulsion system that utilises JP-8 fuel, the UAS features an interchangeable nose that can host different payloads, such as an EO/IR sensor, an imaging radar, SIGINT/ELNIT, or jamming payloads. **Length:** 4.27m **Height:** 3.29m **MTOW:** 226.8kg **Max speed:** 150kt **Cruise speed:** 80kt **Range:** 926km **Ceiling:** 25,000ft **Endurance:** 10h

Germandrones ▸ Songbird 60

The Songbird 60 is part of the VTOL family 'Songbird', manufactured by Germandrones. The family also contains the Songbird 100 and Songbird 150. The platform is a fixed-wing UAS characterised by high speed, long-range and VTOL capability. It features its own ground control station and control software with point and click navigation. **Wingspan:** 2.98m **MTOW:** 9.5kg **Payload:** 1kg **Max speed:** 48.6kt **Range:** 60km **Ceiling:** 6,561.68ft **Endurance:** 0.97h

Germandrones ▸ Songbird 100

The Songbird 100 is part of the VTOL family 'Songbird', manufactured by Germandrones. The family also contains Songbird 60 and Songbird 150. The platform is a fixed-wing UAS characterised by its high speed, long-range and VTOL capability. It features its own ground control station and control software with point and click navigation. Despite the 3m wingspan, Songbird 100 can be packed in a stable transport box of only 120 x 30 x 40 cm and fit into small cars. **Wingspan:** 3.12m **MTOW:** 10.8kg **Payload:** 2kg **Max speed:** 58.32kt **Range:** 90km **Ceiling:** 6,561.68ft **Endurance:** 1.5h

Germandrones ▸ Songbird 150

The Songbird 150 is part of the VTOL family 'Songbird', manufactured by Germandrones. The family also contains Songbird 60 and Songbird 100. The platform is a fixed-wing UAS characterised by high speed, long-range and VTOL capability. It features its own GCS and control software with point and click navigation. Despite the 3m wingspan, Songbird 150 can be packed in a stable transport box of only 120 x 30 x 40 cm and fit into small cars. **Wingspan:** 3.12m **MTOW:** 14kg **Payload:** 4.4kg **Max speed:** 62.2kt **Range:** 110km **Ceiling:** 16,404.2ft **Endurance:** 1.5h

Global Industrial & Defence Solutions (GIDS) ▸ Huma II

Huma II is a medium-range UAV launched by a rocket booster and featuring a twin-boom design. It is designed for desert/field applications and promoted as a low-operational-cost option. **Payload:** 220kg **Max speed:** 81kt **Cruise speed:** 73kt **Range:** 100km **Ceiling:** 14,700ft **Endurance:** 5h

Global Industrial & Defence Solutions (GIDS) ▸ Scout Mini

Scout Mini is a small UAV system that is designed for portability. It is capable of completely autonomous flight and carries an EO payload for daytime surveillance and reconnaissance. The ground control station is portable and equipped with video telemetry and command/autopilot control equipment. **Length:** 1.2m **Wingspan:** 2m **Height:** 0.3m **MTOW:** 5kg **Payload:** 0.5kg **Max speed:** 32kt **Cruise speed:** 28kt **Range:** 10km **Ceiling:** 1,500ft **Endurance:** 1h

Global Industrial & Defence Solutions (GIDS) ▸ Sentry

Sentry is an autonomous UAV designed for field soldiers. It is a noiseless surveillance system, which is designed to be undetected by human observation, IR sensors and radar. **Length:** 0.94m **Wingspan:** 1.88m **MTOW:** 8kg **Payload:** 0.5kg **Max speed:** 40kt **Cruise speed:** 35kt **Range:** 20km **Ceiling:** 4,500ft **Endurance:** 1h

Global Industrial & Defence Solutions (GIDS) ▸ Shahpar

Shahpar is a medium-range tactical UAV capable of conducting day and night surveillance. It can accommodate different mission profiles and payload configurations, depending on the needs of the user. It is the first UAV that was locally designed, developed and manufactured in Pakistan. **Length:** 4.2m **Wingspan:** 6.6m **Height:** 2m **MTOW:** 480kg **Payload:** 50kg **Max speed:** 80kt **Cruise speed:** 54kt **Range:** 250km **Ceiling:** 17,000ft **Endurance:** 7h

Global Industrial & Defence Solutions (GIDS) ▸ Uqab

Uqab is a fixed-wing UAV that can undertake military ISTAR missions and be used by civilian agencies for such tasks as environmental monitoring, law enforcement and search and rescue. The structural design of Uqab utilises composite materials, and the modular design enables it to be deployed quickly using semi-prepared landing strips. **Length:** 4m **Wingspan:** 5.5m **Height:** 1.2m **MTOW:** 200kg **Max speed:** 80kt **Cruise speed:** 60kt **Range:** 150km **Ceiling:** 10,000ft **Endurance:** 6h

Griffon Aerospace ▸ Outlaw G2

The G2 is the fixed landing gear member of the Outlaw family of UAVs. It is designed as a platform for ISR missions, system testing, R&D and payload development. Outlaws are used by the military and research agencies for training, test, data collection and system development. Wing and fuselage hardpoints allow mounting of external payload pods via pylons. **Length:** 2.7m **Wingspan:** 4.9m **MTOW:** 82kg **Payload:** 27.22kg **Max speed:** 95kt **Cruise speed:** 64.79kt **Ceiling:** 12,000ft **Endurance:** 6h

Griffon Aerospace ▸ Outlaw SeaHunter

Outlaw UAVs are used by military and research agencies for training, testing, data collection and system development. In the 114-137kg maximum take-off weight class, SeaHunter has redundant controls and engines. The system also has a backup engine for heavier payloads. **Length:** 3m **Wingspan:** 4.9m **Height:** 1.25m **MTOW:** 114kg **Payload:** 45kg **Max speed:** 140kt **Cruise speed:** 110kt **Range:** 100km **Ceiling:** 18,000ft **Endurance:** 10h

HALCON ▸ Hunter 5

The Hunter 5 is a mini-UAV and loitering munition unveiled by EDGE subsidiary HALCON at the Dubai Airshow 2021. The platform is tube-launched from a 17kg box-shaped launcher that can be mounted on many vehicles. The Hunter 5 can host a strike or ISR payload. **Length:** 1.9m **Wingspan:** 2.4m **MTOW:** 16kg **Payload:** 5kg **Cruise speed:** 40kt **Ceiling:** 4,921.26ft **Endurance:** 0.5h

HALCON ▸ Hunter 10

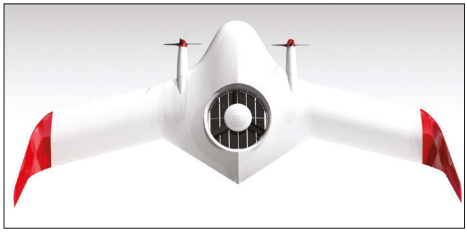
Unveiled at the Dubai Airshow 2021, the Hunter 10 is a tube-launched UAV and loitering munition under development by EDGE subsidiary HALCON. The platform is electrically powered and can host either an ISR or strike payload. Its 58kg box-shaped launcher is designed to be hosted and fired from armoured vehicles and artillery. **Length:** 3.4m **Wingspan:** 4.2m **MTOW:** 47kg **Payload:** 10kg **Cruise speed:** 60kt **Ceiling:** 8,202.1ft **Endurance:** 0.67h

Havelsan ▸ Baha

The Baha is a multi-role UAV designed by Havelsan. The system is powered by a petrol engine during the horizontal cruise and is supported by electric motors in VTOL. It can perform tasks independently or under the remote control of a human operator. Due to its modular architecture, the Baha can host a range of payloads. **Wingspan:** 3.7m **Payload:** 5kg **Range:** 80km **Endurance:** 6h

Havelsan ▸ Turac VTOL UAV

The Turac is a fixed-wing VTOL UAV developed jointly by Havelsan and Istanbul Technical University Aerospace Research Center. It can be used for traditional military ISR missions as well as emerging civil applications. **Length:** 1.82m **Wingspan:** 4.2m **MTOW:** 43kg **Payload:** 10kg **Cruise speed:** 47kt **Ceiling:** 13,120ft **Endurance:** 2.25h

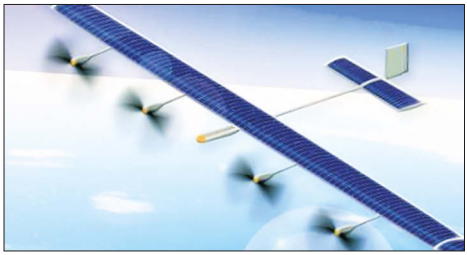


Hindustan Aeronautics Limited (HAL) ▸ CATS Warrior

Manufactured by the state-owned Hindustan Aeronautics Limited (HAL), the Combat Air Teaming System (CATS) Warrior is a medium-altitude long-endurance UAS that is part of the CATS family of systems. Devised to operate as a 'Loyal Wingman' to a crewed Tejas LCA or Jaguar fighter aircraft, the CATS Warrior will be powered by HAL's PTAE-7 engine and can host several payloads, from an EO/IR gimbal, MBDA's ASRAAM short-range air-to-air missiles and the CATS ALFA-S. The platform is expected to be adopted by the Indian Air Force and Navy. Its maiden flight is scheduled to be conducted in 2024 or 2025. **Length:** 9.2m **Wingspan:** 5.8m **MTOW:** 2,100kg **Payload:** 600kg **Max speed:** 600.06kt **Cruise speed:** 426.57kt **Range:** 350km

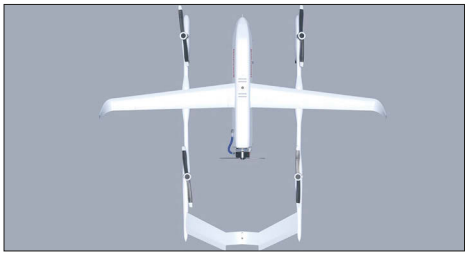
Hindustan Aeronautics Limited (HAL) ▸ HAPS

The high-altitude pseudo-satellite (HAPS) is a developmental UAV being developed by Hindustan Aeronautics Limited (HAL) and NewSpace Research and Technologies (NRT) for the Indian Air Force. The development is estimated to cost $94 million The solar-powered HAPS is expected to have an endurance of three months, operate at 65,000ft and be capable of carrying a payload that weighs between 20-35kg. The UAV is being designed to collaborate with the Combat Air Teaming Systems (CATS) being developed by HAL. **Wingspan:** 59m **MTOW:** 530kg **Payload:** 35kg **Ceiling:** 65,000ft **Endurance:** 2,160h



Honeywell Aerospace ▸ Heavy UAS

The Heavy UAS, or Cargo Unmanned Aerial Vehicle, is, as its name suggests, a cargo-carrying UAV. Manufactured by Honeywell Aerospace, the VTOL capable UAV's horizontal flight is powered by Honeywell's 400kW power system based on its HTS900 engine.



Hongdu Aviation Industry Group ▸ GJ-11 Sharp Sword

Developed by Hongdu Aviation Industry Group (HAIG), the GJ-11 Sharp Sword is a stealth reconnaissance and strike UAS. Displayed during an October 2019 parade, reports conflict when the platform entered the service of the PLAAF. **Length:** 10m **Wingspan:** 14m **MTOW:** 100,000kg **Payload:** 2,000kg **Max speed:** 485.96kt **Range:** 1,200km

Hydra Technologies ▸ E1 Gavilán

The E1 Gavilán is a multipurpose, short-range UAV for civil, law enforcement and military use, with an empty weight of 4.54kg. **Length:** 1.62m **Wingspan:** 2.34m **Height:** 0.4m **MTOW:** 5kg **Max speed:** 35kt **Cruise speed:** 22kt **Range:** 5km **Ceiling:** 1,310ft **Endurance:** 1.25h

Hydra Technologies ▸ G1 Guerrero

The G1 Guerrero is a medium-range UAV designed for civil and military use, which has a mission radius of 40km, with the option to extend that to 80km. **Length:** 2.4m **Wingspan:** 2.8m **MTOW:** 30kg **Payload:** 5kg **Max speed:** 70kt **Cruise speed:** 40kt **Range:** 1.52km **Ceiling:** 11,810ft **Endurance:** 6h

Hydra Technologies ▸ S4/E Ehecatl

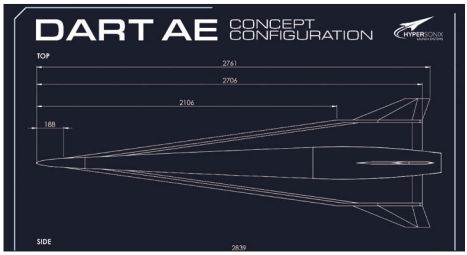
The S4/E Ehecatl is a medium-range ISR UAV for civil, law enforcement and military use, with launch and recovery from a 100m runway. The platform has a loiter speed of 32kt and an operational altitude of 1,970-4,920ft above ground level. **Length:** 3m **Wingspan:** 4.1m **Height:** 1m **MTOW:** 60kg **Payload:** 7kg **Max speed:** 86kt **Cruise speed:** 38kt **Ceiling:** 14,760ft **Endurance:** 8h

Hydra Technologies ▸ S5/A Kukulkán

The Hydra Technologies S5/A Kukulkán is a medium-range ISR UAV for civil, law enforcement and military use. **Length:** 3.5m **Wingspan:** 7.8m **Height:** 1.2m **MTOW:** 200kg **Max speed:** 108kt **Cruise speed:** 75kt **Range:** 200km **Ceiling:** 19,690ft **Endurance:** 14h

Hypersonix Launch Systems/Kratos Unmanned Systems Division ▸ DART AE

The DART AE is a developmental UAV developed by Hypersonix Launch Systems and Kratos. The hypersonic UAV is being designed as a technology demonstrator for the Australian Department of Industry, Science, Energy and Resources Modern Manufacturing Initiative (MMI) Grants Program 2. Hypersonix's SPARTAN hydrogen scramjet engine powers the UAV, and its body will be 3D printed. Its maiden flight is slated for 2023. **Length:** 2.84m **Max speed:** 3,333.69kt **Range:** 500km



IAI Israel Aerospace Industries ▸ Searcher Mk III

The Searcher Mk III is a multi-mission, fixed-wing tactical UAS used for ISTAR, artillery adjustment and damage assessment. Manufactured by Isreal Aerospace Industries, the platform features multiple operational configurations, a four-stroke engine that produces a minimal acoustic signature and two simultaneously automatic take-off and landing systems for maximum safety. **Length:** 5.85m **Wingspan:** 8.55m **MTOW:** 450kg **Payload:** 120kg **Max speed:** 110kt **Cruise speed:** 80kt **Range:** 350km **Ceiling:** 21,000ft **Endurance:** 20h

IAI Malat Division ▸ BirdEye 400 (Zastava)

The BirdEye 400 is a fixed-wing mini-UAV used for real-time day/night imagery intelligence gathering for law enforcement and over-the-hill reconnaissance and surveillance. The system is carried in two backpacks and consists of three platforms, EO/IR payloads, a control station, a data link and a power source. **Length:** 0.8m **Wingspan:** 2.2m **MTOW:** 5.6kg **Payload:** 1.2kg **Max speed:** 60kt **Cruise speed:** 45kt **Range:** 20km **Ceiling:** 1,000ft **Endurance:** 1h

IAI Malat Division ▸ BirdEye 650D

The BirdEye 650D small TUAS is an enhanced version of the BirdEye 650, designed to carry out various civil and military missions, including counter-terrorism, ISTAR, law enforcement and urban operations. The system has three aircraft, which can be installed on a ground vehicle and be operated by a team of three people. **Length:** 1.2m **Wingspan:** 4m **MTOW:** 30kg **Payload:** 5.5kg **Max speed:** 80kt **Cruise speed:** 50kt **Range:** 150km **Ceiling:** 15,000ft **Endurance:** 15h

IAI Malat Division ▸ ETOP

The Electrical Tethered Observation Platform (ETOP) is a hovering aerial system suited for various civilian and military missions and has four ducted fans with emergency parachute recovery. ETOP can provide surveillance for an unlimited period from a stationary or moving platform. It was unveiled in 2010 at the Eurosatory defence exhibition in Paris and at the time the company stated it had conducted ten test flights. **Length:** 1.6m **Wingspan:** 1.6m **Height:** 0.2m **Payload:** 20kg **Range:** 0.1km **Ceiling:** 330ft

IAI Malat Division ▸ Heron Mk 1

The Heron, now referred to as the Heron Mk I, is a MALE UAS manufactured by Isreal Aerospace Industries' Malat Division. Designed for a range of missions, including ISTAR and artillery fire adjustment, the platform has formed the basis for the entire Heron family of uncrewed systems. In addition to seeing service with the IDF, the Heron Mk 1 has also been widely leased and exported to other militaries across the globe, including NATO forces that operated in Afghanistan. **Length:** 8.5m **Wingspan:** 16.6m **MTOW:** 1,270kg **Payload:** 470kg **Max speed:** 120kt **Cruise speed:** 92kt **Range:** 1,000km **Ceiling:** 35,000ft **Endurance:** 45h

IAI Malat Division ▸ Heron Mk 2

The Heron Mk 2 is a MALE UAS developed by Isreal Aerospace Industries' (IAI) Malat Division based on the company's Heron UAS family. An updated model of the Heron Mk 1 UAS, the Mk 2 has a longer fuselage and a different engine that gives it a climb rate that is 50% greater than the Mk 1's. The Heron MK 2, sometimes referred to as the Heron Mk II, is a strategic and versatile aircraft capable of carrying several payloads. **Length:** 8.5m **Wingspan:** 16.6m **MTOW:** 1,350kg **Payload:** 470kg **Max speed:** 140kt **Cruise speed:** 80kt **Ceiling:** 35,000ft **Endurance:** 45h

IAI Malat Division ▸ Heron TP

The Heron TP is a multi-role, advanced, long-range MALE UAS manufactured by Isreal Aerospace Industries' Malat Division (IAI). The Heron TP is faster, larger and higher flying than the Heron Mk 1 on which it is based. It is equipped with automatic taxi-takeoff and landing systems, satellite communication for extended range, fully redundant avionics and more. **Length:** 14m **Wingspan:** 26m **MTOW:** 5,670kg **Payload:** 2,700kg **Max speed:** 220kt **Cruise speed:** 180kt **Range:** 1,000km **Ceiling:** 45,000ft **Endurance:** 30h

IAI Malat Division ▸ Heron TP-XP

Manufactured by Isreal Aerospace Industries' Malat Division, the Heron TP-XP is an export version of the Heron TP. The XP possesses multi-mission and multi-payload capabilities for strategic and tactical missions and can operate at very long ranges in any weather conditions. **Length:** 11m **Wingspan:** 26m **Height:** 4m **MTOW:** 5,400kg **Payload:** 450kg **Max speed:** 220kt **Cruise speed:** 160kt **Ceiling:** 45,000ft **Endurance:** 30h

IAI Malat Division ▸ Mini Panther

Mini Panther is a fixed-wing VTOL UAV with tiltrotor capability that can be used for civilian, military and security roles such as ISR. The aircraft has a tiltrotor on each wing and a top rotor to provide additional lift and is fully electric. **Length:** 1.3m **Wingspan:** 3.2m **MTOW:** 12kg **Payload:** 2kg **Max speed:** 40kt **Cruise speed:** 30kt **Range:** 20km **Ceiling:** 1,500ft **Endurance:** 2h

IAI Malat Division ▸ Mosquito

The Mosquito is a micro-UAV that has been developed in conjunction with the Israeli MoD for both commercial and military applications, including real-time image-gathering in restricted urban areas. The current iteration of the Mosquito was first unveiled during the design stage in 2005 but had its first public demonstration flight in September 2009 at the Latrun Conference in Israel. **Length:** 0.35m **Wingspan:** 0.35m **Height:** 0.1m **MTOW:** 0.5kg **Max speed:** 25kt **Cruise speed:** 18kt **Range:** 3km **Ceiling:** 500ft **Endurance:** 0.7h

IAI Malat Division ▸ Panther

The Panther is a fixed-wing VTOL UAV with tiltrotor capability. The system was unveiled in 2010 and can be used for civilian, military and security roles. Missions include ISTAR, border and coastal surveillance, law enforcement and emergency response and support. **Length:** 2.85m **Wingspan:** 8m **Height:** 1m **MTOW:** 65kg **Payload:** 10kg **Max speed:** 60kt **Cruise speed:** 40kt **Range:** 60km **Ceiling:** 9,842.52ft **Endurance:** 4h

IAI Malat Division ▸ Super Heron HF

The Super Heron Heavy Fuel (HF) MALE UAS is a heavy-fuel version of the Heron Mk 1 manufactured by Isreal Aerospace Industries' Malat Division. The platform has a wider and longer fuselage than the Heron Mk 1, and it can be fitted with a more powerful 200hp diesel powerplant. **Length:** 9m **Wingspan:** 17m **MTOW:** 1,450kg **Payload:** 450kg **Max speed:** 150kt **Cruise speed:** 100kt **Range:** 1,000km **Ceiling:** 30,000ft **Endurance:** 45h

IAI Malat Division ▸ T-Heron

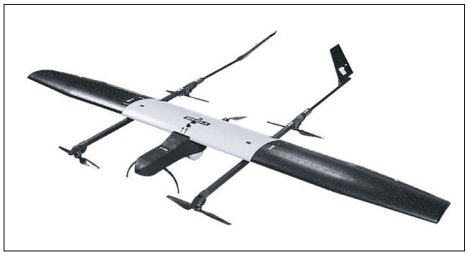
The Tactical Heron (T-Heron) is a UAS manufactured by Israel Aerospace Industries' Malat Division (IAI). Unveiled in June 2019, the T-Heron is a multi-mission, multi-payload aircraft that fulfils the role of tactical UAS previously performed by IAI's Searcher MKII. The T-Heron is the smallest platform in the Heron family. **Length:** 7.3m **Wingspan:** 10.6m **MTOW:** 600kg **Payload:** 180kg **Max speed:** 120kt **Cruise speed:** 95kt **Range:** 300km **Ceiling:** 23,000ft

ideaForge ▸ Skybox

The Skybox is an autonomous, fixed-wing UAV developed for India's defence organisations and other government bodies. The Skybox is fitted with retractable day and night payloads for real-time video footage, altitude sensors, inertial measurement units, fail-safe modes and self-checks before a flight. **Length:** 2m **Wingspan:** 2m **Height:** 0.3m **MTOW:** 4kg **Max speed:** 35kt **Cruise speed:** 25kt **Range:** 5km **Ceiling:** 6,562ft **Endurance:** 1h

ideaForge ▸ Switch

The Switch is VTOL fixed-wing UAS manufactured by Mumbai-based ideaForge. It is marketed as a device for long-endurance ISR. In January 2021, the drone won the Indian Army's MUAV programme and was awarded a $20 million contract. The platforms were delivered throughout 2021 and were employed along India's mountainous borders with China and Pakistan. In January 2022, a contract for a second batch of drones was announced by ideaForge. **Length:** 1.8m **Wingspan:** 2.6m **MTOW:** 6.5kg **Range:** 15km **Ceiling:** 16,404.2ft **Endurance:** 2h



Indonesian Aerospace ▸ Black Eagle

The Black Eagle is a MALE UAV under development by Indonesian Aerospace. It can be used in reconnaissance missions and for target identification and detection operations. It has an ability to return to its home command station when losing its data link and has a redundant flight control system. **Length:** 8.6m **Wingspan:** 16m **Height:** 2.6m **MTOW:** 1,300kg **Payload:** 300kg **Range:** 250km **Ceiling:** 24,000ft **Endurance:** 24h

Indonesian National Institute of Aeronautics and Space (LAPAN) ▸ Lapan LSU-02

The Lapan LSU-02 is a TUAV that has been designed for military applications, including reconnaissance, aerial photography and patrol work. The UAV is fitted with a video camera and real-time sensor payload, which can be adjusted according to the flight mission. It was displayed for the first time at Indo Defence 2016 alongside the LSU-03 and the LSU-05. **Length:** 2m **Wingspan:** 2.5m **MTOW:** 18kg **Payload:** 3kg **Max speed:** 54kt **Cruise speed:** 45kt **Range:** 300km **Ceiling:** 9,843ft **Endurance:** 3h

Indonesian National Institute of Aeronautics and Space (LAPAN) ▸ Lapan LSU-03

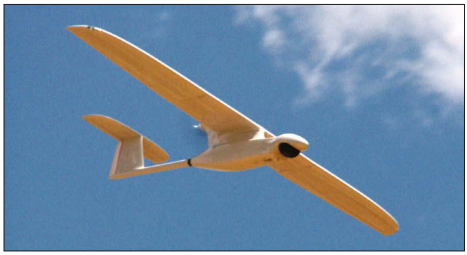
The Lapan LSU-03 TUAV is an upgrade to the LSU-02. It was displayed for the first time at Indo Defence 2016 alongside the LSU-02 and the LSU-05. The primary user of the LSU-03 is the Indonesian National Armed Forces. **Length:** 2.5m **Wingspan:** 7.5m **Height:** 0.7m **MTOW:** 48kg **Payload:** 7kg **Max speed:** 54kt **Cruise speed:** 81kt **Range:** 600km **Endurance:** 6h

Indonesian National Institute of Aeronautics and Space (LAPAN) ▸ Lapan LSU-05

The Lapan LSU-05 is a TUAV fitted with a video camera and real-time sensor payload, which can be adjusted according to the flight mission. The UAV has been designed for military applications, including reconnaissance, aerial photography and patrol work. **Length:** 4.1m **Wingspan:** 5.5m **Height:** 1.13m **MTOW:** 77kg **Payload:** 30kg **Max speed:** 63kt **Cruise speed:** 54kt **Range:** 240km **Ceiling:** 12,000ft **Endurance:** 8h

Indra Sistemas ▸ Mantis

The Mantis UAV is designed to carry out ISTAR short-range, tactical operations during both day and night. Standard missions include aerial surveillance for force protection, military operations in urban terrain, zone surveillance/convoy security, law enforcement and civilian support and blue force tracking relay. **Length:** 1.48m **Wingspan:** 22m **Height:** 0.5m **MTOW:** 5.2kg **Payload:** 1kg **Max speed:** 54kt **Cruise speed:** 32kt **Range:** 30km **Endurance:** 1.25h



Innocon ▸ Micro Falcon Family

The Micro Falcon LE and Micro Falcon LP UAVs are designed to carry out ISR missions for civil, homeland security and military roles. Other proposed applications include anti-drug trafficking, forest fire detection and target acquisition and identification. **Length:** 0.8m **Wingspan:** 2m **Height:** 0.3m **MTOW:** 10kg **Payload:** 2kg **Max speed:** 65kt **Cruise speed:** 40kt **Range:** 40km **Ceiling:** 15,000ft **Endurance:** 4h

Innocon ▸ MiniFalcon TUAV Family

The MiniFalcon TUAV family consists of the MiniFalcon I and MiniFalcon II. The UAVs can take off and land automatically on runways and harsh terrain and carry half their original unloaded weight as payload. MiniFalcon systems have been designed to carry out missions including border patrol, coastguard, ISTAR and pollution monitoring as well as search and rescue. **Length:** 5.85m **Wingspan:** 5.5m **MTOW:** 150kg **Payload:** 35kg **Max speed:** 120kt **Cruise speed:** 80kt **Range:** 200km **Ceiling:** 18,000ft **Endurance:** 15h

Insitu ▸ Integrator

Unveiled in 2007, the Integrator, or RQ-21 Integrator, is a multi-mission, long-endurance UAS designed for ISR missions. Intended to prioritise user flexibility, the platform is equipped with six modular payload bays, allowing the user to customise the loadout to suit mission requirements. The standard system has been exported to foreign customers, and a modified version for the US military was adopted as the RQ-21A Blackjack in 2010. **Length:** 2.5m **Wingspan:** 4.8m **Height:** 0.5m **MTOW:** 61.2kg **Payload:** 18kg **Max speed:** 90kt **Cruise speed:** 55kt **Range:** 100km **Ceiling:** 19,500ft **Endurance:** 24h

Insitu ▸ NRQ-21

Insitu displayed the NRQ-21 Integrator at the Unmanned Warrior 2016 event in Wales. The aircraft has been designed to carry out tasks on land and at sea. The NRQ-21 provides reconnaissance, surveillance and target acquisition capabilities. It can carry payloads of up to 12kg due to its open architecture configuration. **Length:** 2.5m **Wingspan:** 4.9m **MTOW:** 61kg **Payload:** 11.4kg **Max speed:** 75kt **Cruise speed:** 55kt **Range:** 92.6km **Ceiling:** 19,356.96ft **Endurance:** 16h

Insitu ▸ RQ-21A Blackjack

Manufactured by Insitu, the RQ-21A Blackjack, or STUALSO, is a tactical UAS developed to meet the requirements of the USN and USMC. The twin-tailed rear engine UAS is designed to provide persistent maritime and land-based tactical ISTAR support, a capability aided by its open payload architecture. The system has an operational radius of 50nmi and can reach airspeeds up to 80nmi per hour with a service ceiling of 15,000ft. **Length:** 2.5m **Wingspan:** 4.8m **MTOW:** 61kg **Payload:** 18kg **Max speed:** 90kt **Cruise speed:** 60kt **Range:** 92.6km **Ceiling:** 15,000ft **Endurance:** 13h

Insitu ▸ ScanEagle/ScanEagle 2

The ScanEagle and the ScanEagle 2 are long-endurance UAVs developed by Insitu alongside its parent company Boeing. The ScanEagle is capable of day and night ISR, and its internal avionics bay allows the integration of new payloads and sensors. After completing its first flight in 2002, ScanEagle has been in service with the USMC since 2004 and the USN since 2005. **Length:** 1.71m **Wingspan:** 3.11m **Height:** 0.5m **MTOW:** 26.5kg **Payload:** 5kg **Max speed:** 80kt **Cruise speed:** 60kt **Range:** 148km **Ceiling:** 19,521ft **Endurance:** 24h

Insitu ▸ ScanEagle 3

Insitu unveiled the ScanEagle 3 at the Xponential exhibition in Denver in May 2018. The platform has twice the payload capacity of its ScanEagle predecessor and can carry two payloads simultaneously. ScanEagle 3 platforms were provided to the US as part of a $309 million 2019 contract between Insitu and the US DoD. **Length:** 2.5m **Wingspan:** 4m **Height:** 1m **MTOW:** 36.3kg **Payload:** 9.1kg **Max speed:** 80kt **Cruise speed:** 50kt **Range:** 100km **Ceiling:** 20,000ft **Endurance:** 18h

INTA - Instituto Nacional de Técnica Aeroespacial ▸ ALO

ALO (Avión Ligero de Observación) is a UAS able to provide information in real-time for reconnaissance, surveillance and target acquisition (RSTA). In addition to RSTA applications, the system can also be used for fire detection and monitoring and as a target drone. It can be launched by catapult or runway and recovered by runway or parachute. **Length:** 1.75m **Wingspan:** 3.03m **Height:** 1m **MTOW:** 25kg **Payload:** 6kg **Max speed:** 108kt **Cruise speed:** 81kt **Endurance:** 2h

INTA - Instituto Nacional de Técnica Aeroespacial ▸ SIVA

SIVA (Sistema Integrado de Vigilancia Aérea or Integrated Air Surveillance System) is a UAV for civil and military use, mainly designed for real-time observation. The full system consists of four aircraft, a land-based mobile control station and land-based launch, recovery and maintenance equipment. **Length:** 4.02m **Wingspan:** 6.8m **Height:** 0.16m **MTOW:** 300kg **Payload:** 40kg **Max speed:** 102kt **Cruise speed:** 65kt **Range:** 150km **Ceiling:** 13,100ft **Endurance:** 6.5h

Integrated Dynamics ▸ Hornet Mk V

The Hornet Mk V is a UAV that can be used for surveillance and as an aerial target. The Hornet Mk V UAV system combines composite construction and microelectronic flight control and GPS navigation technology. Evolved over several years of field testing, the Hornet's aerodynamics allow for extended loiter operations over targets in the surveillance role. **Length:** 295cm **Wingspan:** 387cm **Height:** 89cm **MTOW:** 65kg **Payload:** 18kg **Range:** 120km **Ceiling:** 16,400ft

Integrated Dynamics ▸ Vector/Shadow Mk 1

Vector/Shadow Mk 1 is a fixed-wing UAV designed for tactical ISR. **Length:** 2.95m **Wingspan:** 5.2m **Height:** 0.89m **MTOW:** 90kg **Payload:** 25kg **Range:** 200km **Ceiling:** 19,700ft **Endurance:** 10h

Integrated Dynamics ▸ Vision Mk I

The Vision Mk I UAV is designed for surveillance and patrol missions and as a system trainer for beyond-visual-range operations out to 50km. **Length:** 2.25m **Wingspan:** 3.22m **Height:** 0.65m **MTOW:** 35kg **Payload:** 10kg **Max speed:** 108kt **Cruise speed:** 86kt **Range:** 50km **Endurance:** 3h

Integrated Dynamics ▸ Vision Mk II

The Vision Mk II is a tactical surveillance UAV capable of performing operations up to a range of 120km. The platform has a larger airframe than the Vision Mk I. **Length:** 2.9m **Wingspan:** 4.51m **Height:** 0.8m **MTOW:** 80kg **Payload:** 15kg **Max speed:** 111kt **Cruise speed:** 81kt **Range:** 100km **Ceiling:** 13,451ft **Endurance:** 4h

Intra Defense Technologies ▸ Asef

In line with Saudi Arabia's Vision 2030 economic development plan, Asef is an all-weather, all-terrain, rugged VTOL hybrid UAS designed and manufactured to Military standards by Intra Defense Technologies and partners. Similar operationally to Karayel UAV, roles include military, naval and land-based applications as well as border patrol and sea patrol. **MTOW:** 96kg **Payload:** 12kg **Cruise speed:** 62kt **Range:** 150km **Ceiling:** 18,000ft **Endurance:** 10h

Intracom Defense Electronics ▸ LOTUS

The LOTUS, Low Observable Tactical Unnamed System, is a tactical UAV especially designed for border patrol ISR operations. The development of the project is funded by the MoDs of Greece and Cyprus as well as with European Commission through their European Defence Industrial Development Program who pledged €9.7 million ($10.87 million) to the LOTUS programme in July 2020.

Iran Aircraft Manufacturing Industrial Company (HESA) ▸ Ababil-2

The Ababil-2 is part of a popular Iranian UAS series. The Ababil aircraft are typically divided into four categories: aerial targeting, surveillance, twin-tail and disposable strike munition. The Ababil fleet includes several variants and sub-variants. The aircraft are generally known for their loitering munitions capability. **Length:** 2.8m **Wingspan:** 3.25m **MTOW:** 83kg **Payload:** 40,000kg **Max speed:** 200kt **Cruise speed:** 150kt **Range:** 120km **Ceiling:** 11,000ft **Endurance:** 1.6h

Iran Aircraft Manufacturing Industrial Company (HESA) ▸ Shahed-129

The Shahed-129 UCAV is the first Iranian MALE UAV manufactured by Iran Aircraft Manufacturing Industrial Company and Shahed Aviation Industries Research Center. The Shahed-129 is intended for export to international customers. It is a dual-role platform and is also referred to as the Eye-Witness or Witness. **Length:** 6m **Wingspan:** 10.5m **Max speed:** 76kt **Range:** 299km **Ceiling:** 17,995ft **Endurance:** 24h

Iran Aircraft Manufacturing Industrial Company/Qods Aviation Industries ▸ Ababil-3

The Ababil-3 comes from the popular Iranian Ababil UAS series, which is typically divided into four categories: aerial targeting, surveillance, twin-tail and disposable strike munition. The Ababil fleet includes several variants and sub-variants. The aircraft are generally known for their loitering munitions capability. However, the Ababil-3 is very similar to South Africa's Denel/Kentron Seeker-1 and Seeker-2D UAS. The Ababil-3 is also referred to as the Swallow-3 or Zagil and is known as the widely exported low-and-slow-flying Ababil. **Length:** 3.5m **Wingspan:** 5m **Height:** 1m **Max speed:** 108kt **Range:** 100km **Ceiling:** 16,400ft **Endurance:** 4h

Iran Aviation Industries Organization ▸ Yasir (Yasseer)

The Yasir (or Yasseer) UAS is Iran's version of an original US-made ScanEagle by Boeing's Insitu. Manufactured by Iran Aviation Industries Organization, the Yasir is known as Iran's light, tactical surveillance and reconnaissance UAS. The platform was revealed less than one year after it was reported that Iran acquired at least one ScanEagle that violated Iranian airspace over the Persian Gulf in 2012. **Range:** 200km **Ceiling:** 14,764ft **Endurance:** 8h

iSTAR UAV ▸ Ghost

Ghost is a lightweight UAV designed to carry out various military, police and homeland security missions, including ISTAR. Ghost can be flown in all weather conditions and has a flight endurance of up to 10h and a communication range of up to 100km. **Length:** 2.1m **Wingspan:** 4.2m **MTOW:** 16kg **Payload:** 3.5kg **Max speed:** 75kt **Cruise speed:** 60kt **Range:** 50km **Ceiling:** 14,000ft **Endurance:** 10h

ITEC Intelligent Technology/Ukrinmash/Ukroboronprom ▸ Patriot R2

The new-generation Patriot R2 UAS is used for military and civil/commercial applications and provides reconnaissance support. It was designed in response to fighting that occurred in Eastern Ukraine starting in 2014. The Patriot R2 is manufactured by Ukrainian company ITEC Intelligent Technology. The system was on display at IDEX 2017 in Abu Dhabi, UAE; at the 13th Edition, Arms and Security 2016 in Kiev, Ukraine; and other various exhibitions in 2014 and 2015. **Length:** 0.65m **Wingspan:** 1.5m **MTOW:** 3.6kg **Max speed:** 54kt **Cruise speed:** 37.8kt **Range:** 120km **Ceiling:** 6,561.68ft **Endurance:** 2h

KAI – Korea Aerospace Industries ▸ K-UCAV

The K-UCAV is a stealthy, armed UAV currently being developed by Korea Aerospace Industries. The K-UCAV can carry out air-to-air and air-to-ground missions, including strike and suppression of enemy air defences as well as typical ISR missions, utilising its low-observable design, performance and sensor system. **Length:** 7.6m **Wingspan:** 10.6m **Height:** 3m **MTOW:** 3,910kg **Max speed:** 633.4kt **Cruise speed:** 480kt **Range:** 280km **Ceiling:** 39,370.08ft **Endurance:** 5h

KAI – Korea Aerospace Industries ▸ MUM-T

The Military Unmanned Teaming (MUM-T) is a UAS in development by Korean Aerospace Industries. Showcased at Seoul ADEX 2021, the MUM-T can be launched from the ground or the air. It can host several payload modules, allowing it to operate in several roles, including EW, ISR, deception and as a loitering munition. **Payload:** 3kg **Max speed:** 80.99kt **Endurance:** 2h

KAI – Korea Aerospace Industries ▸ NCUAV

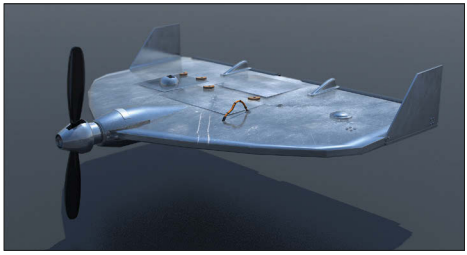
Next Corps UAV (NCUAV) is a MALE multirole surveillance UAS being developed by Korea Aerospace Industries and destined for the Republic of Korea Army (ROKA). Full-scale development of this programme was awarded by the Defense Acquisition Program Administration in 2013, and its maiden flight occurred in 2016. **Length:** 9m **Wingspan:** 17m **Height:** 3m **MTOW:** 1,700kg

KAI – Korea Aerospace Industries ▸ Night Intruder 300

The Night Intruder 300 is a fixed-wing TUAV able to carry out a range of missions, including surveillance, reconnaissance, target acquisition, battlefield observation and battle damage assessment. It is designed to provide commanders and intelligence officers with near real-time imagery during day/night and all weather conditions. **Length:** 4.8m **Wingspan:** 6.4m **Height:** 1.47m **MTOW:** 290kg **Payload:** 45kg **Max speed:** 100kt **Cruise speed:** 64.79kt **Range:** 200km **Ceiling:** 15,000ft **Endurance:** 6h

Kalashnikov Concern ▸ Granat-1

The Granat-series UAS by Kalashnikov Concern (Izhmash Unmanned Systems) – the largest Russian manufacturing company that produces a wide range of precision weapons – includes at least six tactical variants: the Granat-1, -2, -3, -4, -5 and -6. A popular small, fixed-wing variant is the hand-launched Granat-1, one of the smallest designs in use in Russia. **Length:** 0.5m **Wingspan:** 0.82m **Height:** 0.1m **MTOW:** 2.4kg **Max speed:** 40kt **Cruise speed:** 32kt **Range:** 15km **Ceiling:** 11,482ft **Endurance:** 1.25h



Kalashnikov Concern ▸ Granat-2

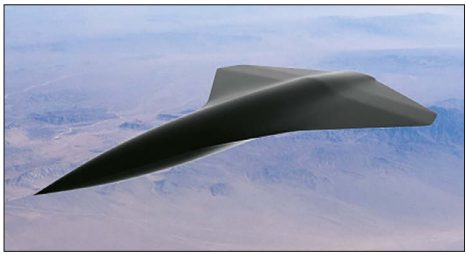
The Granat-series UAS by Kalashnikov Concern (Izhmash Unmanned Systems) includes at least six tactical variants: the Granat-1, -2, -3, -4, -5 and -6. A popular small, fixed-wing variant is the hand-launched Granat-2, one of the smallest designs in use in Russia. **Range:** 15km

Kalashnikov Concern ▸ Granat-4 (Rubezh-20)

The Granat-series UAS by Kalashnikov Concern (Izhmash Unmanned Systems) includes at least six tactical variants: the Granat-1, -2, -3, -4, -5 and -6. A popular variant is the Granat-4 (and associated sub-variants), of which another Russian aircraft company has manufactured a very similar UAS – the Rubezh-20. **Length:** 2.4m **Wingspan:** 3.2m **MTOW:** 30kg **Payload:** 3kg **Max speed:** 78kt **Cruise speed:** 49kt **Range:** 70km **Ceiling:** 11,499ft **Endurance:** 6h

Kelley Aerospace ▸ Arrow

The Arrow is a supersonic prototype UAV developed by Singapore-based Kelley Aerospace. According to the manufacturer, the 16.8t prototype will be operated as a conventional UAV, a MUM-T platform and autonomously. According to Kelley, after its debut in December 2020, 100 units of the prototype have already been pre-ordered. **Length:** 14m **Wingspan:** 9m **MTOW:** 16,800kg **Max speed:** 1,536.36kt **Range:** 4,184km **Ceiling:** 55,000ft



King Abdulaziz City for Science and Technology ▸ Saqr 1

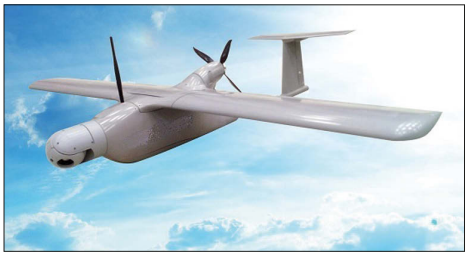
The Saqr 1 is equipped with a Ka-band SATCOM system. It has a range of 2,500km and can launch guided armaments from 550-6,000m with a range of 10km. The UAV is equipped with thermal imaging and surveillance technology and is capable of an average altitude of 20,000ft, with a flight time of 24h. **Length:** 9.2m **Wingspan:** 18m **MTOW:** 1,400kg **Range:** 2,500km

King Abdulaziz City for Science and Technology/Sichuan Tengden Technology ▸ Al Eqab-1

Jointly manufactured by Tengden Technology and King Abdelaziz Centre for Science and Technology, the Al Eqab-1 is a three-engined UAV designed for recon and strike missions. Heavily based on the twin-engined TW328 or TB001 twin-tailed Scorpion, the platform first took flight in January 2020 and was shown at IDEX 2021. **Length:** 10m **Wingspan:** 20m **Height:** 3.3m **MTOW:** 3,200kg **Payload:** 1,500kg **Cruise speed:** 161.99kt **Ceiling:** 31,167.98ft **Endurance:** 35h

King Abdullah II Design and Development Bureau ▸ Mini UAV Fixed Wing I

At SOFEX 2016, King Abdullah II Design and Development Bureau unveiled a family of UAS designed to carry out close-range surveillance. The hand-launched Mini UAS (also known as Mini UAV Fixed-Wing I), developed in collaboration with Aselsan Middle East, is the lightest and most compact fixed-wing UAS in this series. Intended to be simple to operate and rapidly deployable, it is designed to enhance situational awareness at the tactical level. **Length:** 1.32m **Wingspan:** 3.1m **MTOW:** 8kg **Max speed:** 70kt **Range:** 15km **Endurance:** 2h



King Abdullah II Design and Development Bureau ▸ Mini UAV Fixed Wing II

At SOFEX 2016, King Abdullah II Design and Development Bureau unveiled a family of UAS designed to carry out close-range surveillance missions. Intended to be simple to operate and rapidly deployable, the Mini UAV Fixed-Wing II is the largest member of this series. It can be powered by either an electric motor for a low acoustic signature or by a gasoline engine for greater endurance. **Length:** 2.6m **Wingspan:** 3m **MTOW:** 20kg **Range:** 3km **Endurance:** 0.7h

King Abdullah II Design and Development Bureau/Uavos ▸ Saker-1C

The Saker-1C is a MALE UAS being developed jointly by King Abdulaziz City for Science and Technology (KACST) and UAVOS. On 25 May 2020, the manufacturers announced that they were seeking to expand the Saker family of UAS. Work to develop the next generation of MALE UAS has begun with the Saker 1C. This will focus on using advanced manufacturing technologies and integration of next-generation capabilities such as autonomy, navigation, communications and sensor processing. **Payload:** 300kg **Max speed:** 110kt **Ceiling:** 23,000ft **Endurance:** 30h

Korean Air Aerospace Division (KAL-ASD) ▸ Kaori-X

The Kaori-X, Stingray-X, is a stealthy UCAV in joint development by the Agency for Defense Development and the Korean Air Aerospace Division (KAL-ASD). The platform will combine with future KF-21 Boramae fighters as 'loyal wingmen'. It is set for its maiden flight in 2025.

Korean Air Tech Center ▸ KUS-FS/MUAV

The KUS-FS, formally known as the MUAV, is a MALE UAS developed by the Korean Air Aerospace Division (KAL-ASD) under the supervision of the Korean Agency for Defense Development to meet the requirements of the Republic of Korea Air Force (ROKAF). Dubbed the 'Korea Reaper', the UAV undertook its maiden flight in 2012, but its development path has not been smooth. In 2020, the Korean Minister of Defence and KAL-ASD announced that the UAV had finished its development and was ready to enter production. However, no evidence exists of a contract awarded by either the ROKAF or the Republic of Korea Army (ROKA). **Length:** 13m **Wingspan:** 25m **Height:** 3m **Ceiling:** 45,000ft **Endurance:** 24h

Korean Air Tech Center ▸ KUS-FT

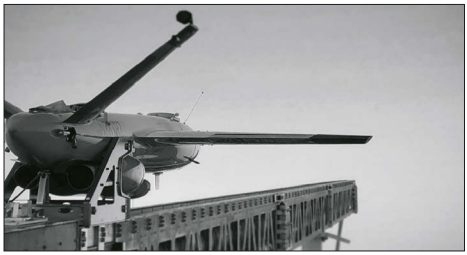
Development of the Korean Air Aerospace Division KUS-FT fixed-wing UAV began in 2010 and was completed in November 2014. It entered service with the Republic of Korea Army and Marine Corps in 2016 as a dedicated ISR and target acquisition platform. The UAV is powered by a 38hp rotary engine and features automatic take-off and landing technology. Each system contains four UAVs, one ground control station and launch/recovery equipment. **Length:** 3.4m **Wingspan:** 4.5m **Height:** 0.9m **MTOW:** 150kg **Payload:** 30kg **Max speed:** 43kt **Cruise speed:** 32kt **Ceiling:** 16,404ft **Endurance:** 24h

Korean Air Tech Center ▸ KUS-VS

Displayed at Seoul ADEX 2021, the KUS-VS is a hybrid configuration UAS manufactured by Korean Air. It is VTOL and automatic take-off and landing capable and is fitted with a gimbaled EO/IR sensor for ISR operations. The OEM is proposing it for the Republic of Korea Army's next-generation division-level UAV. **Max speed:** 107.99kt

Kratos Unmanned Systems Division ▸ Air Wolf

The Air Wolf, or Airwolf, is a catapult-launched developmental UAS manufactured by Kratos Defense & Security Solutions. On 25 August 2021, Kratos announced the platform had completed its inaugural flight while carrying multiple new payloads and a proprietary Kratos artificial intelligence/autonomy system. It has also been confirmed that the Air Wolf has launched an AeroVironment Switchblade. **Length:** 3.29m **Wingspan:** 1.98m **MTOW:** 145.15kg **Payload:** 0kg



Kratos Unmanned Systems Division ▸ Demogorgon/OBSS

In late October 2021, the Air Force Research Laboratory (AFRL) awarded Kratos Unnamed Systems Division an initial $17.68 million 12-month cost-plus-fixed-fee contract to develop an Off-Board Sensing Station (OBSS) MUM-T drone for the USAF programme with the same name. In December 2021, Kratos unveiled the first rending of its OBSS. In a January 2022 investor brief, Kratos unveiled the Demogorgon, its new name for its OBSS platform.

Kratos Unmanned Systems Division ▸ UTAP-22 Mako

Based upon the USAF BQM-167A aerial target, the UTAP-22 Mako is a 'Loyal Wingman' UAV that is manufactured by Kratos Unmanned Systems. In December 2020, Kratos was awarded a $37 million contract in the Skyborg programme to produce a missioned UAV prototype. On 29 April 2021, the Mako was used in the USAF's first Skyborg flight. The platform, equipped with Skyborg's core autonomy system, conducted a 130min flight after its launch from Tyndall AFB in Florida. **Length:** 6.13m **Wingspan:** 3.2m **MTOW:** 929.86kg **Payload:** 385.55kg **Max speed:** 606.73kt **Range:** 2,592.8km **Ceiling:** 50,000ft **Endurance:** 3h

Kratos Unmanned Systems Division ▸ XQ-58A Valkyrie

The XQ-58A Valkyrie is a high-altitude long-endurance, runway-independent, high-subsonic 'Loyal Wingman' UAS developed jointly by Kratos and the Air Force Research Laboratory (AFRL) to be used in ISR and long-range strike missions. It is part of AFRL's Low-Cost Attritable Aircraft Technology portfolio of programmes. According to Kratos, the XQ-58A is a stealthy, long-range, high speed and manoeuvrable platform which can deliver a mix of lethal weapons from its internal bomb bay and wing stations. **Length:** 9.14m **Wingspan:** 8.2m **MTOW:** 2,722kg **Payload:** 544kg **Cruise speed:** 480kt **Range:** 5,556km **Ceiling:** 4,500ft

Kronshtadt ▸ Grom (Thunder)

Manufactured by Kronshtadt, the Grom, or Thunder, is a loyal-wingman type fixed-wing UAS. A mock-up of the platform has been displayed at Army 2020 and Army 2021 and the platform can reportedly be armed with either air-to-air or air-to-surface missiles. **Length:** 13.8m **Wingspan:** 10m **Height:** 3.8m **MTOW:** 7,000kg **Payload:** 2,000kg **Max speed:** 539.96kt **Cruise speed:** 431.97kt **Range:** 700km **Ceiling:** 39,370.08ft

Kronshtadt ▸ Inokhodets-RU

The Inokhodets-RU, or Sirius, is a strike UAS manufactured by the Russian company Kronshtadt. A follow up to the Inokhodets family of aircraft, known as the Orion and Orion-E, the Inokhodets-RU is a two-engined platform that features a larger maximum take-off weight and possesses the ability to carry a heavier payload. The UAV is set to conduct its maiden flight in May 2022 and is due to enter serial production and the service of the Russian Armed Forces in 2023. **MTOW:** 2,000kg **Payload:** 300kg **Cruise speed:** 97.19kt **Range:** 1,000km **Endurance:** 20h

Kronshtadt ▸ Orion/Orion-E

The Orion, sometimes called the Inokhodets, is the first Russian-manufactured MALE UAV that has been designed to carry out a wide variety of military surveillance applications. The Orion-E is the export variant of the Orion MALE UAS and is available in both a strike or ISR variant. The ISR variant can host a range of ISTAR and communications equipment and one 50kg munition. The strike variant is designed to host 200kg of various munitions. **Length:** 8m **Wingspan:** 16.3m **Height:** 3.2m **MTOW:** 1,200kg **Payload:** 250kg **Cruise speed:** 108kt **Range:** 300km **Ceiling:** 24,000ft **Endurance:** 24h

Kronshtadt/Simonov Design Bureau (okb-Sokol Kazan) ▸ Altius

The Altius, sometimes referred to as the Altair, Altius-O or Altius-U, is a long-endurance MALE UAS developed by Kronshtadt Group (previously known as Transas) and Simonov Design Bureau. The platform was designed on behalf of the Russian Air Force and Navy and is comparable to the US-made Predator-series baseline models. According to Russian officials, the Altius will be delivered to the Russian Armed Forces in autumn 2021. **Wingspan:** 28.5m **MTOW:** 6,000kg **Payload:** 2,000kg **Max speed:** 134.99kt **Cruise speed:** 108kt **Range:** 10,000km **Ceiling:** 39,370.08ft **Endurance:** 24h

L3 Technologies ▸ HQ-60

Similarly to other platforms in the L3 Technologies Hybrid Quadrotor (HQ) and Fixed-Wing Rotator family (see separate entries) of VTOL fixed-wing UAVs, the HQ-60 has a pusher propeller for forward flight and rotors forward and rear on spars to provide vertical lift. It is designed to provide the combined endurance advantage of vertical flight and the convenience of horizontal lift. **Length:** 2.44m **Wingspan:** 3.81m **Height:** 0.56m **MTOW:** 43.09kg **Payload:** 5.44kg **Max speed:** 46kt **Cruise speed:** 40kt **Ceiling:** 14,000ft **Endurance:** 15h

L3 Unmanned Systems ▸ Cutlass

Cutlass is a tube-launched UAS that provides ISR and/or lethal capability in a small, expandable platform. It is capable of air and ground launch from 120mm and 150mm tubes and was originally developed as an air-deployable flying sensor. The UAV was first displayed at the Association of the United States Army Annual Meeting and Exposition in Washington, DC, in October 2013. **Length:** 0.83m **Wingspan:** 1.4m **Height:** 0.11m **MTOW:** 6.8kg **Payload:** 1.36kg **Max speed:** 85kt **Cruise speed:** 85kt **Range:** 50km **Ceiling:** 13,451.44ft **Endurance:** 0.5h

L3 Unmanned Systems ▸ Viking 400

The Viking 400 is a TUAS designed to carry a wide range of payloads, including EO/IR sensors, lidar, SIGINT and ELINT systems and CBRN detectors. By using a secure digital data link, it is possible for a single operator to control multiple air vehicles. Under a 2009 contract, an undisclosed number of these systems were supplied to US Special Operations Command. **Length:** 4.48m **Wingspan:** 6m **Height:** 1.52m **MTOW:** 240kg **Payload:** 45kg **Max speed:** 90kt **Cruise speed:** 80kt **Range:** 1,111km **Ceiling:** 15,000ft **Endurance:** 11h

L3Harris Technologies ▸ FVR-90

The L3Harris Technologies FVR-90 is described by the company as a fixed-wing VTOL rotator. The small tactical UAS has been designed to address the US Army's needs. It combines the endurance and range of a fixed-wing platform with the VTOL capability of a rotary-wing platform by combining a pusher propeller for the latter function with four spar-mounted rear and forward rotors. **Length:** 2.5m **Wingspan:** 4.7m **Height:** 0.66m **MTOW:** 54.5kg **Payload:** 10kg **Max speed:** 65kt **Cruise speed:** 45kt **Range:** 750km **Ceiling:** 15,000ft **Endurance:** 18h

Leigh Aerospace ▸ Grey Wolf

The Grey Wolf is a MALE UAV primarily designed for military and government ISR applications, although it can also be configured for civil tasks such as mapping and infrastructure inspection. Capable of carrying a payload weighing up to 91kg, it can be outfitted with a wide range of sensors, cameras, radars and COMINT systems. **Length:** 4.5m **Wingspan:** 10.4m **MTOW:** 445kg **Payload:** 91kg **Max speed:** 100kt **Cruise speed:** 85kt **Range:** 220km **Ceiling:** 18,000ft **Endurance:** 20.4h

Leonardo ▸ Falco Xplorer

The Falco Xplorer is a light, medium-altitude long-endurance UAS developed by Leonardo for persistent ISR missions. It was unveiled at the Paris Air Show in 2019, completed its maiden flight on 15 January 2020 and is undergoing certification for flight in non-segregated airspace targeting civil and military customers. The platform can fly for more than 24h with the complete sensor suite at a distance of 200km from the ground station, with the possibility of extending up to 1,000km in BLoS thanks to the radio relay or the satellite communication system. The ground control station provides real-time command and control via a secure satellite data link, enabling operations beyond the usual line and processing and data exploitation capabilities. **Length:** 9m **Wingspan:** 18.5m **Height:** 3.8m **MTOW:** 1,300kg **Payload:** 350kg **Ceiling:** 30,000ft **Endurance:** 24h

Leonardo ▸ Project Zero

The Project Zero tiltrotor is a demonstrator, completely electric-powered, designed to hover like a helicopter and convert to a fixed-wing aircraft in forward flight thanks to its two integrated rotors, which can be tilted through more than 90°.

Leonardo Airborne & Space Systems ▸ Falco EVO

The Falco EVO is a tactical, uncrewed surveillance system designed to carry out persistent surveillance and homeland security operations. Capable of all-weather flight and able to carry a range of different sensors, the platform can provide real-time standoff target detection, classification, identification and shadowing. The system can function as a integrated information and intelligence node for any C4I network. It is particularly suitable for persistent regional surveillance but also for civil or purely military purposes. **Length:** 6.2m **Wingspan:** 12.5m **Height:** 2.5m **MTOW:** 650kg **Payload:** 120kg **Max speed:** 105kt **Range:** 200km **Ceiling:** 19,000ft **Endurance:** 20h

Leonardo Aircraft ▸ Sky-X

The Sky-X UCAV was conceived for demonstration and research purposes and in 2005 became the first European-designed UAV over 1000 kg and with performance comparable to a subsonic fighter. **Length:** 7.8m **Wingspan:** 5.8m **Height:** 1.86m **MTOW:** 1,450kg **Payload:** 200kg **Max speed:** 350kt **Cruise speed:** 260kt **Ceiling:** 30,000ft **Endurance:** 2h

Leonardo Aircraft ▸ Sky-Y

The Sky-Y is a fixed-wing MALE UAV designed to mature critical technologies – propulsion, surveillance and reconnaissance sensors, data links and data processing systems – for demonstration and research purposes. It is the selected system for the European Mid-Air Collision Avoidance System programme, intended to demonstrate baseline solutions for the UAS mid-air collision avoidance function, enabling technology for operations in non-segregated airspace. **Length:** 9.7m **Wingspan:** 9.9m **MTOW:** 1,200kg **Payload:** 200kg **Cruise speed:** 110kt **Range:** 926km **Endurance:** 14h

Leonardo Defence Systems ▸ Crex-B1

Crex-B1 is a fixed-wing, electrically powered UAS with an endurance of 90min. It can be hand-launched from enclosed spaces by a single operator, without the need for run-ups. The system can be transported in a backpack and operated by a single operator. Typical applications include tactical, close-range, over-the-hill surveillance and reconnaissance. The aircraft can be assembled in the field without special tools in less than 10min using a simple plug-and-play assembly system. **Wingspan:** 1.7m **MTOW:** 2kg **Max speed:** 58.32kt **Range:** 10km **Ceiling:** 1,640.42ft **Endurance:** 1.5h

Leonardo Defence Systems ▸ Horus

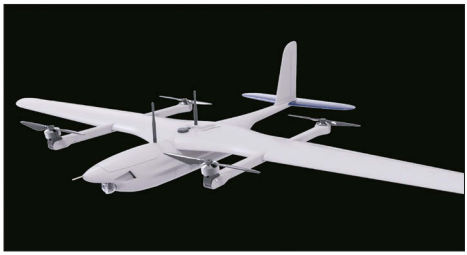
The Horus is a fixed-wing mini-UAV equipped with an inbuilt optical sensor and is designed to carry out surveillance and tactical reconnaissance missions. It can be teleoperated or it can work in automatic mode. **Length:** 0.98m **Wingspan:** 1.65m **Height:** 0.76m **MTOW:** 2kg **Payload:** 0.2kg **Max speed:** 58kt **Cruise speed:** 31kt **Range:** 10km **Endurance:** 1h

LIG Nex1 ▸ KCD-200

The KCD-200 is a hydrogen-powered heavy-lift UAV manufactured by LIG Nex1. It has a VTOL capability, and it is planned the UAV will be capable of lifting a payload of up to 200kg. In May 2021, the South Korean Ministry of Trade, Industry and Energy awarded LIG Nex1 a $44.3 billion contract to develop the KCD-200. Five months later, LIG Nex1 debuted a model of the platform at the Seoul ADEX 2021. **Payload:** 200kg

LIG Nex1 ▸ Loitering Munition

The Loitering Munition is a fixed-wing UAV and, as its name suggests, a loitering munition manufactured by Lig Nex1. It can perform both ISR tasks with an EO/IR sensor and strike missions due to its 500g munition. The platform is VTOL capable and has been re-engineered for military use from an existing commercial drone. **Max speed:** 78.29kt **Cruise speed:** 68.03kt

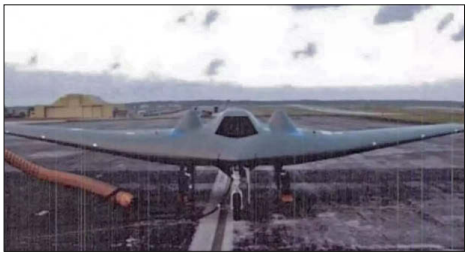


Lockheed Martin ▸ Desert Hawk III

Desert Hawk III is a hand-launched UAV designed by Lockheed Martin to carry out ISR missions. Carrying an EO/IR sensor payload, it is capable of day/night target recognition and identification, but it can also be adapted to perform other types of missions. **Length:** 0.7m **Wingspan:** 1.37m **Height:** 0.2m **MTOW:** 2.7kg **Payload:** 0.9kg **Max speed:** 44kt **Cruise speed:** 32kt **Range:** 15km **Ceiling:** 1,000ft **Endurance:** 1.5h

Lockheed Martin ▸ RQ-170 Sentinel

The RQ-170 Sentinel is a low-observable HALE UAS designed for reconnaissance and surveillance. Although the first photographs of the aircraft emerged in 2007, much of its history remains shrouded in secrecy and many details are unknown. Even the mere existence of the aircraft was not confirmed by the US until December 2009. **Length:** 4.5m **Wingspan:** 20m **MTOW:** 3,850kg **Ceiling:** 50,000ft



Lockheed Martin ▸ Stalker

Stalker is a long-endurance UAS designed to operate in various environments. The UAV, which can be launched by hand or bungee, has an image-stabilised pan/zoom capability in EO, IR and low light. An HD feed from the image tracker allows Stalker to be used by day and night. Lockheed Martin claims that the Stalker is in service with SOF around the world. **Length:** 2.13m **Wingspan:** 3.65m **MTOW:** 10.2kg **Payload:** 2.49kg **Max speed:** 39kt **Cruise speed:** 30kt **Range:** 59.26km **Ceiling:** 15,000ft **Endurance:** 8h

Lockheed Martin Missiles and Fire Control ▸ Terminator

The Terminator is a lightweight, backpackable, precision strike standoff weapon designed to defeat light vehicles and individual combatants. The small, electrically powered UAV is hand-launched, equipped with a blast fragmentation warhead and is designed to operate in high winds. **MTOW:** 2.7kg **Range:** 5km

Lockheed Martin UK ▸ Outrider

Outrider is a lightweight, canister-launched UAS that has been designed to provide enhanced situational awareness in environments where conventional, larger systems are not practical. The platform, which is the latest platform in Lockheed Martin's family of sUAS, was unveiled at the DSEI 2017 exhibition. **Length:** 1.5m **Wingspan:** 1m **Height:** 0.3m **MTOW:** 1.7kg **Max speed:** 50kt **Cruise speed:** 35kt **Range:** 15km **Endurance:** 2h

Luch Design Bureau (KB Lutch) ▸ Tipchak

Luch Design Bureau (KB Lutch), a Russian R&D company, manufactures the Tipchak TUAS. Similar to other Russian UAS, the Tipchak can be used as part of a complex system to perform ISR missions. It served with the Russian military during the war with Georgia in 2008, but soldiers were reportedly dissatisfied with its performance. **Wingspan:** 3.5m **MTOW:** 70kg **Payload:** 14.5kg **Max speed:** 108kt **Range:** 40km **Endurance:** 2h

MAG Aerospace ▸ Super Swiper II

The Super Swiper II is a small, hand-launched, flying-wing UAS designed to provide real-time video observation and surveillance capabilities. It uses the same airframe as the C4EYE Bramor UAS and comes equipped as standard with a C4EYE stabilised gimbal payload. **Length:** 0.96m **Wingspan:** 2.3m **MTOW:** 6kg **Payload:** 1kg **Max speed:** 58kt **Cruise speed:** 30kt **Range:** 40km **Ceiling:** 16,404ft **Endurance:** 3h

MBDA UK ▸ Spectre

Unveiled in September 2018, the Spectre is a tilt-wing, electric VTOL UAS. It is designed to provide organic tactical air support to sub-units operating on the battlefield. A modular payload bay allows the system to be reconfigured for a wide range of tasks, including weapons delivery, resupply and EW functions. **Wingspan:** 2m **MTOW:** 100kg **Payload:** 25kg **Max speed:** 110kt **Cruise speed:** 97kt **Range:** 10km **Ceiling:** 328.08ft **Endurance:** 1h

Military Technical Institute - MTI ▸ Pegaz

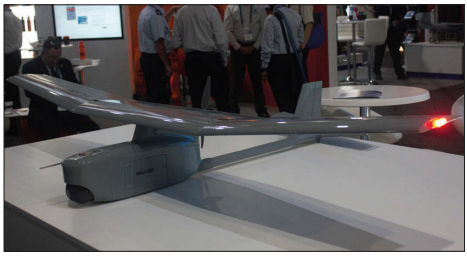
Manufactured by Military Technical Insitute Belgrade (MIT), the Pegaz, or Pegasus, is a multirole UAS developed for the Serbian Armed Forces. With help and technology transfer from China, the platform will reportedly enter service in 2021 or 2022. The platform is designed for day and night ISTAR missions and can host a range of payloads. In addition, the Pegaz can be armed to conduct strike tasks. **Length:** 5.39m **Wingspan:** 6.34m **MTOW:** 0.24kg **Payload:** 50kg **Max speed:** 97.19kt **Cruise speed:** 80.99kt **Range:** 100km **Ceiling:** 9,842.52ft **Endurance:** 12h

Military Technical Institute - MTI ▸ Vrabac

The Vrabac, or Sparrow, is a hand-launched mini-UAV that has been developed by the Military Technical Institute (MTI) for the Serbian Armed Forces. In May 2021, it was announced by the Serbian MoD that an upgraded version of the platform had entered domestic serial production. The platform has been designed to conduct short-range ISR missions and therefore hosts an EO/IR camera payload that can weigh up to 1.5kg. **Length:** 1.94m **Wingspan:** 2.81m **MTOW:** 9kg **Payload:** 1.5kg **Max speed:** 64.79kt **Cruise speed:** 32.94kt **Range:** 10km **Ceiling:** 1,640.42ft **Endurance:** 1h

Milkor ▸ MA 18

South Africa-based OEM Milkor displayed the new MA 18 small, fixed-wing UAV at the Australian International Airshow, which was the first time the platform had been shown internationally. It carries a payload mounted under the aircraft's nose and is designed for short-range, brigade-level reconnaissance using IR or daylight sensors. **Length:** 1.2m **Wingspan:** 1.8m **Height:** 0.3m **MTOW:** 3kg **Payload:** 0.3kg **Max speed:** 35kt **Cruise speed:** 27kt **Range:** 30km **Endurance:** 1.5h



Milkor ▸ MA 80

The MA 80 is a military UAS developed by Milkor as part of the company's strategy to diversify its product range. Designed for carrying out lengthy surveillance missions in all weather conditions, the MA 80 has a long endurance and is capable of carrying a range of customer-specific payloads. **Length:** 4m **Wingspan:** 6m **MTOW:** 80kg **Payload:** 15kg **Max speed:** 86kt **Cruise speed:** 65kt **Range:** 250km **Ceiling:** 16,000ft **Endurance:** 24h

Milkor ▸ MA 380

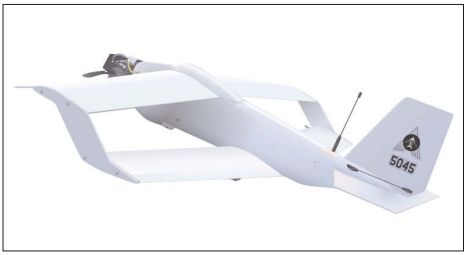
The MA 380 is a military UAS developed by Milkor as part of the company's efforts to diversify its range of products. Designed for performing long-range reconnaissance missions, the MA 380 has a long endurance and is capable of carrying a variety of customer-specific payloads. **Length:** 10m **Wingspan:** 12m **MTOW:** 380kg **Payload:** 80kg **Max speed:** 119kt **Cruise speed:** 81kt **Range:** 2,000km **Ceiling:** 18,000ft **Endurance:** 20h

Milkor ▸ Milkor UCAV

Milkor debuted its Unmanned Combat Ariel Vehicle (UCAV) at IDEX 2021. It is a multi-capable UAV that can operate for up to 35 hours and has a range of 1000km. Payloads can be attached to five hardpoints around the UCAV, allowing it to host ISR, SIGINT and C4I systems. In addition, at IDEX 2021, it was displayed with six HALCON Desert Sting guided munitions installed under its wings. **Wingspan:** 18m **MTOW:** 1,300kg **Payload:** 210kg **Max speed:** 134.99kt **Cruise speed:** 59.4kt **Range:** 1,000km **Ceiling:** 30,000ft **Endurance:** 35h

Mission Technology Systems ▸ Buster ER

This extended-range (ER) variant of the Buster platform is capable of conducting day or night missions with an extended endurance and greater payload than its predecessor. As with the company's other aircraft, this is a twin-wing aircraft with one wing forward and mounted on the top of the aircraft and the second towards the rear and mounted to the underside of the aircraft. **Length:** 1m **Wingspan:** 1.83m **MTOW:** 8.2kg **Payload:** 5.9kg **Max speed:** 55kt **Cruise speed:** 30kt **Range:** 37.04km **Ceiling:** 18,000ft **Endurance:** 10h

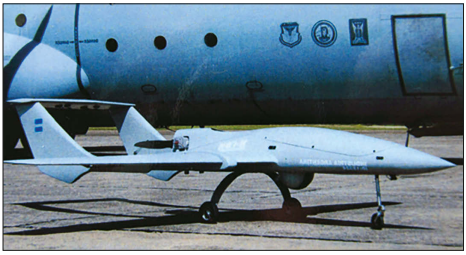


MSP ▸ Koziorog

The Koziorog (Capricorn Beetle) UAV system is a fixed-wing, heavy-duty aircraft manufactured by Poland's MSP. It is powered by two gas engines and can be used for military or civil applications. In 2014, the Capricorn Beetle became the first UAV registered with the civil register of aircraft in Poland, successfully passing its flight tests. **Length:** 3.57m **Wingspan:** 4.59m **Height:** 1.13m **MTOW:** 85kg **Payload:** 14kg **Max speed:** 80.99kt **Cruise speed:** 37.8kt **Range:** 80km **Ceiling:** 16,404.2ft **Endurance:** 8h

Mundo Compuesto Special Developments (MCOM) ▸ MCOM UAV

The Mundo Compuesto (MCOM) UAV is a fixed-wing UAV designed to provide surveillance during both day and night for military and security force users. It uses a GPS-based point-and-click autopilot that is programmable in the field, with an integrated autopilot radio link available in a range of frequency bands. **Length:** 3.6m **Wingspan:** 4.2m **Height:** 0.76m **MTOW:** 57kg **Payload:** 27kg **Max speed:** 108kt **Cruise speed:** 56kt **Ceiling:** 5,000ft **Endurance:** 8h



National Chung-Shan Institute of Science and Technology ▸ Albatross/Ruo Ying

The Albatross TUAS by NCSIST is a fixed-wing aircraft used primarily for reconnaissance. It has an endurance greater than 10h of flight time. Media reports stated that a successful first-ever public fly-over demonstration using the Albatross took place on 24 January 2019 in Pingtung county in southern Taiwan. **Length:** 6m **Wingspan:** 8.9m **MTOW:** 55kg **Max speed:** 78kt **Cruise speed:** 70.19kt **Range:** 180km **Endurance:** 10h

National Chung-Shan Institute of Science and Technology ▸ Cardinal/Cardinal II

Cardinal is a portable mini-UAS designed for surveillance, reconnaissance and targeting. It was launched in 2011 by the state-run National Chung-Shan Institute of Science and Technology and is in service with the Republic of China Marine Corps. **Length:** 1.3m **Wingspan:** 2.2m **MTOW:** 5.5kg **Cruise speed:** 30kt **Range:** 10km **Endurance:** 1h

National Chung-Shan Institute of Science and Technology ▸ Chung Shyang II

The Chung Shyang II was Taiwan's first domestic UAV to enter service. Developed by the state-run National Chung-Shan Institute of Science and Technology, a prototype of the platform was first unveiled in 2005. It is designed to perform surveillance, reconnaissance, target acquisition, artillery spotting, battle damage assessment and communications relay missions. Deliveries to the Republic of China Army commenced in 2012, with an initial order for 32 systems. **Wingspan:** 9m **MTOW:** 380kg **Payload:** 50kg **Max speed:** 68kt **Endurance:** 10h

National Chung-Shan Institute of Science and Technology ▸ Soaring Kite

Soaring Kite has many commonalities with the Chung Shyang II TUAV, such as their ground control stations. It serves as a low-cost interim training platform before operators step up to the larger Chung Shyang II. This UAV, now in service with the Republic of China Army, was first displayed in 2011. **Length:** 2.03m **Wingspan:** 2.8m **MTOW:** 20kg **Max speed:** 38kt **Endurance:** 2h

National Engineering and Scientific Commission (NESCOM) ▸ Burraq

Burraq entered service in November 2013 as a UCAV designed and operated for anti-terror campaigns. It is a large fixed-wing platform with a three-bladed pusher propeller. **Length:** 7m **Wingspan:** 9m **Height:** 2m **MTOW:** 1,000kg **Payload:** 500kg **Max speed:** 116.09kt **Cruise speed:** 97.19kt **Range:** 1,000km **Ceiling:** 24,000ft

National Engineering and Scientific Commission (NESCOM) ▸ Shahpar II

Manufactured by the National Engineering and Scientific Commission (NESCOM) and marketed by Global Industrial Defence Solutions (GIDS), the Shahpar II is a MALE UAV designed to conduct intelligence and strike missions. A successor of the Shahpar, the Shahpar II allegedly uses only indigenous components except for the engine and tyres. The UAVs launch customer is expected to be the Pakistan military, with counterterrorism missions and border protection applications. **Range:** 300km **Ceiling:** 20,000ft **Endurance:** 14h

Naval Research & Development Office ▸ MARCUS B

Manufactured by the Naval Research & Development Office in collaboration with Siam Dy Tech and Pims Technologies, the Maritime Aerial Reconnaissance Craft Unmanned System (MARCUS B) is a VTOL capable fixed-wing UAS. It is based on the MARCUS and features several improvements to suit the naval domain better. The indigenously produced UAV will enter the service of the Royal Thai Navy in 2022, offering a more cost-effective alternative than importing a foreign model. **Length:** 2.5m **Wingspan:** 4.3m **MTOW:** 45kg **Payload:** 10kg **Max speed:** 37kt **Range:** 160km **Endurance:** 2h

Naval Research Lab ▸ Hybrid Tiger

Manufactured by the Naval Research Laboratory, the Hybrid Tiger is an electric UAV. As its name suggests, the platform features a hybrid power generation unit. This combines high-efficiency photovoltaics, gathered from the solar panels located on the Tiger's wings, with other energy sources such as battery-electric and hydrogen fuel cells, to power the Hybrid Tiger. In addition, onboard algorithms can autonomously locate, navigate to and utilise local sources of energy; such as thermal updrafts. This helps increase the endurance of the platform. **Max speed:** 250kt **Ceiling:** 3,500ft **Endurance:** 24h

Navmar Applied Sciences Corporation (NASC) ▸ Teros

Teros is a MALE class UAS being developed by the Navmar Applied Sciences Corporation (NASC). Designed to meet the expanding requirement for an extended range, high altitude aircraft, the Teros was derived from a Sonex airframe. It is a single-engine, low wing, V-tail monoplane platform that can carry large and multiple payloads simultaneously for long periods of time. **Length:** 6m **Wingspan:** 14m **MTOW:** 1,800kg **Payload:** 272kg **Max speed:** 120kt **Cruise speed:** 61kt **Ceiling:** 24,000ft **Endurance:** 24h

Navmar Applied Sciences Corporation (NASC) ▸ TigerShark XP

The Navmar Applied Sciences Corporation (NASC) TigerShark XP is a fixed-wing variant of the USN's RQ-23A UAV. Designed as a rugged low-cost, customisable platform that can carry a range of payloads, the UAV has been purchased by several US organisations and military branches. **Length:** 4.3m **Wingspan:** 6.6m **Height:** 1m **MTOW:** 234kg **Payload:** 43kg **Max speed:** 80kt **Cruise speed:** 60kt **Ceiling:** 14,000ft **Endurance:** 8h

National Defense University ▸ Shagala

The Shagala is a Kazakhstani UAS indigenously manufactured by the National Defence University from mostly domestically produced components. The developmental UAS is catapult-launched and is intended to conduct ISR missions due to its EO/IR camera gimbal. Personnel from the Kazakhstan Armed Forces have stated that the Shagala will be put into the service of the Kazakhstan Armed Forces at the platoon to battalion level in the future. **Range:** 30km **Endurance:** 2.5h

Neany ▸ Arrow

The North Eastern Aeronautical (NEANY) Arrow UAV is a converted lightweight Titan Aircraft Tornado II manned aircraft that is built using more than 90% commercially available parts, making it a low-cost and easily sustained operational asset. It is suitable for both commercial and military applications where extended endurance is required. Proposed missions include ISR, strike, mapping and precision agriculture. **Length:** 5.8m **Wingspan:** 7m **Height:** 1.98m **MTOW:** 612kg **Payload:** 91kg **Max speed:** 60kt **Cruise speed:** 60kt **Range:** 93km **Ceiling:** 12,000ft **Endurance:** 12h

Northrop Grumman ▸ Bat

Northrop Grumman is developing the Bat family of medium-altitude, multi-mission UAS. The company announced two variants of the UAS (3.7m and 4.3m) and a rotary-wing version – R-Bat – in 2015. A maritime version – known as the Sea Bat – has also been proposed. Planned payloads include an EO/IR day/night camera, and a possible offering of maritime search and rescue and communications relay. **Length:** 2m **Wingspan:** 4.26m **Height:** 0.91m **MTOW:** 159kg **Payload:** 56.6kg **Max speed:** 92kt **Cruise speed:** 65kt **Ceiling:** 17,000ft **Endurance:** 18h

Northrop Grumman ▸ EQ-4B Global Hawk BACN

The Northrop Grumman EQ-4B Global Hawk Battlefield Airborne Communications Node (BACN) high-altitude, long-endurance UAV is in service with the USAF. BACN bridges the gaps between systems and extends communications among disparate users and networks to provide improved situational awareness. **Length:** 14.5m **Wingspan:** 39.9m **Height:** 4.7m **MTOW:** 14,600kg **Payload:** 1,360kg **Max speed:** 360kt **Cruise speed:** 310kt **Range:** 22,780km **Ceiling:** 60,000ft **Endurance:** 32h

Northrop Grumman ▸ Firebird

Manufactured by Northrop Grumman, the Firebird is a unique platform that features different cockpit configurations. This allows the Firebird to be configured as either an uncrewed platform, controlled either via a remote operator or autonomously, or as a crewed platform. When airborne, payloads attached to the platform's three hardpoints or held in its internal bay allow the Firebird to conduct ISR missions. **Length:** 10.5m **Wingspan:** 24.1m **Height:** 3.2m **MTOW:** 3,220kg **Payload:** 771kg **Max speed:** 199.78kt **Ceiling:** 25,000ft **Endurance:** 30h Engines: 1 Crew: 1

Northrop Grumman ▸ MQ-4C Triton

The MQ-4C Triton is a maritime version of the Global Hawk high-altitude long-endurance UAS. Developed to fulfil the USN's Broad Area Maritime Surveillance requirement, the Triton can perform persistent ISR data collection and has possessed the capability to disseminate that data to the fleet. In July 2021, an upgraded platform variant, the MQ-4C Integrated Functional Capability Four (IFC-4), conducted its maiden flight. The USN sees the MQ-4C IFC-4 as a key component to its future family of systems to achieve maritime domain awareness, and as such, it plans to procure 65 units. Australia has also procured the platform. **Length:** 14.5m **Wingspan:** 39.9m **Height:** 4.6m **MTOW:** 14,628kg **Payload:** 2,541kg **Max speed:** 331kt **Cruise speed:** 307.78kt **Range:** 15,186km **Ceiling:** 56,500ft **Endurance:** 24h

Northrop Grumman ▸ RQ-4 Global Hawk

The Global Hawk is a HALE UAV that can fly at altitudes of up to 60,000ft for more than 30h. Primarily designed to carry payloads for ISTAR payloads, the platform has accumulated more than 200,000 flight hours and has been operated by the branches of the US Armed Forces since 2003. Other customers of the platform include South Korea, NATO and will soon include Japan. **Length:** 14.5m **Wingspan:** 39.9m **Height:** 4.7m **MTOW:** 14,628kg **Payload:** 1,360kg **Max speed:** 339.63kt **Cruise speed:** 310.48kt **Range:** 22,780km **Ceiling:** 60,000ft **Endurance:** 32h

Northrop Grumman ▸ RQ-180 White Bat

In November 2020, photos emerged online of a HALE UAV, dubbed the RQ-180 or the White Bat, reportedly being developed by Northrop Grumman. Little about the platform is known, other than the fact that it will probably feature a stealthy design, have high endurance, and feature an ISR payload.

Northrop Grumman ▸ SandShark

SandShark is a UAV training system applicable to commercial, defence and university users. It can be used as an introduction into unmanned aviation as well as a proficiency trainer. The system emulates manually flown large UAVs, offering pilots a hands-on, real-world flying experience. **Length:** 2m **Wingspan:** 3.66m **Height:** 0.75m **MTOW:** 40kg **Payload:** 15kg **Max speed:** 89kt **Cruise speed:** 68kt **Ceiling:** 16,500ft **Endurance:** 4h

Northrop Grumman ▸ X-47B UCAS

The X-47B is a tailless, strike fighter-sized unmanned aircraft, which was developed as part of the USN's Unmanned Combat Air System Demonstration project. The aircraft was designed to be capable of semi-autonomous operation from aircraft carriers and was intended to perform air-to-air refuelling duties and attack roles. **Length:** 11.64m **Wingspan:** 18.92m **Height:** 3.17m **MTOW:** 20,000kg **Payload:** 2,040kg **Max speed:** 800kt **Cruise speed:** 600kt **Range:** 3,890km **Ceiling:** 40,000ft **Endurance:** 6h

Paramount Advanced Technologies ▸ Civet

Civet is a fixed-wing TUAV that can be operated by one person and prepared for flight in less than 10min. It is optimised for ISR missions by law enforcement and military users. **Length:** 1.55m **Wingspan:** 29.1m **MTOW:** 5kg **Max speed:** 44kt **Range:** 15km **Endurance:** 1h

Paramount Advanced Technologies ▸ Mwewe

Mwewe is a TUAV that can be operated by two people and prepared for flight in less than 15min. It is optimised for ISR missions by law enforcement and military users and particularly suited to border surveillance applications. **Length:** 2.2m **Wingspan:** 3m **MTOW:** 25kg **Max speed:** 66kt **Endurance:** 5h

Paramount Advanced Technologies ▸ RoadRunner RR150

The rhomboid-wing RR150 is a TUAV that can be operated by one person and prepared for flight in less than 10min. It is optimised for ISR missions by law enforcement and military users and is particularly well suited to shipborne applications. **Length:** 1.6m **Wingspan:** 1.5m **MTOW:** 12kg **Max speed:** 138kt **Range:** 40km **Endurance:** 3h

Paramount Advanced Technologies ▸ Vulture

The Paramount Advanced Technologies Vulture is a fixed-wing TUAV designed for such missions as day/night reconnaissance and surveillance and target acquisition in support of brigade-level operations. **Length:** 3.1m **Wingspan:** 5.2m **Height:** 0.7m **MTOW:** 150kg **Payload:** 35kg **Max speed:** 97kt **Cruise speed:** 62kt **Range:** 60km **Ceiling:** 16,400ft **Endurance:** 3h

Paramount Group ▸ N-Raven

Manufactured by Paramount Advanced Technologies (PAT) and debuted at IDEX 2021, the N-Ravan is marketed as a cost-effective long-range swarming UAV. With a payload capacity of up to 15kg, the drone can provide both ISR and loitering munition capabilities. **MTOW:** 41kg **Payload:** 15kg **Max speed:** 97.19kt **Range:** 250km

Piaggio Aerospace ▸ P.1HH HammerHead

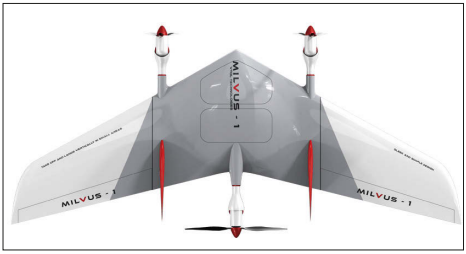
First unveiled at the 2013 Paris Air Show, the P.1HH HammerHead is a multipurpose MALE UAS designed for ISR missions. Manufactured by Piaggio Aerospace and based on its P.180 Avanti II aircraft, the UAS hosts a FLIR EO/IR StarSafire 380HD sensor and/or a Seaspray 7300 E Radar and is powered by two 850 SHP Pratt & Whitney Canada PT-6A-66B turboprop engines. Italy and the UAE have cancelled their orders and walked away from the platform. **Length:** 14.4m **Wingspan:** 15.6m **Height:** 3.98m **MTOW:** 6,600kg **Payload:** 500kg **Max speed:** 395kt **Cruise speed:** 320kt **Range:** 7,038km **Ceiling:** 45,000ft **Endurance:** 16h

PIT-Radwar S.A ▸ PGZ-19R

PGZ-19R is a low-altitude, short-range UAV for civil and military applications. It has been selected by Poland for its Orlik tactical, short-range UAV requirement. The platform has been designed to carry ISR sensors, search and rescue and other specialised equipment. It is based on the E-310 demonstrator. **Length:** 3m **Wingspan:** 5.4m **Height:** 0.7m **MTOW:** 90kg **Payload:** 20kg **Max speed:** 86kt **Cruise speed:** 86kt **Range:** 150km **Ceiling:** 16,400ft **Endurance:** 12h

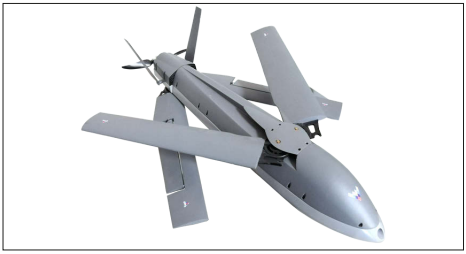
Preneu ▸ Droneit Milvus

The Milvus fixed-wing VTOL UAV is made by Droneit, a subsidiary of South Korean company Preneu, and is outfitted for surveillance and reconnaissance (Milvus R) or mapping (Milvus M). It is a flying-wing platform powered by three tiltrotor engines, two forward of the wing and one next to a pusher propeller at the back. **Length:** 0.77m **Wingspan:** 2m **Height:** 0.3m **MTOW:** 7.5kg **Max speed:** 59kt **Cruise speed:** 43kt **Range:** 20km **Ceiling:** 3,281ft **Endurance:** 1h



Pride Systems ▸ Attack Drone

Manufcuated by Pride Systems, and debuted at IDEX 2021, the Attack Drone is a loitering munition based fixed-wing UAV which, according to the manufacturer, is capable of precision strikes on stationary and mobile targets that can be performed manually by an operator or autonomously. Launched from a canister, the variable-sweep wings extend out and enable this system to achieve a range of 80km, a maximum speed of 250km/h and an endurance of one hour. **MTOW:** 5kg **Max speed:** 107.99kt **Cruise speed:** 80.99kt **Range:** 80km **Endurance:** 1h



Primoco UAV ▸ Primoco

The Primoco UAV is a medium-sized platform designed for commercial and military use. The system performed its first take-off on 26 March 2016, and the company announced sales to Finland, Malaysia and Russia. **Length:** 3.7m **Wingspan:** 4.8m **Height:** 1.4m **MTOW:** 100kg **Payload:** 20kg **Max speed:** 100kt **Cruise speed:** 85kt **Range:** 200km **Ceiling:** 9,843ft **Endurance:** 10h

PSATRI/Prince Sultan Defense Studies & Research Center ▸ Sky Guard SG-03

Saudi Arabia's tactical Sky Guard SG-03 was developed by Prince Sultan Advanced Technology Research Institute (PSATRI) – an R&D organisation that supports the Royal Saudi Air Force as well as other military and security customers. The Sky Guard SG-03 system comprises two aircraft, one containerised ground control station (GCS), one containerised ground data terminal and one portable GCS. **Wingspan:** 8m **MTOW:** 250kg **Payload:** 50kg **Max speed:** 100kt **Cruise speed:** 80kt **Range:** 200km **Ceiling:** 26,248ft **Endurance:** 8h

Prince Sultan Defense Studies & Research Center (PSDSARC) ▸ Shaheen VTOL UASN SH-01

Saudi Arabia's Prince Sultan Defense Studies & Research Center displayed its Shaheen VTOL UASN SH-01 at IDEX in February 2019. The aircraft is designed for surveillance, reconnaissance and transport and can be launched from land or ship. **Wingspan:** 2m **MTOW:** 30kg **Payload:** 4kg **Range:** 50km **Ceiling:** 9,842.52ft **Endurance:** 3h

Prioria Robotics ▸ Maveric UAS

The Maveric is a small, lightweight UAS designed to perform covert ISR missions at the tactical level. In order to camouflage the drone, its profile is deliberately reminiscent of a small bird, with patented bendable wings that fold around the fuselage for easy transportation and quick launches. **Length:** 0.67m **Wingspan:** 0.75m **Height:** 0.15m **MTOW:** 1.16kg **Payload:** 0.3kg **Max speed:** 55kt **Cruise speed:** 26kt **Range:** 15km **Ceiling:** 25,000ft **Endurance:** 1h

PT Bhinneka Dwi Persada ▸ Rajawali 330

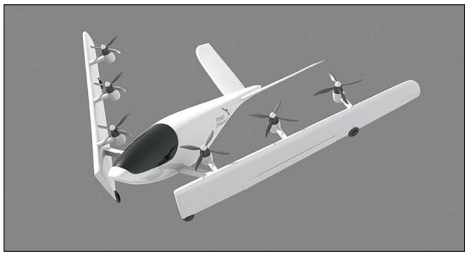
Rajawali 330 is an ITAR-free, fixed-wing UAV with a platform ready for payload integration. It is a localised version of UMS Skeldar's F-330. **Length:** 2.27m **Wingspan:** 3.3m **Height:** 0.9m **MTOW:** 23.7kg **Payload:** 10kg **Max speed:** 64.7kt **Cruise speed:** 43kt **Endurance:** 10h

PT Dirgantara Indonesia ▸ Elang Hitam

The Elang Hitam, or Black Eagle, is a MALE UAS being developed by the Indonesian firm PT Dirgantara Indonesia. With a development dating back to 2015, the first prototype of the platform was produced in 2019. It is hoped the Black Eagle will be certified for military operations by 2024. **Length:** 8.65m **Wingspan:** 16m **Height:** 2.6m **Payload:** 300kg **Max speed:** 126.89kt **Range:** 0.25km **Ceiling:** 21,325.46ft **Endurance:** 30h

PteroDynamics ▸ Transwing

The Transwing is UAS manufactured by PtetroDynamics. The aircraft can fold its wing during flight to transition between a rotary-wing and fixed-wing configuration. According to PtetroDynamics, the articulation mechanism is only a small fraction of the aircraft's weight. In August 2021, the Naval Air Warfare Center Aircraft Division contracted PtetroDynamics to deliver three Transwing prototypes to the Blue Water Maritime Logistics UAS programme.



Puspenerbal ▸ PUTA SE-02

Manufactured by Puspenerbal, the PUTA SE-02 is an Indonesian fixed-wing UAS. An evolution of the PUTA SE-01, the UAS conducted several ground tests and test flights in East Java in September 2021. **Length:** 4.5m **Wingspan:** 6.5m **Height:** 1.5m **MTOW:** 100kg **Max speed:** 54kt **Ceiling:** 10,000ft **Endurance:** 0h

QinetiQ Target Systems ▸ Banshee NG

Manufactured by UK multinational defence technology company Qinetiq Target Systems, the Banshee Next Generation (NG) is a target UAS and the fifth system in its series. It is primarily used for testing and training. The NG is part of a series that includes the Banshee Whirlwind, Jet 40, Jet 80 and Jet 80+ target UAS. This particular variant was designed independently with consideration of only some existing capabilities from the aforementioned target UAS. Banshee-series UAS are considered transonic systems that travel at or faster than 250m/s. **Payload:** 25kg **Max speed:** 486.5kt **Range:** 101km **Ceiling:** 39,370.08ft

Qods Aviation Industries (QAI) ▸ Mohajer-2

Manufactured by Qods Aviation Industries (QAI), the Mohajer-2 is the second iteration of the Iranian Mohajer UAV family. Featuring a configuration near identical to its predecessor, the Mohajer-2 is reportedly powered by a 25hp WAE-342 engine and features an autonomous control system. **Length:** 2.91m **Wingspan:** 3.8m **MTOW:** 85kg **Payload:** 15kg **Max speed:** 107.99kt **Range:** 50km **Ceiling:** 11,000ft **Endurance:** 1.5h

Qods Aviation Industries (QAI) ▸ Mohajer-4

Manufactured by Qods Aviation Industries (QAI). The Mohajer-4 is part of an Iranian family of UAS that include several variants and sub-variants. It is a fixed-wing UAV characterised by a square-like cylindrical fuselage, wings with a tapered trailing edge and canted wingtips. The platform has a greater range and endurance than the three previous Mohajer platforms, and it is likely powered by an MD-500 engine manufactured by Qom-based MADO. **Length:** 3.64m **Wingspan:** 5.3m **MTOW:** 175kg **Max speed:** 97kt **Cruise speed:** 108kt **Range:** 150km **Ceiling:** 14,764ft **Endurance:** 4h

Qods Aviation Industries (QAI) ▸ Mohajer-6

First unveiled in 2017, the Mohajer-6 is part of a family of Iranian-made UAS that includes several variants and sub-variants that provide a range of tactical surveillance operations. The Mohajer-6 provides this surveillance and reconnaissance capability while also possessing the ability to host and launch a range of precision-guided anti-aircraft missiles and other warheads. **Length:** 5.6m **Wingspan:** 10m **MTOW:** 600kg **Payload:** 40kg **Max speed:** 108kt **Range:** 965.61km **Ceiling:** 15,000ft **Endurance:** 12h

Quantum-Systems/ESG Elektroniksystem und Logistik ▸ Vector

Developed by Quantum-Systems, Vector is an electric UAS with VTOL capabilities and tiltrotor engines. Its 2-in-1 design allows to remove the wings and attach a separate set of copter arms to transform the platform into Scorpion configuration. **Length:** 2.8m **Wingspan:** 2.8m **Height:** 0.8m **MTOW:** 6kg **Max speed:** 50.54kt **Cruise speed:** 38.88kt **Range:** 25km **Endurance:** 2h

Raytheon ▸ Cobra

The Cobra UAS was designed to support Raytheon's development, integration and testing of unmanned systems. The onboard mission computer can process payload data and format it for transmission to a ground or airborne control station. The system can use satellite imagery for the moving map display. **Length:** 2.8m **Wingspan:** 3m **Height:** 0.9m **MTOW:** 52kg **Payload:** 16kg **Max speed:** 70kt **Cruise speed:** 60kt **Range:** 37.04km **Ceiling:** 12,000ft **Endurance:** 2h

Raytheon ▸ Coyote

The Raytheon Coyote is an expendable UAS deployed from an A-size sonobuoy tube or common launch tube to perform ISR missions while the host aircraft remains in safe airspace. The system is suitable for perimeter security, research missions and targeting assistance. In January 2016, the OEM announced that it will be providing the UAS to the US National Oceanic and Atmospheric Administration for hurricane research missions. **Length:** 79cm **Width:** 147cm **Height:** 30cm **Weight:** 6.4kg **Payload:** 1.8kg **Max speed:** 70kt **Cruise speed:** 55kt **Range:** 37km Detection **range:** 130,000m **Ceiling:** 20,000ft **Endurance:** 1.5h

Raytheon ▸ Manta

The Manta is a long-range UAS that can be carried, set up and operated by two people. Possible applications include atmospheric and meteorological missions, sensor test and evaluation, academic research, surveillance and littoral operations. **Length:** 1.9m **Wingspan:** 2.6m **Height:** 0.6m **MTOW:** 27.7kg **Payload:** 6.8kg **Max speed:** 80.99kt **Cruise speed:** 75kt **Range:** 37km **Ceiling:** 15,980ft **Endurance:** 8h

Raytheon ▸ Silver Fox

The Silver Fox is a TUAV that was unveiled in 2002 and fielded in 2003. It can be deployed from land or sea within 15min. Designed to carry out real-time ISR missions in both civilian and military environments, the system has a longer range and endurance than comparable electric UAVs. Silver Fox first saw service with the US military, which deployed the system in support of Operation Iraqi Freedom in 2003. Since then, it has also been exported to other military, government and private customers, including Canada and Colombia. **Length:** 1.47m **Wingspan:** 3.04m **Height:** 0.28m **MTOW:** 17.2kg **Payload:** 2.7kg **Max speed:** 75kt **Cruise speed:** 60kt **Range:** 55km **Ceiling:** 2,500ft **Endurance:** 8h

Reiner Stemme Utility Air Systems (in liquidation) ▸ Q-01

The Q-01 is an optionally piloted MALE UAS developed by Reiner Stemme to meet the requirements of the Qatar Armed Forces (QAF). The development programme started in 2014, and the Q-01 prototype recorded its maiden flight in November 2015. In 2016, Qatar signed a $100 million contract to acquire 17 Q-01s from Germany, but it is not clear whether the aircraft were ever delivered as Reiner Stemme went into liquidation on 1 July 2018. The system is powered by two turbocharger Technify/Continental internal combustion engines producing 310hp of thrust. **Length:** 10.7m **Wingspan:** 20m **Height:** 3.32m **MTOW:** 2,750kg **Payload:** 960kg **Max speed:** 190kt **Cruise speed:** 135kt **Ceiling:** 30,000ft **Endurance:** 50h Engines: 2 Crew: 3

Rheinmetall ▸ ALADIN

ALADIN is a miniature system consisting of a man-portable GCS and a hand-launched air vehicle with exchangeable sensor payloads. The UAV, which can be operated autonomously or manually, is fitted with either four video cameras for daylight reconnaissance, one thermal IR video camera and one daylight video camera for night and day surveillance or one high-resolution digital photo zoom camera and two daylight video cameras. **Length:** 1.57m **Wingspan:** 1.46m **Height:** 0.38m **MTOW:** 4kg **Max speed:** 49kt **Range:** 15km **Ceiling:** 14,800ft **Endurance:** 1h

Rheinmetall ▸ LUNA

The LUNA is a UAV designed for real-time surveillance, reconnaissance and target location at ranges exceeding 100km. Capable of performing its missions in all weather conditions, the UAV has been in service with the German Army since March 2000, supporting peacekeeping missions in countries including Afghanistan and Kosovo. It can accommodate a range of payloads such as search and rescue, high-resolution digital photo or video cameras, onboard data storage and EW systems. **Length:** 2.36m **Wingspan:** 4.17m **Height:** 0.87m **MTOW:** 40kg **Cruise speed:** 49kt **Range:** 100km **Ceiling:** 16,400ft **Endurance:** 6h

Rheinmetall ▸ LUNA NG

The LUNA NG is a tactical UAV based on the LUNA platform. It is an all-weather UAV designed for real-time surveillance, reconnaissance and C4ISR missions during both day and night. Able to operate at ranges of up to 150km with an endurance exceeding 12h, the LUNA NG enables round-the-clock situational awareness. **Length:** 3m **Wingspan:** 5.3m **Height:** 1.1m **MTOW:** 110kg **Max speed:** 81kt **Range:** 150km **Endurance:** 12h

Robot Aviation ▸ SkyRobot FX20

The Robot Aviation SkyRobot FX20 is a pusher-propeller UAV designed for medium-range missions and is operated by two personnel. It is a small, quiet, electric-powered system with an endurance of 3h. Key roles for the platform include surveillance, inspections and monitoring, emergency and security support, mission planning and mapping. **Length:** 1.04m **Wingspan:** 3.16m **Height:** 0.35m **MTOW:** 12kg **Payload:** 3kg **Max speed:** 55kt **Cruise speed:** 52kt **Ceiling:** 13,123ft **Endurance:** 3h

Robot Aviation ▸ SkyRobot FX450

The Robot Aviation SkyRobot FX450 is a long-endurance, pusher-propeller UAV with a heavy-fuel engine and a swept wing, which on a typical mission carries a payload of 10kg for up to 20h. Key roles outlined by the company include national security and border surveillance, emergency response, maritime surveillance and resource management. **Length:** 4m **Wingspan:** 7m **Height:** 1.4m **MTOW:** 180kg **Payload:** 100kg **Max speed:** 86kt **Cruise speed:** 68kt **Range:** 2,000km **Ceiling:** 13,000ft **Endurance:** 20h

Rostec ▸ Korsar

The Korsar, or Corsair, is a UAS intended for round-the-clock air reconnaissance, delivering kinetic strikes and carrying payloads. In 2018, plans for the Korsar included upgraded EW systems and an increased operational range. **Length:** 4.2m **Wingspan:** 6.5m **MTOW:** 200kg **Max speed:** 81kt **Cruise speed:** 65kt **Ceiling:** 19,685ft **Endurance:** 8h

RV Connex ▸ Sky Scout

Developed by Thailand's RV Connex, the Sky Scout is an ISTAR capable UAS that has a range of 80km, an endurance of 6+ hours, a cruise speed of 120km/h and a service ceiling of 10,000ft. 90% of its parts have been produced domestically, aside from its engine, payload and communications suite. In November 2016, the Royal Thailand Air Force (RTAF) contracted 20 units which were mostly delivered by November 2019. These fly under an RTAF U1 designation. **Wingspan:** 6.2m **MTOW:** 140kg **Payload:** 10kg **Cruise speed:** 65kt **Range:** 80km **Ceiling:** 10,000ft **Endurance:** 6h

RV Connex ▸ Sky Scout-X

The Sky Scout-X is an armed UAV that has been manufactured by RV Connex. It is a variant of the Sky Scout and features the same performance. It is differentiated by the fact it is armed with Thales Freefall Lightweight Multirole Missiles (FFLMM). First displayed at Defence & Security 2019, the UAS is projected to commence test flights in late 2021 or early 2022. Although no formal contract had been signed, the firm had begun development work for the Sky Scout-X to be delivered to Royal Thai Air Force (RTAF). These fly under an RTAF U1M designation. Thai media has reported this contact is for three units. **Wingspan:** 6.2m **MTOW:** 140kg **Payload:** 10kg **Cruise speed:** 65kt **Range:** 80km **Ceiling:** 10,000ft **Endurance:** 6h

Safran Electronics & Defense ▸ Patroller

The Patroller is a long-endurance, multi-mission tactical UAS manufactured by Safran Electronics & Defence. Designed to conduct ISR operations, the platform hosts a Euroflir 410 EO/IR pod and can support a range of other payloads, such as a COMINT sensor, Synthetic Aperture Radar and, in the future, a 68mm Acüleüs LG (laser guided) rocket. The French Army has ordered 14 units under a production contract reportedly worth approximately €300 million ($341.7 million), deliveries of these units will begin in 2022 at the earliest. **Length:** 8.52m **Wingspan:** 18m **Height:** 2.45m **MTOW:** 1,000kg **Payload:** 200kg **Max speed:** 107.99kt **Range:** 1,000km **Ceiling:** 14,763.78ft **Endurance:** 15h

Safran Electronics & Defense ▸ Sperwer Mk II

The Sperwer Mk II is a modernised version of the Sperwer system, with extended autonomy, higher-performance image chain and reduced footprint. Like its predecessor, it is a TUAV that can provide observation, threat detection and target designation to land forces as well as fire coordination for artillery. **Length:** 3.5m **Wingspan:** 4.2m **MTOW:** 330kg **Payload:** 50kg **Max speed:** 90kt **Cruise speed:** 80kt **Range:** 200km **Ceiling:** 15,000ft **Endurance:** 6h

Santos Lab ▸ Carcará I

Carcará I is a simple flying-wing UAV developed to meet Brazilian Army specifications for an unmanned platform to provide tactical reconnaissance at platoon level. A civilian version of the Carcará I UAV is also available. **Length:** 0.5m **Wingspan:** 1.5m **Height:** 0.2m **MTOW:** 2.3kg **Payload:** 1.4kg **Max speed:** 40kt **Cruise speed:** 25kt **Range:** 15km **Ceiling:** 1,640ft **Endurance:** 1h

Santos Lab ▸ Carcará II

Carcará II was developed to meet Brazilian Army specifications for a UAV to provide tactical reconnaissance at platoon level. A civilian version of the Carcará II UAV is also available. **Length:** 1m **Wingspan:** 2m **Height:** 0.31m **MTOW:** 4kg **Payload:** 1kg **Max speed:** 78kt **Cruise speed:** 78kt **Range:** 15km **Ceiling:** 1,640ft **Endurance:** 2h

Santos Lab ▸ Jabirú

Jabirú is a multi-payload platform designed to carry out tactical and strategic reconnaissance. In order to meet different customer requirements, it is able to accommodate a range of EO and IR sensors. This platform entered service with the Brazilian Army in 2010. **Length:** 2.73m **Wingspan:** 5m **Height:** 1m **Max speed:** 97kt **Cruise speed:** 43kt **Range:** 120km **Endurance:** 12h

Satuma ▸ Flamingo

Flamingo is a medium-range UAV equipped with an avionics suite that controls the aircraft during visual flight. In cases of silent operation, Flamingo can reach a 400km distance and return to base. The line-replaceable unit architecture of the UAV is designed to facilitate maintenance in field conditions.
Length: 5.18m **Wingspan:** 6.61m **MTOW:** 245kg **Payload:** 35kg **Max speed:** 75kt **Cruise speed:** 50kt **Range:** 1,000km **Ceiling:** 14,000ft **Endurance:** 8h

Satuma ▸ Jasoos II/Bravo+

The Jasoos II/Bravo+ UAV is designed for real-time information-gathering and situational awareness. The standard variant of Jasoos II is equipped with a steerable day/low-light camera pod capable of moving 360˚ in azimuth and +/-105˚ in elevation, giving it the capability of panoramic viewing. **Length:** 4.27m **Wingspan:** 4.92m **Height:** 1.2m **MTOW:** 145kg **Payload:** 25kg **Max speed:** 68kt **Cruise speed:** 40kt **Range:** 100km **Ceiling:** 10,000ft **Endurance:** 5h

Satuma ▸ Mukhbar

Mukhbar is a scaled-down version of the Jassos II, designed to meet an operational requirement for a short-range reconnaissance UAV. The fuselage and wings are manufactured using non-metallic materials, minimising radar signature.
Length: 2.86m **Wingspan:** 3.56m **MTOW:** 40kg **Payload:** 5kg **Max speed:** 65kt **Cruise speed:** 45kt **Range:** 50km **Ceiling:** 7,000ft **Endurance:** 1.5h

Satuma ▸ Nigraan

The Satuma Nigraan is a medium, fixed-wing TUAV. Key applications include observation, reconnaissance, battlefield damage assessment and patrol. **Length:** 3.1m **Wingspan:** 3.6m **Height:** 0.5m **MTOW:** 40kg **Max speed:** 54kt **Cruise speed:** 155.51kt **Range:** 100km **Ceiling:** 20,013.12ft **Endurance:** 8h

Satuma ▸ Salaar

The Satuma Salaar is a fixed-wing mini-UAV that is hand-launched and recovered by net or belly landing. **Length:** 1.3m **Wingspan:** 2.5m **Height:** 0.35m **MTOW:** 4kg **Max speed:** 35.1kt **Cruise speed:** 27kt **Range:** 10km **Ceiling:** 5,000ft **Endurance:** 1h

Satuma ▸ Shikra

The Satuma Shikra is a fixed-wing TUAV designed to be low-cost, simple to operate and less expensive to operate than larger platforms. **Length:** 1.9m **Wingspan:** 2.5m **Height:** 0.4m **MTOW:** 8kg **Max speed:** 51.3kt **Cruise speed:** 40.5kt **Range:** 40km **Ceiling:** 13,451.44ft **Endurance:** 5h

Satuma ▸ Super Salaar

The Satuma Super Salaar UAV is a small, electric, fixed-wing, tactical reconnaissance platform. It is launched by hand and recovered by net, parachute or belly landing. **Length:** 1.5m **Wingspan:** 2.5m **Height:** 0.4m **MTOW:** 8kg **Max speed:** 27kt **Cruise speed:** 40.5kt **Range:** 15km **Ceiling:** 10,170.6ft **Endurance:** 1.5h

Saxon Remote Systems ▸ M12 Monitor

The Saxon Remote Systems M12 Monitor UAV is a commercial and military system designed to perform a range of roles such as surveillance, pipeline inspection and border patrol. It was unveiled at the AUVSI Xponential trade show in April 2017. **Length:** 2.64m **Wingspan:** 6m **MTOW:** 16kg **Payload:** 16kg **Max speed:** 104kt **Cruise speed:** 48kt **Range:** 65km **Ceiling:** 10,007ft **Endurance:** 32h

Scaled Composites ▸ Model 347

Scaled Composites, a subsidiary of Northrop Grumman, unveiled the Model 437 in September 2021. The conceptual UAS is derived from a Model 401, or Son of Ares, and can be configured as a loyal wingman. Because of this, it is likely to be a future candidate in the USAF's Skyborg and the RAF's Mosquito programmes. **Payload:** 453.59kg **Cruise speed:** 532.94kt **Range:** 5,556km

Shield AI ▸ Bat 4

The Bat 4 fixed-wing UAV is designed for missions such as border patrol, surveillance, aerial mapping and research. The platform is launched autonomously from a runway. **Length:** 2.4m **Wingspan:** 4m **Height:** 0.9m **MTOW:** 55kg **Payload:** 9kg **Max speed:** 70kt **Cruise speed:** 58kt **Range:** 32.19km **Ceiling:** 10,000ft **Endurance:** 24h

Shield AI ▸ V-Bat 118

Originally manufactured by Martin UAV, a company now owned by Shield AI, the V-Bat is a VTOL rotary platform that rotates and operates as a fixed-wing aircraft when airborne. The platform was later dubbed the V-Bat 118 after the introduction of the V-Bat 128. The platform has a near-zero footprint and, due to its highly customisable nature, can host various payloads that allow it to conduct a range of missions. The UAV is involved in the Polish Navy's Albatros programme and the US Army's Future Tactical UAS programme. **Length:** 2.4m **Wingspan:** 2.74m **Height:** 0.8m **MTOW:** 38kg **Payload:** 3kg **Max speed:** 90kt **Cruise speed:** 75kt **Range:** 560km **Ceiling:** 15,000ft **Endurance:** 8h

Shield AI ▸ V-Bat 128

Unveiled in March 2021, the V-Bat 128 is an improved version of the V-Bat 118. Compared to that platform, the V-Bat 128 has an increased payload capacity, more power, greater endurance and a higher service ceiling. The UAS is manufactured by Sheild AI. The V-Bat 128 is a VTOL rotary-wing platform that rotates and operates as a fixed-wing aircraft when airborne. The platform has been downselected in the US Navy's next-generation UAS programme. **Length:** 2.4m **Wingspan:** 2.96m **Height:** 0.8m **MTOW:** 56.7kg **Payload:** 11.34kg **Max speed:** 90kt **Ceiling:** 20,000ft **Endurance:** 11h

Sichuan Tengden Technology Co. Ltd. ▸ TB001

Manufactured by the Chinese company Tengden Technology, the TB001 (or TW328) is a twin-engined medium-altitude long-endurance fixed-wing UAS that completed its maiden flight in August 2017. Designed for strike missions, the TB001 features four hardpoints and was seen flying near Japanese airspace in August 2021. **Length:** 10m **Wingspan:** 20m **Height:** 3.3m **MTOW:** 2,800kg **Payload:** 1,200kg **Range:** 6,000km **Ceiling:** 26,246.72ft **Endurance:** 35h

Sichuan Tengden Technology Co. Ltd. ▸ TD

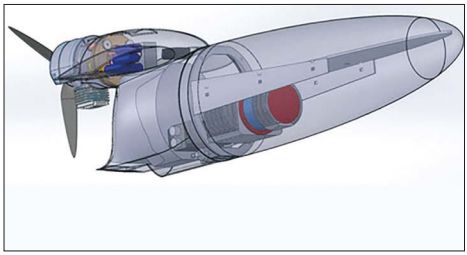
The TD is a 65t UAV aimed towards cargo and troop movement. In addition to its large delivery pod, it features optional modules for remote sensing, communication/EW and early warning. **Wingspan:** 40m **Height:** 8m **MTOW:** 65,000kg **Payload:** 24,000kg **Range:** 7,500km **Endurance:** 12h

Silent Falcon UAS Technologies ▸ Silent Falcon

The Silent Falcon is a solar-electric sUAS with long-endurance capabilities for extended-range missions. The UAS can be used for commercial and military applications. The entire system can be transported in a standard pickup truck. **Length:** 1.9m **Wingspan:** 4.4m **Height:** 0.6m **MTOW:** 14.5kg **Payload:** 3kg **Max speed:** 48kt **Cruise speed:** 27kt **Range:** 1,000km **Ceiling:** 20,000ft **Endurance:** 7h

Silvertone Electronics ▸ Flamingo Mk3

The Flamingo Mk3 entered production in July 2017 and is based on the Flamingo Mk2. The Mk3 has been designed to provide a 65% increase in payload volume (3kg capacity increase) and an additional 4h of flight time while remaining within a 25kg maximum take-off weight. **Length:** 2.9m **Wingspan:** 4.1m **Height:** 0.55m **MTOW:** 25kg **Payload:** 6kg **Max speed:** 65kt **Cruise speed:** 62kt **Ceiling:** 10,000ft **Endurance:** 12h



Skydweller Aero ▸ Skydweller

Skydweller is a MALE developmental UAV. Manufacturers Skydweller Aero plan to remove the crewed features from a Solar Impulse 2 aircraft and replace them with an autonomous AI flight system. The weight this will save, combined with the platform's 2,900ft² of photovoltaic cells that will gather solar energy during a flight, will theoretically give the UAV unlimited endurance and range. These performance specifications mean the Skydweller will offer persistent surveillance of a given area with its ISR payloads. Possible uses include land and sea surveillance, environmental and infrastructure monitoring, geo-information services, telecommunications and precision navigation, the provision of communications to support operators in emergencies. **Wingspan:** 72m **MTOW:** 2,495kg **Payload:** 363kg **Cruise speed:** 100kt **Ceiling:** 45,931.76ft **Endurance:** 2,160h

Skyeton ▸ Raybird-3

Developed by Skyeton, the Raybird-3 is an autonomous TUAV that is launched by catapult and recovered by parachute and air cushion. It is designed to be dismantled, so it is man-portable and can be set up for launch within 15min. The system is able to operate day and night in all weather conditions. **Length:** 1.8m **Wingspan:** 2.98m **Height:** 0.32m **MTOW:** 20kg **Payload:** 5kg **Max speed:** 86.4kt **Cruise speed:** 64.8kt **Range:** 240km **Ceiling:** 9,843ft **Endurance:** 20h

SkyPro UAV ▸ V200 Series

The V200 Series UAV is a hand-launched platform designed for endurance and ease of deployment. It is powered by electric propulsion and is designed for operation with minimal training. **Length:** 1.2m **Wingspan:** 2m **Height:** 0.4m **MTOW:** 6kg **Payload:** 1.5kg **Max speed:** 48kt **Cruise speed:** 30kt **Range:** 60km **Ceiling:** 11,483ft **Endurance:** 3h

Sky-Watch ▸ Heidrun V1

Heidrun V1 is a man-portable, autonomous UAV designed for defence and law enforcement. The platform is designed to be rapidly deployed in the field for low-altitude reconnaissance, surveillance or target acquisition. Heidrun V1 weighs 1.7kg without a payload and is operated by a touchscreen navigator with GPS or can be operated by a control pad. **Length:** 1.07m **Wingspan:** 1.65m **Height:** 0.17m **MTOW:** 2.2kg **Payload:** 0.5kg **Max speed:** 58kt **Cruise speed:** 31kt **Range:** 25km **Ceiling:** 11,483ft **Endurance:** 2h

Skyways ▸ Blue Water Maritime Logistics UAS

The Blue Water Maritime Logistics UAS is a developmental platform heavily based on the Skyways commercial available V2.5 Hybrid-Electric UAS. Following a 2019 industry event, the Naval Air Warfare Center Aircraft Division acquired one V2.5 unit and is in the process of developing it, possibly changing its airframe and propulsion system. Dubbed the Blue Water Maritime Logistics UAS, the aircraft is intended to perform autonomous long-range ship-to-ship and ship-to-shore cargo transportation. A programme of record is expected soon. **Length:** 5.48m **Payload:** 13.5kg **Range:** 804.67km

Spaitech/Ukrinmash/Ukroboronprom ▸ Anser

Designed as a TUAS, Anser provides multiple applications. It is developed by Spaitech Spe Ltd, a UAS research, development and production company in Odessa, Ukraine. Anser provides day and night surveillance and target reconnaissance and can also act as a radio relay system and radiological/chemical detector. **Length:** 2.2m **Wingspan:** 3.5m **Height:** 0.3m **MTOW:** 23kg **Max speed:** 59.4kt **Cruise speed:** 50kt **Range:** 780km **Ceiling:** 9,842.52ft **Endurance:** 12h

Spaitech/Ukrinmash/Ukroboronprom ▸ Sparrow

The Spaitech Sparrow is a flying-wing sUAS with a belly-mounted camera, but it can be customised for different sensors. The electric platform is catapult-launched and parachute-recovered, with a cruising altitude of 300-700m. Spaitech is a UAS R&D and production company in Odessa, Ukraine. It is recognised for developing UAS for military and civil/commercial uses in observation, intelligence and environmental monitoring. It is assessed that Spaitech is affiliated with investment firm Ukrinmash, a participant of the Ukroboronprom state concern which operates internationally and has more than 80,000 employees. **Length:** 0.4m **Wingspan:** 0.98m **Height:** 0.12m **MTOW:** 3.3kg **Max speed:** 64.79kt **Cruise speed:** 48.6kt **Range:** 20km **Ceiling:** 6,561.68ft **Endurance:** 1h

Spaitech/Ukrinmash/Ukroboronprom ▸ Sparrow LE

Spaitech's Sparrow LE is a class-one, battlefield, fixed-wing TUAS designed to be launched by hand and recovered by parachute with an air cushion. It is electrically powered for almost silent operation at a cruising altitude of 500-1,000m. Spaitech is a UAS R&D and production company in Odessa, Ukraine. It is recognised for developing UAS for military and civil/commercial uses in observation, intelligence and environmental monitoring. It is assessed that Spaitech is affiliated with investment firm Ukrinmash, a participant of the Ukroboronprom state concern which operates internationally and has more than 80,000 employees. **Length:** 1.4m **Wingspan:** 3m **Height:** 0.6m **MTOW:** 7.5kg **Max speed:** 80.99kt **Cruise speed:** 62.1kt **Range:** 40km **Ceiling:** 16,404.2ft **Endurance:** 3.5h

Special Technological Center ▸ Orlan-10/10E

Developed by the Russia-based Special Technology Center, the Orlan-10 is a medium-range UAS that has many variants. The 10E is an export version introduced in 2017. The platform is intended for ISR missions and can operate autonomously or via remote control from a ground control station installed in an MP32M1 C2 vehicle. **Length:** 1.8m **Wingspan:** 3.1m **MTOW:** 18kg **Payload:** 2.5kg **Max speed:** 92kt **Cruise speed:** 40kt **Range:** 120km **Ceiling:** 16,404ft **Endurance:** 4h

Special Technological Center ▸ Orlan-30

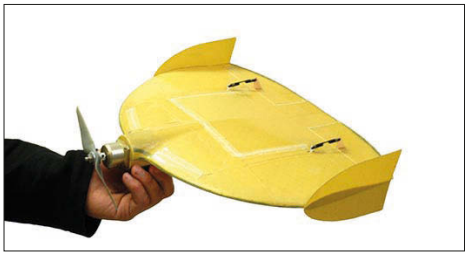
The Orlan-30 is a scaled-up version of the Orlan-10. Both look almost identical, with the exception of the engine and wing. The Orlan-30 is multipurpose and used for military applications such as observation, patrol and tactical intelligence. **Length:** 2.43m **Wingspan:** 3.8m **MTOW:** 27kg **Payload:** 8kg **Max speed:** 81kt **Cruise speed:** 49kt **Range:** 120km **Ceiling:** 14,764ft **Endurance:** 5h

Special Technological Center ▸ Orlan-50

The Orlan-50 is a scaled-up version of the Orlan-10 and -30. The main difference is that the Orlan-10 and -30 are single-engined, while the Orlan-50 is twin-engined, with target acquisition capabilities. **Length:** 2.4m **Wingspan:** 3.8m **MTOW:** 50kg **Payload:** 15kg **Max speed:** 97kt **Cruise speed:** 65kt **Range:** 120km **Ceiling:** 16,404ft **Endurance:** 8h

Spirit AeroSystems Belfast/Intrepid Minds/Northrop Grumman UK ▸ Mosquito

Mosquito, or the Lightweight Affordable Novel Combat Aircraft, is a developmental 'Loyal Wingman' UAS produced by Team Mosquito as part of the RAF's Mosquito Project. The team is an industry collaboration of Northrop Grumman UK, Intrepid Minds and Spirit AeroSystems Belfast that leads the team. The platform is planned to conduct a test-flight programme by the end of 2023 and could be deployed alongside the RAF's crewed fighter jets by the end of the decade.

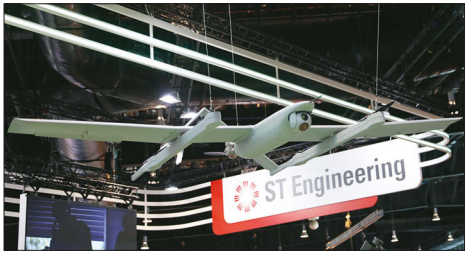


ST Engineering Aerospace ▸ Skyblade IV

The fixed-wing Skyblade IV is being developed by Singapore Technologies Aerospace and DSO National Laboratories for tactical missions, including reconnaissance, surveillance, target designation and tracking, bomb damage assessment, maritime/coastal patrol and search and rescue. **Length:** 2.4m **Wingspan:** 3.7m **MTOW:** 70kg **Payload:** 12kg **Max speed:** 81kt **Cruise speed:** 81kt **Range:** 70km **Ceiling:** 7,400ft **Endurance:** 6h

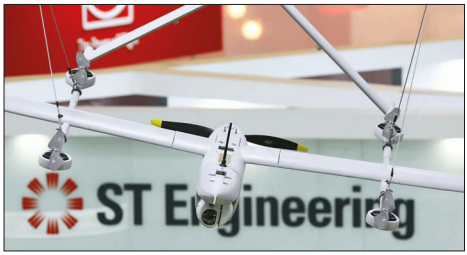
ST Engineering Aerospace ▸ Veloce-15

The ST Engineering Veloce-15 (V-15) is a hybrid fixed-wing UAV with four rotors for vertical lift and a tail-mounted two-bladed pusher propeller for horizontal propulsion. It is designed to have a variety of both military and commercial applications and it will replace the Skyblade III in the Singapore Army. **Wingspan:** 3.7m **MTOW:** 16kg **Max speed:** 40kt **Range:** 15km **Ceiling:** 2,000ft **Endurance:** 3h



ST Engineering Aerospace ▸ Veloce-60

The Veloce-60 is a hybrid fixed-wing UAV produced by ST Engineering. It has VTOL capabilities with a rear-mounted piston engine to power a two-bladed pusher propeller. It has a maximum take-off weight of 70kg. The platform will have an EO/IR turret with an optional laser rangefinder. **Wingspan:** 5m **MTOW:** 70kg **Max speed:** 70kt **Range:** 70km **Endurance:** 14h



Star UAV System ▸ AT200

The AT200 is essentially a Pacific Aerospace P-750 XSTOL light cargo aircraft converted into a UAV. Developed for SF Express, China's second-largest courier company, the AT200 is designed to deliver short-haul, time-sensitive packages to locations throughout China. However, it has also been proposed for use as a military transport, particularly for resupplying military garrisons located on China's outposts in the South China Sea. **Length:** 11.84m **Wingspan:** 12.8m **Height:** 4.04m **MTOW:** 3,400kg **Payload:** 1,500kg **Max speed:** 170kt **Cruise speed:** 141kt **Range:** 2,000km **Ceiling:** 20,000ft **Endurance:** 8h

State Kyiv Design Bureau Luch ▸ Sokil-300

Manufactured by LUCH Design Bureau, the Sokil-300 or Sokyl-300 is a surveillance and combat MALE UAS. The Sokil, Ukraine's first domestically produced UAS, can host four guided missiles and a gimbal-mounted camera. The platform was first displayed at IDEX 2021 and was developed for the Ukraine Armed Forces and the international market. **Length:** 8.6m **Wingspan:** 14m **MTOW:** 1,225kg **Payload:** 300kg **Max speed:** 180.89kt **Cruise speed:** 83.69kt **Range:** 3,300km **Endurance:** 26h

Sukhoi Design Bureau ▸ Okhotnik-B

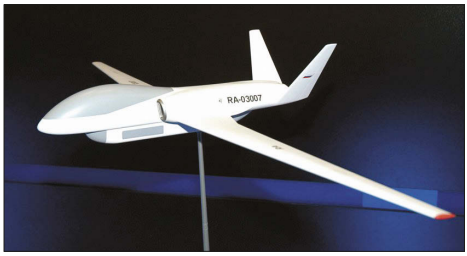
The Okhotnik-B, or the Sukhoi S-70, is an advanced strike UAS due to enter the service of the Russian Armed Forces in 2024, according to Andrey Yelchaninov, the first deputy chairman of the Board of the Russian Military-Industrial Commission, in April 2021. The Russian platform was developed by Sukhoi Design Bureau and contains a high level of autonomy, allowing it to possibly operate as a 'loyal wingman' in the future. **Wingspan:** 20m **MTOW:** 20,000kg **Max speed:** 432kt **Cruise speed:** 380kt **Range:** 6,000km

Sukhoi Design Bureau ▸ Uncrewed Checkmate

At the Dubai Airshow 2021, United Aircraft Corporation (UAC), the parent company of Checkmate manufacturer Sukhoi Design Bureau, announced its intention to manufacture an uncrewed version of the crewed Su-75 Checkmate. Little is known about the UAV, other than its appearance in a Youtube video posted by UAC on 15 November 2021.

Sukhoi Design Bureau ▸ Zond-1/2/3

Zond-1/2/3 is a family of fixed-wing UAVs currently in development for military use. **Length:** 13m **Wingspan:** 35m **Height:** 5.5m **MTOW:** 12,000kg **Payload:** 1,500kg **Max speed:** 135kt **Cruise speed:** 100kt **Range:** 12,000km **Ceiling:** 52,500ft **Endurance:** 18h



Survey Copter ▸ Aliaca

Aliaca, or DVF 2000 VT, is an electrically powered mini-UAV designed to perform ISR missions, coastal surveillance, convoy protection and powerline and pipeline monitoring. It is fitted with a gyro-stabilised camera, installed vertically, giving the platform 360° panoramic coverage of an area. In February 2021, Airbus, of which Survey Copter is a subsidiary, announced the French Navy had awarded a contract for the delivery of 11 Aliaca systems, comprising 22 units in total. **Length:** 1.85m **Wingspan:** 3m **Height:** 3m **MTOW:** 12kg **Payload:** 1.1kg **Max speed:** 54kt **Cruise speed:** 52kt **Range:** 10km **Ceiling:** 9,842.52ft **Endurance:** 3h

Survey Copter ▸ DVF 2000 ER

The DVF 2000 ER is a fixed-wing UAV with a setup time of less than 25min. The system can be used for civil and military ISR, protection or monitoring missions. **Length:** 2.27m **Wingspan:** 3m **MTOW:** 22.5kg **Payload:** 2kg **Max speed:** 65kt **Cruise speed:** 47kt **Range:** 50km **Ceiling:** 9,000ft **Endurance:** 7h

Survey Copter ▸ Tracker 120

The Tracker 120 is a fixed-wing UAV designed for a range of civil and military applications, including reconnaissance and surveillance, public safety missions, protection and surveillance of sensitive sites and border and pollution monitoring. **Length:** 1.54m **Wingspan:** 3.3m **Height:** 0.5m **MTOW:** 87kg **Payload:** 1.1kg **Max speed:** 48.6kt **Cruise speed:** 33.05kt **Range:** 25km **Ceiling:** 8,202.1ft **Endurance:** 1.5h

Swift Engineering ▸ Accipiter

The Accipiter is a fixed-wing UAS designed by Swift Engineering in California, US. It is controlled by a single operator with autonomous navigation. **MTOW:** 6.8kg **Payload:** 4.54kg **Endurance:** 8h

Swift Engineering ▸ Fortus

The Fortus is a fixed-wing UAS designed by Swift Engineering. It has VTOL capabilities and is controlled by a single operator, with autonomous navigation. **Max speed:** 43.45kt **Endurance:** 2h

Swift Engineering ▸ Gryphon 3.0

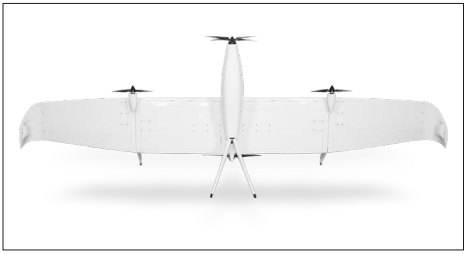
The Gryphon 3.0 is a UAS designed by Swift Engineering in California, US. The Gryphon 3.0 is designed for ISR operations for maritime security, expeditionary missions and Incident Awareness and Assessment. **Length:** 1m **Wingspan:** 3.9m **MTOW:** 20kg **Payload:** 1kg **Max speed:** 29.94kt **Cruise speed:** 21kt **Ceiling:** 8,999.34ft **Endurance:** 2h

Swift Engineering ▸ Swift Banshee

The Banshee is a fixed-wing UAS designed by Swift Engineering in California, US. It has VTOL capability and autonomous navigation. **Max speed:** 130.35kt

Swift Engineering ▸ Swift021

The Swift021 is a fully autonomous mini-UAS manufactured by Swift Engineering. An evolution of the Swift020, the UAS has a VTOL capability before autonomously transitioning to operate as a fixed-wing aircraft when airborne. According to Swift Engineering, several easily swappable payload options can be attached to the platform allowing it to conduct a range of missions. **Wingspan:** 3m **Height:** 1.5m **MTOW:** 13.6kg **Payload:** 1kg **Max speed:** 44.82kt **Cruise speed:** 45kt **Range:** 120km **Ceiling:** 393.7ft **Endurance:** 2h



TATA Advanced Systems ▸ Aquilon

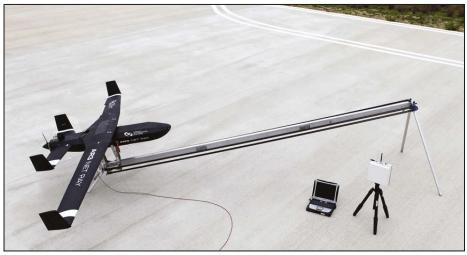
The Tata Aquilon fixed-wing small UAV is a hand-launched system designed to be operated by two people with automated belly-landing. The system is man-packable with autonomous operation and automatic search, acquisition and track. **Length:** 1m **Wingspan:** 1.5m **Height:** 0.3m **MTOW:** 2.5kg **Payload:** 0.5kg **Endurance:** 1h

Tekever ▸ AR2 Carcará

The AR2 Carcará is a hand- or catapult-launched mini-UAV designed to support search and rescue, surveillance and patrol operations in amphibious and maritime environments. It is controlled via a GCS that is available in multiple configurations, including laptop, tablet and smartphone. This UAV is interoperable with other Tekever UAS and is currently in operation with multiple forces. **Length:** 1m **Wingspan:** 2.2m **Payload:** 1kg **Cruise speed:** 22kt **Range:** 20km **Endurance:** 2.5h

Tekever ▸ AR3

The AR3, or AR3 Net Ray, is a fully autonomous small-UAS designed to support land-based and maritime missions, including communications support, infrastructure surveillance, ISTAR and pollution monitoring. Manufactured by Tekever, the platform was trialled by the Portuguese Navy when it was first revealed in 2015. In 2020, Nigeria purchased the AR3 for its Deep Blue maritime security project. **Length:** 1.7m **Wingspan:** 3.5m **Height:** 0.7m **MTOW:** 23kg **Payload:** 4kg **Max speed:** 65kt **Cruise speed:** 45.9kt **Range:** 100km **Endurance:** 16h



Tekever ▸ AR4

The AR4 is a hand-launched mini-UAS designed for rapid mobile deployment. Manufactured by Tekever, the UAS is suitable for both military and commercial ISTAR applications. A fully modular system, the AR4 is ITAR free and can be carried in one rugged 100L transport case or one military-grade backpack. **Length:** 1.35m **Wingspan:** 2.1m **MTOW:** 4kg **Payload:** 0.5kg **Max speed:** 43kt **Cruise speed:** 29.16kt **Range:** 20km **Endurance:** 2h

Tekever ▸ AR5

First announced in October 2012, the AR5 is a MALE UAS designed for SAR, surveillance and maritime patrol missions. The AR5 can either be flown manually or commanded to perform specific tasks autonomously. The platform, manufactured by Tekever, is utilised in non-military roles by both the UK Home Office and the European Maritime Safety Agency (EMSA). **Length:** 4m **Wingspan:** 7.3m **Height:** 1.5m **MTOW:** 180kg **Payload:** 50kg **Max speed:** 75kt **Cruise speed:** 59.4kt **Endurance:** 12h

Textron Systems ▸ RQ-7B Shadow v2 Block III

The RQ-7B Shadow v2 Block III is an upgraded UAS developed by Textron Systems. Compared to previous versions, it has a quieter, more reliable and more powerful engine, is more capable of operating in adverse weather conditions and has a larger payload capacity. Following extensive trials by the US Army in late 2020, a $66 million contract was awarded to Textron in December 2020 for 36 units. **Wingspan:** 6.2m **MTOW:** 0.21kg **Payload:** 45kg **Range:** 125km **Ceiling:** 17,998.69ft **Endurance:** 8h

Textron Systems Unmanned Systems ▸ Aerosonde HQ SUAS

The Aerosonde Hybrid Quadcopter (HQ) SUAS is the VTOL version of the Aerosonde SUAS manufactured by Textron Systems. It combines the capabilities of a multi-rotor platform with the efficiency and speed of the Aerosonde SUAS fixed-wing. The platform is competing in the American Future Tactical UAS (FTUAS) programme and the Australian Project Land 129 Phase 3 and Project Sea 129 Phase 5 programmes. **Wingspan:** 3.7m **MTOW:** 47.63kg **Payload:** 6.8kg **Max speed:** 65kt **Cruise speed:** 45kt **Range:** 140km **Ceiling:** 10,000ft **Endurance:** 8h

Textron Systems Unmanned Systems ▸ Aerosonde Mk 4.7

Jointly developed by AAI Unmanned Aircraft Systems, a unit of Textron Systems, and Aerosonde, the Aerosonde Mk 4.7 is a fixed-wing UAV. First demonstrated in 2009, the platform can be launched from land and ship-based platforms and can conduct ISR missions over a period of up to 14 hours. **Length:** 2.03m **Wingspan:** 3.6m **Height:** 0.8m **MTOW:** 36.3kg **Payload:** 9kg **Max speed:** 65kt **Cruise speed:** 50kt **Range:** 140km **Ceiling:** 15,000ft **Endurance:** 14h

Textron Systems Unmanned Systems ▸ Aerosonde Mk 4/5

The Aerosonde Mark 4 and 5 come from a long line of capable aircraft. The Aerosonde Mk 4 series has several sub-variants to improve the endurance and handling of the aircraft. The Aerosonde Mk 5 is known as the medium-endurance, low-altitude aircraft. It was announced in 2009 that the Aerosonde Mk 5 made a successful first flight at Yuma Proving Ground in Yuma, Arizona. All test objectives were exceeded or met, thereby validating the aerodynamics capabilities of the aircraft. The platform is also closely associated with the USN's small TUAS programme and the USMC's Tier II UAS programme. **Length:** 2.1m **Wingspan:** 2.9m **Height:** 0.6m **MTOW:** 14kg **Payload:** 5.3kg **Cruise speed:** 50kt **Range:** 1,850km **Ceiling:** 19,685ft **Endurance:** 35h

Textron Systems Unmanned Systems ▸ Aerosonde SUAS

The Aerosonde SUAS comes from a long line of capable aircraft. The Aerosonde SUAS, like the Aerosonde fleet of aircraft, operates through contractor-owned and operated agreement services or can be acquired as a system. The aircraft delivers multi-mission performance and operators for worldwide customers. It has provided more than 150,000 flight hours. **Length:** 1.7m **Wingspan:** 3.45m **Height:** 0.6m **MTOW:** 16.8kg **Payload:** 4.5kg **Max speed:** 62kt **Cruise speed:** 50kt **Range:** 140km **Ceiling:** 14,765ft **Endurance:** 19h

Textron Systems Unmanned Systems ▸ Nightwarden

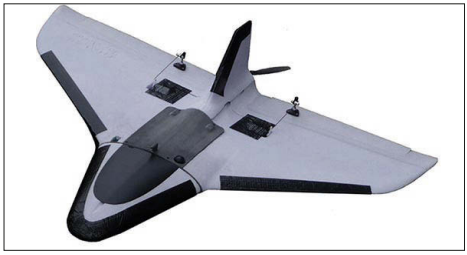
Textron Systems Unmanned Systems unveiled the Nightwarden TUAS – the company's latest addition to their TUAS range – at the 2017 Pars Air Show. The platform represents the production-ready model of the developmental Shadow M2. **Length:** 3.9m **Wingspan:** 7m **MTOW:** 340kg **Payload:** 65kg **Max speed:** 90kt **Cruise speed:** 78kt **Range:** 1,100km **Ceiling:** 20,000ft **Endurance:** 18h

Thales ▸ Fulmar X

At the Farnborough International Airshow 2016, Thales revealed the Fulmar X UAV, designed to carry out high-quality ISTAR missions for civil and military applications. A complete system comprises two UAVs, launch and recovery equipment and a mobile control station. It can be integrated with a range of surveillance sensors, including a gyro-stabilised EO/IR camera. **Length:** 1.2m **Wingspan:** 3m **Height:** 0.5m **MTOW:** 20kg **Payload:** 4kg **Max speed:** 81kt **Range:** 80km **Ceiling:** 9,843ft **Endurance:** 8h

Thales ▸ Spy Arrow

Spy Arrow is a fixed-wing mini-UAV suitable for a range of applications, including tactical ISR, convoy protection, border surveillance and law enforcement. The Spy Arrow micro-UAV was launched in 2008 and has been tested by the French Army in Afghanistan for its ad-hoc surveillance capabilities. **Length:** 0.52m **Wingspan:** 0.67m **Height:** 0.19m **MTOW:** 0.6kg **Max speed:** 54kt **Cruise speed:** 45kt **Range:** 3km **Ceiling:** 1,000ft **Endurance:** 0.5h



Thales ▸ Spy'Ranger 330

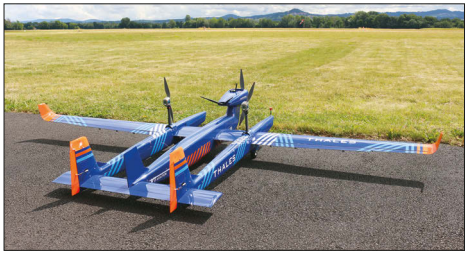
At Milipol 2015, Thales unveiled the Spy'Ranger mini-UAS designed to carry out ISR missions in hot and cold environments. As called the Spy Ranger, the system is aimed at operational BLoS image intelligence for joint battlegroup and brigade-level units. Each system consists of three mini-UAVs, a ground segment and associated technical support. Thales are in the process of delivering 105 units, 35 systems, to the French Army. **Wingspan:** 3.9m **MTOW:** 15kg **Payload:** 1.2kg **Max speed:** 48.6kt **Cruise speed:** 40kt **Range:** 30km **Endurance:** 2.5h

Thales ▸ Spy'Ranger 550

The Spy'Ranger 550, a larger version of the Spy'Ranger 330, is a UAS developed by Thales for tactical surveillance and intelligence. It was unveiled at the Paris Air Show in 2019 as an addition to the Spy'Ranger mini-UAS family. The system is deployable in 20 minutes and has a maximum range of 50km. The Spy'Ranger 550 can fly autonomously for five hours. **Wingspan:** 5.2m **MTOW:** 25kg **Payload:** 1kg **Max speed:** 48.6kt **Cruise speed:** 42.12kt **Range:** 50km **Endurance:** 5h

Thales ▸ UAS 100

The UAS 100 is an autonomous, three-engined platform, modular UAS manufactured by Thales in partnership with Issoire Aviation, Hionos and with the support of the French Ministry of the Armed Forces via the Defence Innovation Agency. The UAVs flight avionics ensure a high level of flight safety, aided by the platform having multiple redundancies, making the platform resistant to failures. The modular configuration of the platform will allow it to hold multiple payloads simultaneously. **Wingspan:** 5.4m **MTOW:** 100kg **Payload:** 10kg **Range:** 100km



Thales España ▸ Fulmar

The Fulmar UAV is designed to operate from land or ship and can be recovered using a net or water landing. It is operated by a two-person team and can be transported in a lightweight towable trailer, with deployment in under 30min. **Length:** 1.2m **Wingspan:** 3m **Height:** 0.5m **MTOW:** 20kg **Payload:** 8kg **Max speed:** 54kt **Cruise speed:** 35kt **Range:** 800km **Ceiling:** 9,850ft **Endurance:** 8h

The Scientific and Production Center of Multipurpose Unmanned Systems ▸ Yastreb

The Yastreb (Hawk) is the heaviest military, fixed-wing UAV developed by the Belarusian Academy of Sciences' Scientific and Production Centre of Multipurpose Unmanned Systems. Available in three different configurations (reconnaissance, combat and target), it can be equipped with several different types of payloads, including up to three 25kg loitering munitions. **MTOW:** 700kg **Payload:** 150kg **Max speed:** 119kt **Cruise speed:** 65kt **Range:** 500km **Endurance:** 6h

Thread Systems ▸ EOS C VTOL

The EOS C VTOL is an electric mini-UAS manufactured by Thread Systems. The UAS has multiple sub-components and subsystems that allow the platform to be operated in several configurations, depending on the user's requirements. The standard configuration comes with a handled 10.1" touchscreen ground control station and an Orca 130 Full-HD camera payload. **Length:** 1.8m **Wingspan:** 5m **Height:** 0.45m **MTOW:** 14.2kg **Payload:** 1.1kg **Max speed:** 58.32kt **Cruise speed:** 34.99kt **Range:** 120km **Ceiling:** 14,763.78ft **Endurance:** 3h

Thread Systems ▸ Stream C

Stream C is an updated version of the original Stream UAS developed by Thread Systems. Designed for military use, it can carry a multi-sensor package for performing surveillance and patrol missions. Compared to its predecessor, Stream C is a larger platform that is capable of handling an increased payload. In 2019, a version with a VTOL capability was revealed that became known as the Stream C VTOL. **Length:** 2.3m **Wingspan:** 3.9m **MTOW:** 30kg **Payload:** 6kg **Max speed:** 70kt **Cruise speed:** 43kt **Range:** 100km **Ceiling:** 9,843ft **Endurance:** 6h

Thread Systems ▸ Stream C VTOL

At IDEX 2019, Thread Systems unveiled a new version of the Stream C UAS, capable of VTOL manoeuvres. Known as the Stream C VTOL, this variant makes the drone easier to deploy in confined spaces and difficult environments such as mountainous terrain or dense urban locations. Aimed at commercial, governmental and military users, it is capable of performing several tasks, ranging from battlefield ISR to assisting with civil infrastructure inspections. **Length:** 2.3m **Wingspan:** 3.9m **MTOW:** 45kg **Payload:** 6kg **Max speed:** 70kt **Cruise speed:** 43kt **Range:** 100km **Ceiling:** 6,561ft **Endurance:** 5h

Top Engineering Group ▸ Falcon-V

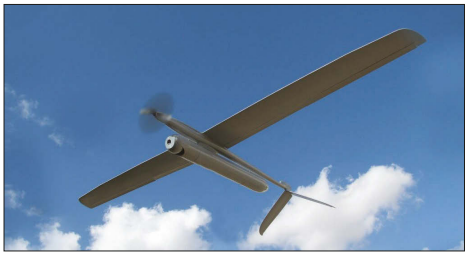
The Falcon-V is a fixed-wing VTOL UAV designed for frontline day/night ISR. The platform can complete a mission automatically, with no operator intervention, or be reprogrammed when airborne to perform alternative missions or react to task changes. **Length:** 2.3m **Wingspan:** 4.5m **MTOW:** 22kg **Payload:** 5kg **Max speed:** 65kt **Cruise speed:** 49kt **Range:** 50km **Ceiling:** 16,401ft **Endurance:** 5h

Top I Vision ▸ Casper 250

Casper 250 is a fixed-wing TUAV designed for civil and military roles, including ISTAR, law enforcement, perimeter security and special operations. It has a high T-wing which carries an electric motor and forward propeller. **Length:** 1.7m **Wingspan:** 2.5m **Height:** 0.36m **MTOW:** 5.7kg **Payload:** 1.25kg **Max speed:** 43kt **Cruise speed:** 38kt **Range:** 10km **Ceiling:** 6,900ft **Endurance:** 2h

Top I Vision ▸ Casper 280

Casper 280 is a TUAV developed for civil and military missions, including ISTAR, law enforcement, perimeter security and special operations. **Length:** 1.7m **Wingspan:** 2.5m **Height:** 0.5m **MTOW:** 6kg **Payload:** 1.24kg **Max speed:** 38kt **Cruise speed:** 28kt **Ceiling:** 6,900ft **Endurance:** 2.5h



Top I Vision ▸ Casper 420

Casper 420 is a TUAV developed for civil and military missions, including ISTAR, law enforcement, perimeter security and special operations. **Length:** 2.5m **Wingspan:** 4.2m **Height:** 0.86m **MTOW:** 32kg **Payload:** 5.5kg **Max speed:** 60kt **Cruise speed:** 43kt **Range:** 50km **Ceiling:** 11,800ft **Endurance:** 5h

Top I Vision ▸ Casper 650

Casper 650 is a TUAV designed for various civil and military roles, including ISTAR, law enforcement, perimeter security and special operations. **Length:** 2.5m **Wingspan:** 6.5m **Height:** 0.65m **MTOW:** 18kg **Payload:** 2.5kg **Max speed:** 38kt **Cruise speed:** 54kt **Range:** 40km **Ceiling:** 6,900ft **Endurance:** 4.5h

Top I Vision ▸ Casper 800

Casper 800 is a TUAV suitable for various civil and military missions, including ISTAR, law enforcement, perimeter security and special operations. **Length:** 4.5m **Wingspan:** 8m **Height:** 1.2m **MTOW:** 70kg **Payload:** 13kg **Max speed:** 60kt **Cruise speed:** 43kt **Range:** 100km **Ceiling:** 17,000ft **Endurance:** 8h

Top I Vision ▸ Whisper

Whisper is a fixed-wing TUAV suitable for civil and military missions, including ISTAR, special operations, law enforcement and perimeter security. **Length:** 1.2m **Wingspan:** 3.5m **MTOW:** 12kg **Payload:** 2.5kg **Max speed:** 38kt **Cruise speed:** 22kt **Range:** 35km **Ceiling:** 6,900ft **Endurance:** 3h

TopXGun ▸ Star-650

The TopXGun Star-650 has the size and design of a single-seat hobbyist or civilian aircraft and can carry a payload of 200kg, with an endurance of 10-15h. **Length:** 6.89m **Wingspan:** 8.6m **Height:** 2.53m **MTOW:** 650kg **Payload:** 200kg **Max speed:** 137.69kt **Cruise speed:** 118.79kt **Range:** 300km **Ceiling:** 16,404.2ft **Endurance:** 15h

Turkish Aerospace ▸ Aksungur

The Aksungur is a twin-engined MALE UAS manufactured by Turkish Aerospace Industries (TAI) for the Turkish Armed Forces. The platform's maiden flight was completed on 20 March 2019 before being shown at that year's IDEF in Istanbul. The platform has a payload capacity of 1000kg and can carry a wide variety of munitions on hardpoints on each of its wings. In October 2021, TAI delivered the first mass-produced unit to the Turkish Navy. **Length:** 11.6m **Wingspan:** 24m **Height:** 3m **MTOW:** 3,300kg **Payload:** 1,000kg **Max speed:** 200kt **Range:** 2,250km **Ceiling:** 40,000ft **Endurance:** 50h

Turkish Aerospace ▸ Anka-B

The Anka-B, or Anka Block B, is a MALE UAS manufactured by Turkish Aerospace Industries (TAI). An improved version of the Anka-A, the Anka-B completed its maiden flight in January 2015 and is fitted with an EO/IR sensor and an Aselsan synthetic aperture radar/ground moving-target indicator. TAI announced in November 2019 that it had delivered a total of 22 Anka-B UAVs to the Turkish Navy Forces. **Length:** 8.9m **Wingspan:** 17.3m **Height:** 3.4m **MTOW:** 1,600kg **Payload:** 200kg **Max speed:** 117kt **Cruise speed:** 95kt **Range:** 200km **Ceiling:** 30,000ft **Endurance:** 24h

Turkish Aerospace ▸ Anka-I

Anka-I is a SIGINT/COMINT variant of Turkey's Anka-S and is operated by Turkey's National Intelligence Organization. The COMINT capability allows operators to track, geolocate and potentially intercept communication signals being transmitted. The ELINT functionality will allow operators to identify and locate other emissions in the RF spectrum, principally from radars. **Length:** 8.9m **Wingspan:** 17.3m **Payload:** 200kg **Max speed:** 117kt **Cruise speed:** 75kt **Range:** 200km **Ceiling:** 30,000ft **Endurance:** 18h

Turkish Aerospace ▸ Anka-S

Anka-S is a medium-altitude long-endurance UAV produced by Turkish Aerospace Industries to meet the requirements of the Turkish Armed Forces. The system can perform a variety of missions day and night in all weather conditions. It has a high definition, EO/IR payload and autonomous flight capability, including automatic take-off and landing. **Length:** 8.9m **Wingspan:** 17.3m **Height:** 3.4m **MTOW:** 1,700kg **Payload:** 350kg **Max speed:** 117kt **Cruise speed:** 75kt **Range:** 2,500km **Ceiling:** 30,000ft **Endurance:** 30h

UA Technology ▸ UA-Gamma

The UA-Gamma is a TUAV developed by UA Technology. The system is used for aerial surveillance, remote sensing and commercial mapping applications. It comes with two aircraft, one launching device, one GCS and a container for transport. The aircraft are catapult-launched and recoverable by parachute with an airbag. The platforms are day/night IR-capable and use encrypted video and command channels. **Length:** 1.8m **Wingspan:** 2.98m **Max speed:** 86.39kt **Range:** 200km **Ceiling:** 9,842.52ft **Endurance:** 6h

UA Technology/National Aviation University of Ukraine ▸ UA-Beta

Ukraine's UA-Beta tactical mini-UAV is developed by UA Technology and the National Aviation University. There is more than one version of this aircraft, and it can operate in extreme weather conditions. The two organisations are affiliated with investment firm Ukrinmash, a participant of the Ukrobo-ronprom state concern. **MTOW:** 4.5kg **Payload:** 1kg **Cruise speed:** 40.5kt **Range:** 40km **Ceiling:** 9,842.52ft **Endurance:** 1.5h

UAV Factory Europe ▸ Penguin C MIL

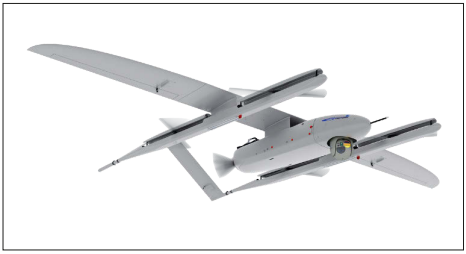
The Penguin C MIL is a small UAS designed for ISR missions. Manufactured by UAV Factory, the UAV has been flight-tested for over 9000h by its manufacture, proving its robustness in average to severe weather conditions. The entire system, which weighs 265kg, can be packed into ruggedised cases and transported by a single minivan, pickup or helicopter. The Latvian National Armed Forces (LNAF) ordered a total of three units. However, these have since been upgraded to the Penguin C MIL Mk2 standard. **Length:** 2.3m **Wingspan:** 3.3m **Height:** 0.9m **MTOW:** 23kg **Max speed:** 62kt **Cruise speed:** 43kt **Range:** 100km **Ceiling:** 16,400ft **Endurance:** 20h

UAV Factory Europe ▸ Penguin C MIL Mk2

The Penguin C MIL Mk2 is a small UAS manufactured by UAV Factory. An evolution of the Penguin C MIL, the platform features a larger payload carrying capacity, radio link rank, and longer endurance. Like its predecessor, the UAV is modular and boasts a low logistic footprint. The Latvian National Armed Forces ordered one system in December 2019 and have upgraded one Penguin C MIL to the Mk2 specification. **Wingspan:** 3.3m **MTOW:** 28kg **Payload:** 4kg **Max speed:** 62.2kt **Cruise speed:** 49kt **Range:** 100km **Ceiling:** 16,404.2ft **Endurance:** 25.5h

UAV Factory Europe ▸ Penguin C VTOL

Announced by UAV Factory on 19 August 2021, the Penguin C VTOL is the VTOL version of the Penguin C MIL Mk2; hence it is sometimes called the Penguin C Mk2 VTOL. With a greater endurance than the Penguin B VTOL, the UAS is available with the Epsilon series of advanced micro-gimbals developed by Octopus ISR Systems. In addition, the twin-boom UAS has a payload bay that can host a range of third-party payloads. **Wingspan:** 3.9m **MTOW:** 32kg **Payload:** 4.5kg **Max speed:** 68kt **Cruise speed:** 46kt **Range:** 180km **Ceiling:** 13,123.36ft **Endurance:** 14h



UAV Factory Europe/UAV Factory USA ▸ Penguin B

Penguin B is a high-performance, semi-integrated UAV available for final assembly and customisation by UAV system integrators. Launched in 2009, Penguin B has been sold to UAV system integrators in 43 countries. Between 2009 and 2017, more than 165 Penguin-series UAVs were delivered. The platform is highly modular. All components of the Penguin B are easily removable and completely interchangeable and the platform can host a range of payloads and subsystems. **Length:** 2.3m **Wingspan:** 3.3m **Height:** 0.9m **MTOW:** 21.5kg **Payload:** 10kg **Max speed:** 70kt **Cruise speed:** 43kt **Ceiling:** 16,400ft **Endurance:** 20h

UAV Factory Europe/UAV Factory USA ▸ Penguin B VTOL

The Penguin B VTOL is a variant of the Penguin B platform manufactured by UAV Factory. Announced in June 2021, the variant is a reliable, long-endurance aircraft with four rotary blades to provide vertical lift before operating as a fixed-wing platform while airborne. The platform is highly modular and can host a range of subsystems and ISR payloads, including the Epsilon 140LC, Epsilon 140/140Z and Epsilon 175. **Length:** 2.3m **Wingspan:** 3.9m **Height:** 0.9m **MTOW:** 21.5kg **Payload:** 7.2kg **Ceiling:** 16,400ft **Endurance:** 8h

UAV Factory USA ▸ Penguin BE Electric

The Penguin BE Electric is a fixed-wing, semi-integrated, electric variant of the Penguin B UAV that was unveiled in June 2013. The Penguin BE Electric is a small platform with electric propulsion, available for final assembly and customisation by UAV system integrators. **Length:** 2.3m **Wingspan:** 3.3m **Height:** 0.9m **MTOW:** 21.5kg **Payload:** 6.6kg **Max speed:** 70kt **Cruise speed:** 43kt **Range:** 6km **Ceiling:** 19,685ft **Endurance:** 1.8h

UAV Solutions ▸ Talon 120LE

The Talon 120LE is a ruggedised, man-portable UAV designed for military, law enforcement, search and rescue, first responders, border security, agriculture, inspection and anti-poaching missions. The system is also suitable for universities and organisations needing a platform for experimentation purposes. **Length:** 1.83m **Wingspan:** 3.8m **MTOW:** 9.07kg **Payload:** 1.13kg **Max speed:** 40kt **Cruise speed:** 22kt **Range:** 32km **Ceiling:** 5,000ft **Endurance:** 2.5h

UAV Solutions ▸ Trident TL

The Trident TL is a low-cost, foldable, ground- or air-launched UAS. Designed for commercial and federal agency use, this system uses autonomous navigation for launch, data gathering and recovery. **Length:** 0.91m **Wingspan:** 0.91m **MTOW:** 2.27kg **Payload:** 2.3kg **Max speed:** 80kt **Cruise speed:** 50kt **Range:** 20km **Ceiling:** 500ft **Endurance:** 0.4h

UAV Tactical Systems (U-Tacs) ▸ Watchkeeper

Watchkeeper is a tactical UAS manufactured for the British Army by U-TacS, a joint venture between Elbit Systems and Thales. The platform, a heavily modified variant of the Hermes 450, provides an ISTAR capability and was utilised by the UK in Afghanistan. In 2015, Thales launched the Watchkeeper X, an upgraded variant of the Watchkeeper. **Length:** 6.5m **Wingspan:** 10.9m **Height:** 2.29m **MTOW:** 485kg **Payload:** 150kg **Max speed:** 85kt **Cruise speed:** 70kt **Range:** 150km **Ceiling:** 16,000ft **Endurance:** 14h

UAVERA Aviation Systems ▸ Çağatay CGT50

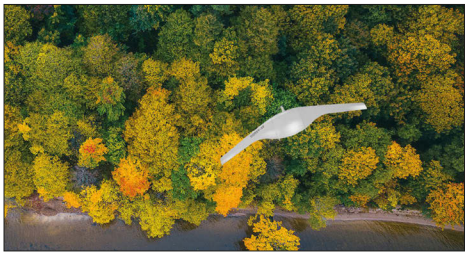
The Çağatay CGT50, or Cagatay, is a VTOL UAS manufactured by UAVERA, a subsidiary of Coskunöz Defence and Aviation. First displayed in June 2021, UAVERA has stated that the platform is ready for mass production. An electric motor powers four rotary blades that give the Çağatay its VTOL capability. When airborne, the Çağatay operates as a fixed-wing UAS powered by a 100cc engine that gives the platform an endurance of six hours and a range of 150km. **Wingspan:** 4.65m **MTOW:** 55kg **Payload:** 5kg **Max speed:** 58kt **Cruise speed:** 58kt **Range:** 150km **Ceiling:** 18,000ft **Endurance:** 6h

Uavos ▸ Albatross 2.2

The Uavos Albatross 2.2 is a fixed-wing UAV, which forms part of the Albatross UAS. The UAV is based on the Pipistrel Sinus light aircraft and has fully automatic take-off and en-route flying and landing. **Length:** 6.6m **Wingspan:** 15m **Height:** 1.7m **MTOW:** 850kg **Payload:** 280kg **Max speed:** 135kt **Cruise speed:** 108kt **Range:** 5,400km **Ceiling:** 26,246ft **Endurance:** 28h

Uavos ▸ Borey-10

Borey-10 is a flying-wing UAS that was introduced by Uavos in March 2018. The UAS has been designed to carry out a range of applications, including mapping, surveillance, reconnaissance and monitoring of oil and gas pipelines and military bases. **Length:** 0.88m **Wingspan:** 4.3m **Height:** 0.35m **MTOW:** 20kg **Payload:** 4kg **Max speed:** 58kt **Cruise speed:** 31kt **Range:** 430km **Ceiling:** 11,483ft **Endurance:** 4h



Uavos ▸ SAT-i

The Uavos SAT-i solar-powered, fixed-wing UAV is designed to perform monitoring and aerial photography, during daylight hours, for a range of applications such as prospecting, mapping and monitoring important lines of communication in remote areas. In July 2018, the company announced that it had conducted a 10h test flight of the platform carrying a 600g EO payload to conduct surface mapping. **Length:** 3.2m **Wingspan:** 7.3m **Height:** 0.53m **MTOW:** 6.3kg **Payload:** 0.6kg **Max speed:** 27kt **Cruise speed:** 16kt **Range:** 250km **Ceiling:** 29,528ft **Endurance:** 2h

UAVTEK ▸ Scout

The Scout is a developmental, bungee launched, fixed-wing UAS manufactured by UAVTEK. Displayed at DSEI 2021, the Scout is designed to provide an ISR capability and is being trailed by the 29 Commando Royal Artillery of the British Army.

UAVTEK ▸ Scout Tailsitter

Manufactured by UAVTEK, the Scout Tailsitter is a developmental UAS that is due to enter production in Q4 of 2021. With a VTOL capability, the platform combines the advantages of both a rotary-wing and fixed-wing platform.

Uconsystem ▸ RemoEye-002B

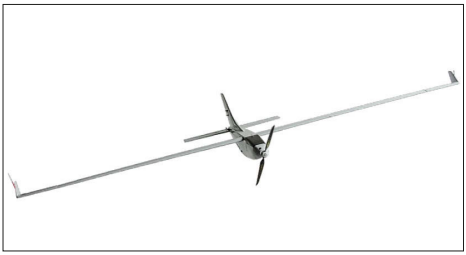
RemoEye-002B is a close-range mini-UAV constructed using composite materials that can be prepared and launched in 5min. Its features include changeable flight modes during mission, real-time target position displayed on a video screen and target hold (camera with two-axis scanning). **Length:** 1.15m **Wingspan:** 1.5m **Height:** 0.28m **MTOW:** 2.8kg **Payload:** 0.35kg **Max speed:** 43kt **Cruise speed:** 36kt **Range:** 10km **Endurance:** 1h

Uconsystem ▸ RemoEye-006

RemoEye-006 is a short-range mini-UAV that is in service with the Republic of Korea Marine Corps (ROKMC). Deliveries first commenced to the ROKMC in 2009. **Length:** 1.72m **Wingspan:** 2.59m **Height:** 0.34m **MTOW:** 6.5kg **Payload:** 0.8kg **Max speed:** 40kt **Range:** 15km **Endurance:** 1.5h

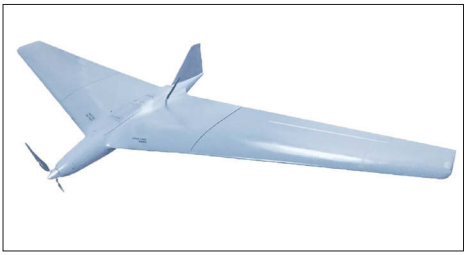
Ukrinmash ▸ Spectator MP-1/563

The Spectator UAS-MP-1/563 is an sUAS developed by PJSC Meridian and marketed by Ukrinmash. Designed for patrol, reconnaissance and surveillance missions, the Spectator can be configured to carry different payload modules, depending on user requirements. It is assessed that Meridian is affiliated with investment firm Ukrinmash, a participant of the State Concern Ukroboronprom Ukrainian Defence Industry which operates internationally and has more than 80,000 employees. **Length:** 1.35m **Wingspan:** 3.02m **MTOW:** 7.5kg **Payload:** 1.5kg **Max speed:** 50kt **Cruise speed:** 38kt **Range:** 50km **Ceiling:** 6,562ft **Endurance:** 2h



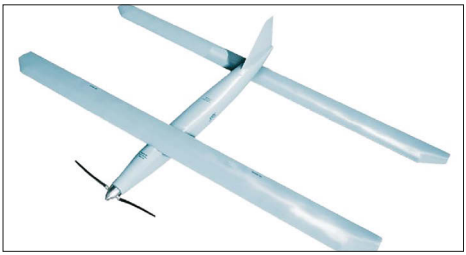
Ukrinmash/Ukroboronprom ▸ Apus 1505A01/1505A04

Apus 1505A01 and Apus 1505A04 small TUAS are part of the Apus 1505 family and appear identical. The development of Apus-series platforms is supported by investment firm Ukrinmash, part of the State Concern Ukroboronprom Ukrainian Defence Industry. **Length:** 0.9m **Wingspan:** 3.2m **Max speed:** 80.99kt **Cruise speed:** 72kt **Range:** 800km **Ceiling:** 11,482.94ft **Endurance:** 8h



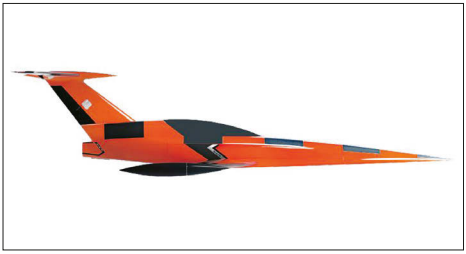
Ukrinmash/Ukroboronprom ▸ Dragonfly 1603

The Dragonfly 1603 twin-wing, hand-launched, small Tactical Unmanned Aerial System (TUAS) is supported by investment firm Ukrinmash, a participant of the State Concern Ukroboronprom Ukrainian Defence Industry. The UAV has an electric motor and is hand-launched and parachute-landed and has an IR camera, with encrypted communication channels. **Length:** 1.25m **Wingspan:** 1.9m **Max speed:** 65kt **Cruise speed:** 27kt **Range:** 140km **Ceiling:** 11,483ft **Endurance:** 2h



Ukrinmash/Ukroboronprom ▸ Obriy

Obriy UAS may come in more than one version, is used for training and is supported by investment firm Ukrinmash, a participant of the State Concern Ukroboronprom Ukrainian Defence Industry. **Length:** 3.35m **Wingspan:** 2.47m **Max speed:** 269.98kt **Range:** 125km **Ceiling:** 18,044.62ft **Endurance:** 0.5h



Ukrspecsystems ▸ PD-2

The PD-2 is a UAS manufactured by the Ukrainian firm UKRSPECSYSTEMS. It is a modular aircraft that can be operated as just a fixed-wing platform or as a hybrid platform, utilising rotary wings for a VTOL capability then operating as a fixed-wing platform while airborne. The modular nature of the PD-2 also means it can host either UKRSPECSYSTEMS or third-party ISTAR gimbals. In addition, the platform can also host other payloads and can carry cargo if required. **Wingspan:** 5m **MTOW:** 55kg **Payload:** 19kg **Range:** 1,100km **Ceiling:** 16,404.2ft **Endurance:** 10h

Ukrspecsystems/DeViRo ▸ Leleka-100

The Leleka-100 is a mini UAV manufactured by the Ukrainian company's Ukrspecsystems and DeViRo. Once launched from a rubber catapult, the platform's electric motor allows the 5.5kg platform to remain airborne for up to 2.5h at a maximum altitude of 1500m. The platform can host a range of EO/IR and photo payloads and can be flown by a remote operator or autonomously. It has been trialled by Ukrainian Armed Forces since 2015. On 11 May 2021, it was approved for ISR missions within the Ukrainian Army. **Length:** 1.14m **Wingspan:** 1.98m **Height:** 0.35m **MTOW:** 5.5kg **Cruise speed:** 37.8kt **Range:** 100km **Ceiling:** 4,921.26ft **Endurance:** 2.5h

Ukrspecsystems/Ukrinmash/Ukroboronprom ▸ People's Drone-1 (PD-1)

The People's Drone-1 (PD-1) is Ukraine's first crowdfunded small VTOL TUAS, hence the name of the aircraft. The platform was developed in late 2014. It is manufactured by Ukrspecsystems and provides Ukraine's armed forces with an 'eye in the sky' on the front lines. **Length:** 2.54m **Wingspan:** 4m **MTOW:** 40kg **Payload:** 10kg **Max speed:** 76kt **Range:** 100km **Ceiling:** 9,843ft **Endurance:** 10h

Ultimate Aviation Group ▸ Viper 1000C

The Viper 1000C is a fixed-wing MALE UAS. Designed to carry EO/IR sensors over vast distances, it can be employed in a wide variety of civil and military roles, including border patrol, infrastructure monitoring and mapping. In order to avoid accumulating the SATCOM C2 costs associated with long-range beyond visual line-of-sight (BVLoS) automatic flight, as well as to circumvent airspace restrictions placed on unmanned vehicles, it is possible to manually pilot the drone. **Length:** 8.52m **Wingspan:** 18m **Height:** 2.45m **MTOW:** 1,100kg **Payload:** 350kg **Max speed:** 143kt **Cruise speed:** 113kt **Ceiling:** 25,000ft **Endurance:** 28h

UMS Skeldar ▸ F-330

The F-330 has been designed as a high-performance, ITAR-free unmanned aircraft. The platform is fitted with a CM160 EO and IR gimbal, which provides continuous full-motion video for up to 5h. Tactical lasers, geo-mapping and various auto-track modes are available if required. **Length:** 2.27m **Wingspan:** 3.3m **Height:** 0.9m **MTOW:** 21.5kg **Payload:** 10kg **Max speed:** 65kt **Cruise speed:** 43kt **Endurance:** 8h

UMS Skeldar ▸ F-720

The F-720 is a fixed-wing UAV with a flexible and modular design to enable it to carry multiple payloads at the same time. **Length:** 4.8m **Wingspan:** 7.2m **Height:** 1.35m **MTOW:** 250kg **Payload:** 70kg **Max speed:** 75.6kt **Cruise speed:** 64.8kt **Range:** 200km **Ceiling:** 16,000ft **Endurance:** 12h

Unknown Manufacturer (Armenia) ▸ X-55

The X-55, or Kh-55, is an indigenously produced Armenian UAS manufactured to provide an ISR capability. Utilised during the 2020 Nagorno-Karabakh conflict, the Armed Forces of Armenia first introduced the platform in 2014. **Length:** 1.88m **Wingspan:** 2.62m **Height:** 0.94m **MTOW:** 50kg **Max speed:** 70.19kt **Cruise speed:** 54kt **Range:** 320km **Ceiling:** 14,763.78ft

Unknown manufacturer (Iran) ▸ Gaza

The Gaza is a HALE UCAV manufactured in Iran. Unveiled on 21 May 2021 by Brigadier General Amir Ali Hajizadeh, commander of the Islamic Revolution Guard Corps aerospace force, the name of the platform is in reference to the Palestinian territory in the context of the May 2021 conflict between Israel and Palestine. An evolution of the Shahed-129 (see separate entry), the Gaza has an endurance of 35h, a service ceiling of 35,000ft, a range of 2,000km and can reportedly carry up to 13 warheads. **Length:** 11m **Wingspan:** 20m **Max speed:** 188.98kt **Range:** 2,000km **Ceiling:** 35,000ft **Endurance:** 35h

Unknown Manufacturer (Iran) ▸ Kaman-22

Unveiled in February 2021, the Kaman-22 is a UAV that is due to enter the service of the Islamic Republic of Iran Air Force (IRIAF) by the end of 2021. With a payload capacity of 300kg and seven hardpoints, the Kaman-22 is capable of hosting a range of optical and combat payloads. In terms of mobility, it is claimed that the Kaman-22 has a range of 3,000km, an endurance of 24 hours and a service ceiling of 8,000m.
Payload: 300kg **Range:** 3,000km **Endurance:** 24h

Unmanned Systems Technology SDN BHD ▸ Aludra Hexacopter

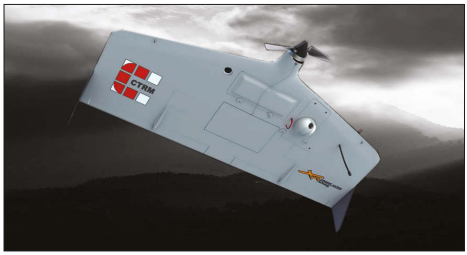
Unmanned Systems Technology unveiled a prototype of the Aludra Hexacopter UAS at the General Police Equipment Exhibition and Conference in Malaysia in 2015. The system, which can be transported in a police multipurpose vehicle, has been designed for government and military use. **Length:** 0.47m **Wingspan:** 0.47m **Height:** 0.27m **MTOW:** 2.5kg **Payload:** 0.12kg **Max speed:** 13kt **Cruise speed:** 10kt **Ceiling:** 100ft **Endurance:** 0.4h

Unmanned Systems Technology SDN BHD ▸ Aludra MK1

The Aludra MK1 UAV was developed for missions including battlefield and maritime surveillance, reconnaissance and traffic monitoring. Able to be transported in a police multipurpose vehicle, it is suitable for both government and military use. The system has been deployed in operations in Semporna, Malaysia. **Length:** 4.57m **Wingspan:** 6.1m **MTOW:** 200kg **Payload:** 25kg **Max speed:** 140kt **Cruise speed:** 119kt **Range:** 100km **Ceiling:** 12,000ft **Endurance:** 3h

Unmanned Systems Technology SDN BHD ▸ Aludra SR-08

The Aludra SR-08 is a transportable system with backup power cells for the UAV and GCS. It can be used for frontline intelligence and surveillance of both sea and land terrain. It can be controlled in both autonomous and semi-autonomous modes. **Length:** 0.42m **Wingspan:** 0.81m **Height:** 0.1m **MTOW:** 2.3kg **Payload:** 0.2kg **Max speed:** 70kt **Cruise speed:** 58kt **Range:** 15km **Ceiling:** 13,123ft **Endurance:** 1.7h



USOL ▸ Alcotán

The Alcotán is a lightweight, hand-launched platform. Designed by USOL, the system features an aerial platform, autopilot and GCS. It is suitable for both civil and military applications. **Length:** 1.3m **Wingspan:** 1.8m **Height:** 0.4m **MTOW:** 3.5kg **Payload:** 0.9kg **Max speed:** 35kt **Cruise speed:** 27kt **Endurance:** 1h

USTI- Unmanned Systems Technology International ▸ UAV MX-1

The MX-1 is a UAS designed with the flexibility to meet the needs of different sectors such as railways, oil, agriculture, energy, telecommunications and scientific research, as well as military applications. **Length:** 3m **Wingspan:** 6m **Height:** 1.3m **MTOW:** 90kg **Payload:** 35kg **Max speed:** 80kt **Cruise speed:** 60kt **Range:** 100km **Ceiling:** 10,000ft **Endurance:** 6h

Vanilla Unmanned ▸ VA001 Vanilla

The VA001 Vanilla is a MALE UAS designed by Vanilla Aircraft, a company owned by Platform Aerospace, for ISR missions. According to the manufacturer, the platform could theoretically achieve a ten-day endurance without payloads. On 24 September 2021, the aircraft was from Rogers Dry Lakebed. It landed on 2 October 2021, staying airborne for a world record 192h, 50min and 47sec. In addition, the Vanilla is designed to have low initial costs coupled with low maintenance and logistical costs. **Wingspan:** 10.97m **MTOW:** 35kg **Payload:** 22.7kg **Max speed:** 64.79kt **Cruise speed:** 54kt **Range:** 27,780km **Ceiling:** 15,000ft **Endurance:** 240h

Vestel Defence Industry ▸ Bora

Bora is a fixed-wing UAV designed for reconnaissance and surveillance applications. **Length:** 3m **Wingspan:** 4.6m **Height:** 0.7m **MTOW:** 85kg **Payload:** 10kg **Max speed:** 80kt **Cruise speed:** 80kt **Range:** 150km **Endurance:** 6h

Vestel Defence Industry ▸ Efe

Efe is a lightweight, fixed-wing UAV designed for target acquisition. The platform was launched in 2006. **Length:** 1.6m **Wingspan:** 2.6m **Height:** 0.3m **MTOW:** 4.6kg **Payload:** 1kg **Max speed:** 27kt **Cruise speed:** 20kt **Range:** 15km **Ceiling:** 12,000ft **Endurance:** 1.5h

Vestel Defence Industry/Intra Defense Technologies ▸ Karayel

Karayel is a fixed-wing UAV designed for reconnaissance, targeting and surveillance applications. Karayel can take off, land and fly a designated mission autonomously. According to the company, it is the first Turkish UAS developed in accordance with NATO Standardisation Agreement 4671. Vestel Defence Industry displayed its armed Karayel-SU variant for the first time at the Dubai Airshow 2017 and it has a larger wing surface area. **Length:** 6.5m **Wingspan:** 10.5m **Height:** 2m **MTOW:** 560kg **Payload:** 70kg **Max speed:** 97kt **Cruise speed:** 80kt **Range:** 150km **Ceiling:** 18,000ft **Endurance:** 20h

Volansi ▸ VOLY M20

The VOLY M20 is a fixed-wing UAS with a VTOL capability. The hybrid platform is highly flexible and can simultaneously carry 20lb of cargo and a 10lb ISR or sensor payload. In July/August 2021, the VOLY M20 completed the first-ever autonomous ship-to-ship UAS deliveries, transporting cargo from a USN to a USCG ship. **Payload:** 13.5kg **Cruise speed:** 65.17kt **Range:** 563.27km **Endurance:** 8h

VTUL a PVO Praha ▸ Sokol

The Sokol is a fixed-wing UAV for security and search and rescue roles. It is powered by a 5hp ZDZ 80 B2RV gasoline engine and has a three-blade propeller. The system conforms to Czech legislation for flight in controlled airspace. **Length:** 2.3m **Wingspan:** 3.3m **Height:** 0.66m **MTOW:** 21kg **Payload:** 3.5kg **Max speed:** 70kt **Cruise speed:** 49kt **Range:** 40km **Ceiling:** 9,840ft **Endurance:** 2.5h

WB Group ▸ FlyEye

Manufactured by WP Group, the Flyeye is a hand-launched mini-UAS that has been designed to provide reconnaissance capabilities. With a modular configuration and the ability to host more than one payload, the platform is widely utilised by the Polish Army, Special Operation Forces, Territorial Forces and the Border Guard. **Length:** 1.8m **Wingspan:** 3.6m **Height:** 1,000m **MTOW:** 11kg **Payload:** 2kg **Max speed:** 65kt **Range:** 30km **Ceiling:** 11,483ft **Endurance:** 2.5h

WB Group ▸ FT-5 LOS

The FT-5 LOS (the Moose) is a short-range tactical UAV designed for EW, ISR and strike missions. It is capable of fully autonomous take-off and landing. The platform is embedded into the W2MPIR anti-A2/AD system WB Group unveiled in September 2021. **Length:** 3.1m **Wingspan:** 6.4m **Height:** 1m **MTOW:** 85kg **Max speed:** 97kt **Cruise speed:** 85kt **Range:** 180km **Ceiling:** 16,404ft **Endurance:** 12h

WB Group ▸ Warmate

The Warmate is a loitering munition and UAS developed by WB Electronics. When configurated as a loitering munition, the platform can be armed with a 1.4kg anti-personal or anti-tank warhead and provides its user with a highly targeted strike capability. When configured as a UAS, the platform is fully recoverable and can be utilised for ISR tasks. In 2017, Poland ordered 100 sets of Warmate loitering munitions, each consisting of ten platforms, under an agreement worth around 100 million Polish Zloty ($27 million). All the systems have since been delivered. **Length:** 1.17m **Wingspan:** 1.59m **MTOW:** 5.3kg **Payload:** 1.4kg **Max speed:** 80.99kt **Range:** 12km **Ceiling:** 1,640ft **Endurance:** 0.8h

WB Group ▸ Warmate R

Manufactured by WB Group, the Warmate R is a UAV version of the Warmate loitering munition. It is based on the same fuselage as the Warmate and is designed to conduct reconnaissance missions and be reused for multiple operations, unlike the Warmate 2 and Warmate TL. **Length:** 1.17m **Wingspan:** 1.59m **MTOW:** 5.2kg **Payload:** 1.4kg **Range:** 15km **Ceiling:** 1,640.42ft **Endurance:** 1.33h

Windracers ▸ Ultra

The Ultra UAV is a fixed-wing twin-engined cargo-carrying platform manufactured by Windracers. The platform is mainly aimed at the commercial market and has conducted trials for the Royal Mail and the UK Government's Industrial Strategy Challenge Fund. It is also involved in the Royal Navy's Heavy Lift Challange. The platform received a £300,000 contract award to further its development. **Payload:** 100kg **Range:** 1,000km

Xi'an Aisheng Technology Group ▸ ASN-209/Nut

The ASN-209 is a MALE UAS developed by Xi'an Aisheng Technology Group in collaboration with Egypt. It is launched by rocket/catapult, recovered by parachute or net and can hold a range of payloads. In Eygpt, the platform is called the Nut or Neuth. The UAV is operated by the Egyptian Armed Forces and the PLA. **Length:** 4.3m **Wingspan:** 7.5m **Height:** 1.5m **MTOW:** 320kg **Payload:** 50kg **Max speed:** 97kt **Cruise speed:** 75kt **Range:** 200km **Ceiling:** 16,400ft **Endurance:** 10h

Yakovlev Design Bureau ▸ Pchela-1T

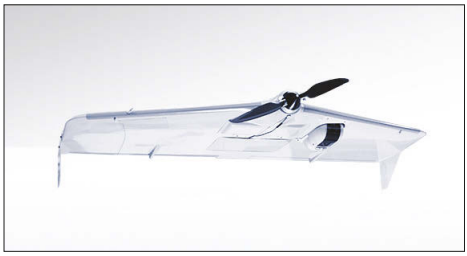
The Pchela-1T is a small UAV designed for real-time reconnaissance missions, battlefield surveillance and observation with downlink video. Up to two platforms can be controlled at a time. **Length:** 2.78m **Wingspan:** 3.25m **Height:** 1.1m **MTOW:** 138kg **Payload:** 70kg **Max speed:** 97kt **Cruise speed:** 80.99kt **Range:** 60km **Ceiling:** 9,800ft **Endurance:** 2h

Zala Aero Group ▸ 421-04M

The 421-04M is a small, close-range UAV developed by the Zala Aero Group. Featuring an integrated payload consisting of a digital camera, video camera or thermal imager, the 421-04M can be employed to collect and transmit photos, video footage and thermal images. The UAV can be used to carry out a wide range of tasks, including search and rescue, surveillance and surveying terrain. **Length:** 0.64m **Wingspan:** 1.61m **MTOW:** 5.5kg **Payload:** 1kg **Max speed:** 54kt **Range:** 25km **Ceiling:** 11,811ft **Endurance:** 1.5h

Zala Aero Group ▸ Zala 421-08M

The Zala 421-08M is a small, fixed-wing UAV designed for ship- or land-based reconnaissance and surveillance, real-time target acquisition and damage assessment. It is intended to be easy to operate and to have a low acoustic, radar and visual signature. **Length:** 0.65m **Wingspan:** 0.81m **MTOW:** 2.5kg **Payload:** 0.3kg **Max speed:** 70kt **Cruise speed:** 35kt **Range:** 15km **Ceiling:** 16,404ft **Endurance:** 1.7h

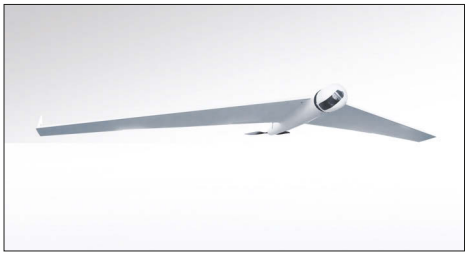


Zala Aero Group ▸ Zala 421-16

The Zala 421-16 is a fixed-wing UAV designed for ship- or land-based reconnaissance and surveillance, real-time target acquisition and bomb damage assessment. **Length:** 0.8m **Wingspan:** 1.62m **Height:** 0.3m **MTOW:** 23kg **Payload:** 5kg **Max speed:** 113.39kt **Cruise speed:** 5.94kt **Range:** 50km **Ceiling:** 16,400ft **Endurance:** 8h

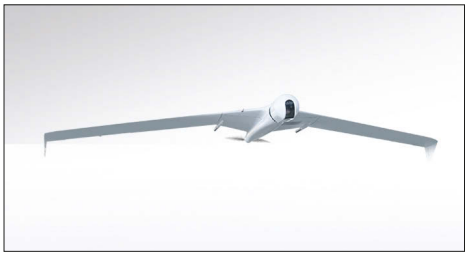
Zala Aero Group ▸ Zala 421-16E

The Zala 421-16E is a fixed-wing UAS designed to conduct ISR missions. Its payload options are changeable modules consisting of a gyro-stabilised video camera, IR camera with 360˚ viewing angle, and built-in camera. The UAS is launched by a pneumatic/mechanic catapult and is powered by an electric motor once airborne. **Length:** 1m **Wingspan:** 2.81m **Height:** 0.3m **MTOW:** 10.5kg **Payload:** 1.5kg **Max speed:** 59.4kt **Cruise speed:** 54kt **Range:** 100km **Ceiling:** 16,404ft **Endurance:** 4h



Zala Aero Group ▸ Zala 421-16E2

The Zala 421-16E2 is a fixed-wing UAV designed for ship- or land-based reconnaissance and surveillance, real-time target acquisition and bomb damage assessment. The flying-wing platform is designed for real-time aerial reconnaissance at any time of the day. **Length:** 1.9m **Wingspan:** 2.8m **MTOW:** 7.5kg **Payload:** 1.5kg **Max speed:** 60kt **Cruise speed:** 54kt **Range:** 245km **Ceiling:** 16,404ft **Endurance:** 4h



Zala Aero Group ▸ Zala 421-16E5

The Zala 421-16E5 is a fixed-wing UAV designed for all-day ship- or land-based reconnaissance and surveillance, real-time target acquisition and battle damage assessment. It is designed for security operations, border patrol, monitoring areas and prevention of environmental disasters. **Length:** 1.5m **Wingspan:** 5m **Height:** 0.5m **MTOW:** 29kg **Payload:** 5kg **Max speed:** 59kt **Cruise speed:** 54kt **Range:** 100km **Ceiling:** 16,404ft **Endurance:** 14h

Zala Aero Group ▸ ZALA 421-16E5G

Manufactured by the ZALA Aero Group, the ZALA 421-16E5G is an airdrome-free UAV that is designed to conduct reconnaissance missions. The platform is equipped with a hybrid powerplant that gives it an endurance of more than 12h and the ability to perform missions silently while running on electric power only. **Wingspan:** 2,815m **Range:** 1,000km **Endurance:** 12h

Zala Aero Group ▸ Zala 421-16EM

The Zala 421-16EM is a fixed-wing UAV designed for ship- or land-based reconnaissance and surveillance, real-time target acquisition and battle damage assessment. The main feature of the system is being able to maintain tactical and technical characteristics at a substantial reduction in size. It has a reconnaissance range of 25km. **Length:** 0.9m **Wingspan:** 1.8m **Height:** 0.2m **MTOW:** 6.5kg **Payload:** 1kg **Max speed:** 65kt **Cruise speed:** 54kt **Range:** 50km **Ceiling:** 16,404ft **Endurance:** 2.5h

Zala Aero Group ▸ ZALA 421-16EV

ZALA 421-16EV is a multipurpose VTOL UAS developed based on the ZALA 421-16E variant. It features four electric motors, HD video streaming at 1,280 × 720 pixels, 16VHD20-IR-TEM EO/IR pod, inertial navigation system (INS) and radio rangefinder. The system can operate from –40˚C to +50˚C. It is capable of automatic landing and take-off. **Wingspan:** 2.8m **MTOW:** 10.5kg **Payload:** 1.5kg **Cruise speed:** 59.4kt **Range:** 100km **Ceiling:** 6,561.68ft **Endurance:** 2h

Zala Aero Group ▸ Zala 421-20

The Zala 421-20 is a fixed-wing UAV designed for land-based reconnaissance and surveillance, battle damage assessment and target location. It is also able to perform resupply missions with two gliding payloads, 25kg each, and able to glide up to 8km from a 5,000ft drop. **Wingspan:** 8m **MTOW:** 250kg **Payload:** 50kg **Max speed:** 108kt **Cruise speed:** 49kt **Range:** 400km **Ceiling:** 16,404ft **Endurance:** 8h

Zala Aero Group ▸ Zala VTOL

Manufactured by Zala Aero Group, the ZALA VTOL is a hybrid platform that can be operated both as a fixed-wing and rotary-wing UAV due to interchangeable wings. Its primarily, interchangeable, payload hosts a 42Mp camera which is augmented by a second 24Mp camera located on the UAV's underside. First displayed at IDEX 2021, the UAV is similar to the ZALA 241-16EV (see separate entry). **Wingspan:** 2.85m **Max speed:** 59.4kt

Zhong Tian Guide Control Technology Company ▸ FL-1

The FL-1, sometimes called the Feilong-1 or Flying Dragon-1, is an unmanned, long-endurance platform under development for civilian and military use. Its design is aimed towards air freight, ground observation, marine search and rescue, border patrol and armed attack. Each wing features a hardpoint to mount weapons for the latter type of mission, and its large payload makes it ideal for transporting cargo. **MTOW:** 3,200kg **Payload:** 1,400kg **Max speed:** 172.79kt **Range:** 2,000km **Ceiling:** 26,246.72ft **Endurance:** 45h

Zhong Tian Guide Control Technology Company ▸ FL-2

The FL-2 is a turbofan-powered multirole MALE UCAV designed to conduct precision strikes against key assets and provide an ISR capability. First displayed at Airshow China 2018, in April 2021 Zhongtian Feilon claimed the prototype of the UAV had been completed. **MTOW:** 22,000kg **Payload:** 6,000kg **Max speed:** 421.17kt **Cruise speed:** 323.97kt **Range:** 7,000km **Ceiling:** 49,212.6ft **Endurance:** 10h

Zhong Tian Guide Control Technology Company ▸ FL-71

The FL-71 (Fei Long-2 or Flying Dragon-2) is a supersonic unmanned transportation platform designed by ZT Guide Control. The design was presented at Airshow China in November of 2018, but it was then still in the design stage. The platform has a separated V-tail and a diamond flying-wing design with stealthy surfaces. **MTOW:** 3,000kg **Max speed:** 1,187.9kt **Cruise speed:** 464.36kt **Range:** 900km **Ceiling:** 49,212.5ft **Endurance:** 1h

Zhong Tian Guide Control Technology Company ▸ Unmanned Airborne Swarm System

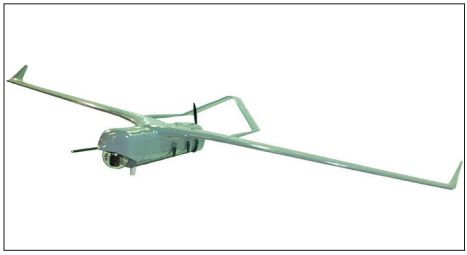
Zhongtian Feilong announced on 1 April 2021 that its as yet unmanned MALE UAV had conducted a test flight in March 2021. During this flight, the unmanned airborne swarm system, as Zhongitan Feilong referred to it, performed a vertical take-off before launching smaller UAVs from under its fuselage mid-flight. The platform, which is essentially an aircraft carrier for UAVs, is set to increase in size throughout development.

Zhong Tian Guide Control Technology Company ▸ Tiger Shark

The Tiger Shark reconnaissance UAV is launched from a catapult rail and is suitable for both civilian and military applications. In November 2018, a company spokesperson confirmed that the platform had several customers already, though it is unclear whether the UAV has left the development stage. **Length:** 1.8m **Wingspan:** 3.8m **Max speed:** 62.1kt **Range:** 50km **Ceiling:** 11,482.94ft **Endurance:** 2h

Z-sistem ▸ Ucankaya-20

Ucankaya-20 is a TUAV being developed by Z-sistem. It has a maximum range of 25km and an endurance of up to 8h. The platform can operate between -20˚C and +65˚C and is powered by a 35cc single-cylinder unleaded gasoline engine. The system comes with a rugged transport case. **Length:** 1.95m **Wingspan:** 3.6m **Height:** 0.46m **MTOW:** 21kg **Payload:** 2kg **Max speed:** 77kt **Cruise speed:** 50kt **Range:** 25km **Ceiling:** 15,000ft **Endurance:** 8h



Rotary-wing UAVs ▸ 558 ARP JSC ▸ Shershen

The Shershen UAS is a multirotor device designed for EO terrain reconnaissance missions. The unit consists of a TV module, an IR module, a ground control station, a container for storage and transportation and operational documentation. The device can be transported in the backpack of its operator. **MTOW:** 3kg **Range:** 5km **Endurance:** 0.5h

ADASI ▸ Garmoosha

Garmoosha, or Garmousha, is a VTOL rotary-wing UAV manufactured by ADASI for ISR missions. It is designed to carry a payload of up to 100kg and can fly up to a distance of 150km for six hours. It was first unveiled at an exhibition in Abu Dhabi on 23 February 2020. The platform is due to be delivered to the UAE Armed Forces in early 2022. **Length:** 600cm **Width:** 160cm **Height:** 280cm **MTOW:** 500kg **Payload:** 100kg **Range:** 150km **Ceiling:** 100,000ft **Endurance:** 6h

ADASI ▸ QX-1

Manufactured by ADASI, a subsidiary of the EDGE Group, the QX-1 is a micro loitering munition and UAS. The platform is electrically powered, VTOL capable, backpack transportable, and features multiple fuse options. The QX-1 was unveiled at IDEX 2021, alongside the QX-2, QX-3 and QX-4. ADASI later expanded the family with the QX-5 and QX-6. **MTOW:** 3kg **Payload:** 0.5kg **Range:** 10km **Ceiling:** 6,561.68ft **Endurance:** 0.33h

ADASI ▸ QX-2

Designed for use by infantry and special forces, the QX-2 is a mini loitering munition manufactured by ASADI. The platform can be controlled by a remote operator and can also strike targets autonomously thanks to its Global Navigation Satellite System and up to 1.5kg armed payload. This payload capacity is also partly taken up by the QX-2's surveillance EO/IR gimbal. The QX family consists of six platforms of various sizes. In addition to the QX-2, the family consists of the QX-1, QX-3, QX-4, QX-5 and QX-6. **MTOW:** 8kg **Payload:** 1.5kg **Range:** 20km **Ceiling:** 6,561.68ft **Endurance:** 0.5h

ADASI ▸ QX-3

Manufactured by ADASI, the QX-3 is a platform that appears visually similar to the quadcopter designs of the QX-1 and QX-2. However, it can also be configured to operate as a fixed-wing platform, like its larger QX-4 sibling. Transportable by light vehicle, the system can carry up to four precision-guided munitions, offers a stand-off range of 40km and an endurance of up to 40min for extended mission scenarios. The QX family consists of six platforms of various sizes. In addition to the QX-3, the family consists of the QX-1, QX-2, QX-4, QX-5 and QX-6. **MTOW:** 20kg **Payload:** 6kg **Range:** 40km **Ceiling:** 2,000ft **Endurance:** 0.67h

ADASI ▸ QX-6

Unveiled at the Dubai Airshow 2021, the QX-6 is a cargo-carrying UAV manufactured by ADASI, a subsidiary of the EDGE Group. The QX-6 features an autopilot and communications system, which allows it to perform cargo-carrying missions autonomously. Depending on its payload configuration, the system has an endurance of up to four hours and can be utilised for military and commercial applications. The QX family consists of six platforms of various sizes, the QX-1, QX-2, QX-3, QX-4, QX-5 and QX-6. **MTOW:** 500kg **Payload:** 150kg **Range:** 100km **Ceiling:** 10,000ft **Endurance:** 4h

Advanced Electronics Company ▸ Bariq

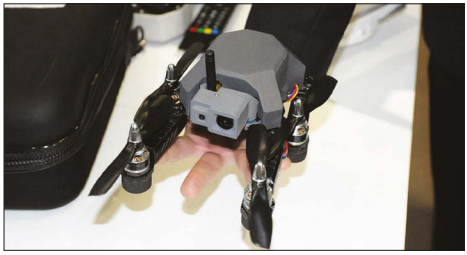
The Bariq is a small hexacopter UAV manufactured by Advanced Electronics Company, a Saudi Arabian Military Industries company. It is a highly customizable platform and can consequently be fitted with a range of payloads, such as ISR cameras or cargo. The drone is powered by a hybrid power system consisting of a two-stroke single-cylinder IC engine coupled with an electric power generator. **Length:** 200cm **Payload:** 12kg **Max speed:** 27kt **Range:** 85km **Ceiling:** 13,123.36ft **Endurance:** 4h

AERACCESS ▸ Hawker Q800X

Manufactured by AERACCESS, the Hawker Q800X is a quadcopter UAS designed for ISR applications. A wide range of AERACCESS developed payloads can be fitted to the platform, these include/IR cameras, CBRNe Sensors, Laser Range Finder and designators, Nocturn Night Vision sensors and an IP Mesh. Capable of operating in resist harsh weather conditions, AERACCESS announced an undisclosed country from the Middle East acquired several units of the platform for €2 million in late 2019. A year later, several units were delivered to the Malian Armed Forces. **Length:** 89cm **MTOW:** 8kg **Payload:** 5kg **Max speed:** 32.4kt **Endurance:** 0.83h

AERACCESS ▸ HawkEye Mk2

The HawkEye Mk2, or HawkEye MkII, is a mini-UAS manufactured by Aeracess. It provides real-time day & night short-range reconnaissance, perimeter surveillance and tactical situational awareness. The platform is an evolution of the HawkEye Mk1 with enhanced features such as digital communications, GPS-denied navigation and a dual-low light visible and thermal camera. **Length:** 68.5cm **Width:** 60cm **Height:** 32cm **MTOW:** 5kg **Range:** 15km **Endurance:** 0.67h



AERACCESS ▸ NanoHawk

The NanoHawk is a micro-UAV specially designed for Special Forces to fly indoors during close-quarters battle operations. Fitted with visual and thermal cameras, the platform contains a flight assist mode which allows the operator to remain focused on their mission rather than controlling the device. In June 2018, the French Special Forces selected the platform to meet its requirements for a UAV to operate within buildings. **Length:** 20cm **Width:** 20cm **Height:** 10cm **Rotor diameter:** 5cm **MTOW:** 0.3kg **Range:** 0.3km **Endurance:** 0.13h

AERACCESS ▸ Sparrowhawk

The Sparrowhawk is an indoor platform built jointly with the police for law enforcement and indoor intervention. Used mainly by SWAT police and some special forces, it hosts an EO/IR camera. It can carry an additional payload, such as teargas grenades, flashbangs, or any other lethal payload to fight terrorism and urban warfare.

Aero Surveillance ▸ ASV 30-470

The ASV 30-470 is a high-endurance quadrotor UAV equipped with a dual-sensor, gyro-stabilised payload. The ASV 30-470 includes onboard image processing systems with optional custom payloads and a choice of ground control station (GCS). **Length:** 190cm **Width:** 190cm **Height:** 80cm **Rotor diameter:** 20cm **MTOW:** 14kg **Payload:** 4kg **Range:** 10km **Endurance:** 1.17h

Aero Surveillance ▸ ASV 30-860

The ASV 30-860 is an octorotor UAV equipped with a high-end, day/night, gyro-stabilised gimbal. The platform includes onboard image processing systems and a portable ground control station. Training and operational services are also available for the system. **Length:** 200cm **Width:** 200cm **Height:** 80cm **Rotor diameter:** 50cm **MTOW:** 18kg **Payload:** 7kg **Range:** 10km **Endurance:** 1h

Aeronautics/Azad Systems ▸ Pegasus 120

The Pegasus 120 is Aeronautics' first multirotor platform. With a maximum payload weight of up to 75kg and an ability to carry multiple payloads, including COMINT, the Pegasus 120 is designed for defence and security missions, as well as commercial applications. Aeronautics displayed the Pegasus 120 for the first time at the Paris Air Show in June 2017. **Length:** 190cm **Width:** 190cm **Height:** 60cm **MTOW:** 120kg **Payload:** 75kg **Max speed:** 40kt **Cruise speed:** 32kt **Range:** 15km **Endurance:** 2h

Aero-Starloop High-tec ▸ BH-90

The BH-90 is a rotary-wing VTOL UAS designed for both civil and military applications. It is the smallest member of a series of rotary-wing drones developed by Aero-Starloop, which also includes the larger BH-160. These designs are notable for their highly modular construction which allows a variety of mission-specific payloads to be accommodated without compromising the flight and performance characteristics of the drones. Intended to be easy to use and maintain, these platforms can operate fully autonomously. **Length:** 252cm **Width:** 73cm **Rotor diameter:** 294cm **MTOW:** 90kg **Payload:** 35kg **Max speed:** 97kt **Cruise speed:** 54kt **Range:** 250km **Ceiling:** 14,750ft **Endurance:** 2.5h

Aero-Starloop High-tec ▸ BH-160

The BH-160 is a rotary-wing VTOL UAV designed for both civil and military applications. It is the largest member of a series of rotary-wing drones developed by Aero-Starloop, which also includes the smaller BH-90. These designs are notable for their highly modular construction which allows a variety of mission-specific payloads to be accommodated without compromising the flight and performance characteristics of the drones. Intended to be easy to use and maintain, these platforms can operate fully autonomously. **Length:** 318cm **Width:** 91.5cm **Rotor diameter:** 369.4cm **MTOW:** 160kg **Payload:** 65kg **Max speed:** 100kt **Cruise speed:** 65kt **Range:** 350km **Ceiling:** 15,750ft **Endurance:** 3.5h

Aeryon Labs ▸ SkyRanger

The SkyRanger is a VTOL UAS developed for land and maritime military and civil applications, including ISR. Its folding design enables it to be carried in a backpack and rapidly prepared for launch. In February 2017, Aeryon announced that SkyRanger successfully completed the first BVLoS flight in Canada. **Length:** 60cm **Width:** 60cm **Height:** 32cm **Rotor diameter:** 39cm **MTOW:** 5kg **Payload:** 0.7kg **Max speed:** 27kt **Cruise speed:** 21.6kt **Range:** 3km **Ceiling:** 15,000ft **Endurance:** 0.83h

Airbus Defence & Space (UK) ▸ Tanan

The Tanan is VTOL UAS developed for maritime and land missions. It is capable of completing eight hour missions over a 180km range with a 50kg payload. **Length:** 430cm **Width:** 100cm **Height:** 120cm **Rotor diameter:** 500cm **MTOW:** 350kg **Payload:** 80kg **Max speed:** 81kt **Cruise speed:** 64.8kt **Range:** 180km **Ceiling:** 12,000ft **Endurance:** 8h

Airbus Helicopters ▸ VSR700

The VSR700 is a rotary-wing UAS developed by Airbus Helicopters in partnership with Naval Group (formerly DCNS). Designed to be launched from naval vessels, the UAV is compact enough to fit within anything from small corvettes to large warships. Capable of carrying EO/IR sensors as well as a tactical radar, the VSR700 can be configured for a wide variety of roles, including search and rescue, maritime security, anti-surface warfare and ISTAR. **Length:** 620cm **Width:** 200cm **Height:** 228cm **Rotor diameter:** 720cm **MTOW:** 700kg **Payload:** 150kg **Max speed:** 99.89kt **Cruise speed:** 120kt **Range:** 148.16km **Ceiling:** 19,685.04ft **Endurance:** 13h

AirRobot ▸ AR100-B

The AR100-B is a quadcopter mini-UAV based on the AR100. With its interchangeable payload, the UAV can be used for a range of applications, including remote detection of hazardous materials, hover-and-stare and perch-and-stare operations and day and night surveillance. **Length:** 100cm **Width:** 100cm **Height:** 4,000cm **MTOW:** 0.9kg **Payload:** 0.2kg **Max speed:** 23kt **Cruise speed:** 18kt **Range:** 1.5km **Ceiling:** 3,000ft **Endurance:** 0.5h

Alcore Technologies ▸ Easycopter

Easycopter is a small, lightweight VTOL UAV especially designed to operate stealthily in built-up urban areas. Its small size means it uses less power. It has especially large rotor blades, a low RPM and low noise levels. **Length:** 65cm **Width:** 20cm **Height:** 20cm **Rotor diameter:** 65cm **MTOW:** 1.6kg **Payload:** 0.2kg **Range:** 1km **Endurance:** 0.33h

Alliance Solutions Group ▸ Argus Elite

The Argus Elite is a rotary-wing micro UAS manufactured Alliance Solutions Group (ASG). Its EO/IR cameras and hazardous material sensors allow it to capture positional, chemical, radiological, visual and infrared information which it communicates back to its operator in real-time. This capability means the Argus Elite is marketed at first responders and CBRN teams. **Length:** 20cm **Width:** 36cm **Height:** 43cm **MTOW:** 1.4kg **Max speed:** 30kt **Cruise speed:** 17kt **Range:** 5km **Ceiling:** 500ft **Endurance:** 0.5h

Alpha Unmanned Systems ▸ Alpha 800

The Alpha 800 is a rotary-wing UAS that is suitable for a variety of civil and military applications. Capable of both manual or fully autonomous flight, it can remain airborne for up to three hours and has a maximum range of 30km. A payload of up to three kilograms can be carried beneath the fuselage, and several sensor gimbals, as well as IR, multispectral and lidar sensors, have already been successfully integrated onto the platform. **Length:** 170cm **Width:** 48cm **Height:** 60cm **Rotor diameter:** 180cm **MTOW:** 14kg **Payload:** 3kg **Cruise speed:** 30kt **Range:** 30km **Ceiling:** 9,843ft **Endurance:** 2.8h

Alpi Aviation ▸ Sixton-A

The Sixton-A is a military-certified, electric-powered hexarotor micro-UAV for tactical surveillance, force protection, special operations and law enforcement. A backpack weighing 25kg contains three ready-to-fly UAVs, two-day cameras, one IR camera and a ground control station. **Length:** 100cm **Width:** 75cm **Height:** 100cm **Max speed:** 7.6kt **Cruise speed:** 4.86kt **Range:** 5km **Ceiling:** 7,500ft **Endurance:** 0.75h

Alpi Aviation ▸ Sixton-B

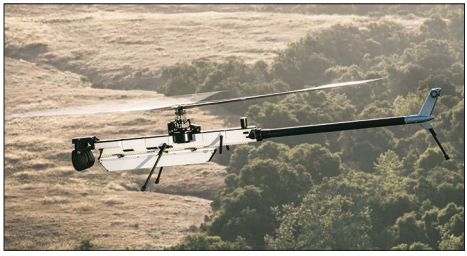
The Sixton-B is a military-certified, electric-powered VTOL micro-UAV for tactical surveillance, force protection, special operations and law enforcement. A backpack weighing 25kg contains three ready-to-fly UAVs, two-day cameras, one IR camera and a ground control station. The platform has three rotors mounted at the end of three arms. **Length:** 100cm **Width:** 100cm **Height:** 100cm **Rotor diameter:** 30cm **MTOW:** 7kg **Payload:** 0.5kg **Max speed:** 7.6kt **Cruise speed:** 5kt **Range:** 3km **Ceiling:** 7,500ft **Endurance:** 0.75h

Anavia ▸ Anavia HT-100

Manufactured by Avania, the Avania HT-100 is a small rotary-wing UAS. The platform has a Flettner double rotor system, an autonomous flight control system and a range of safety and redundancy features. A range of payloads can be quickly attached to the platform, allowing it to be utilised in several roles, such as ISR and cargo-carrying. **Length:** 282cm **Width:** 72cm **Height:** 100cm **Rotor diameter:** 375cm **MTOW:** 120kg **Max speed:** 64.79kt **Ceiling:** 9,842.52ft **Endurance:** 4.17h

Anduril ▸ Ghost 4

Ghost 4 is an autonomous VTOL small UAS manufactured by Anduril. Operating on the Lattice AI platform and featuring a small acoustic and visual signature, Ghost 4 can autonomously detect, classify, and track objects of interest without being detected. Featuring three methods of payload integration, modular payload bays, an ISR gimbal and an adaptable rail, the highly modular platform is designed to be used on various missions in any environment — including ISR, counter intrusion, SAR, and signals intelligence. **Length:** 272.5cm **Width:** 42cm **Height:** 43.5cm **Rotor diameter:** 227.4cm **Payload:** 0.01kg **Max speed:** 204.1kt **Cruise speed:** 106.91kt **Range:** 0.03km **Ceiling:** 39,370.08ft **Endurance:** 1h



ARI Savunma ▸ ARI Amphibious Drone

In March 2018, ARI Savunma Ve Havacilik released the ARI Amphibious Drone.The UAV can fly for more than 25min at a speed of ~56km/h thanks to its 6S 7000mAh battery. As its name suggests, the structure and materials of the UAV allow it to fly, navigate the surface of the water and even operate submerged in shallow water. **Length:** 65cm **Width:** 74cm **Height:** 24cm **Payload:** 2kg **Max speed:** 30.24kt **Endurance:** 0.42h

ARI Savunma ▸ ARI-80

The ARI-80, manufactured by ARI Savunma, is a rotary-wing UAV designed for wide-area flights. Powered by a Li-on 6S battery, the UAV is capable of autonomous flight and can host a range of camera payloads, such as the Sony Alpha a6300, a Sony RX1R II and the Parrot SEQUOIA. **Rotor diameter:** 81cm **MTOW:** 8kg **Payload:** 2kg **Max speed:** 38.88kt **Range:** 10km **Endurance:** 0.67h

Ascent Aerosystems ▸ Spirit

The Spirit is a coaxial-style UAS manufactured by Ascent AeroSystems. The cylindrical platform has a modular configuration that allows for the integration of emerging technology and a growing ecosystem of payloads, power sources and launch methods. According to Ascent AeroSystems, the platform can be used for ISR missions, target designation and as a communications relay. **Length:** 10.6cm **Width:** 10.67cm **Height:** 22.86cm **Rotor diameter:** 18cm **MTOW:** 6.1kg **Payload:** 4.54kg **Max speed:** 52.14kt **Cruise speed:** 26.07kt **Range:** 19.31km **Ceiling:** 16,404.2ft **Endurance:** 0.37h

Aselsan ▸ ARI-1T

The ARI-1T is a small, rotary-wing UAV that meets military requirements for surveillance and reconnaissance missions. The system can operate autonomously according to a mission plan that can be loaded before or during flight. **Length:** 200cm **Width:** 50cm **Height:** 50cm **Rotor diameter:** 150cm **MTOW:** 38kg **Payload:** 3kg **Range:** 15km **Ceiling:** 10,000ft **Endurance:** 2h

Aselsan ▸ Saka

Designed for ISR missions, the Saka is a micro-UAV manufactured by Turkish manufacturer Aselsan. With an MTOW of 600g, the rotary-wing quadcopter is easily transportable and has the ability to work in closed urban spaces, caves and similar environments. **MTOW:** 0.6kg

Aselsan ▸ Serçe-1

Developed by Aselsan, Serçe-1 is a fully autonomous tri-rotor UAV that can be equipped with different payloads for ISR missions as well as road traffic information and border security. It has rotors above and below the hub at the end of each arm. **Length:** 150cm **Width:** 150cm **Height:** 100cm **Rotor diameter:** 80cm **MTOW:** 6.5kg **Payload:** 1kg **Max speed:** 30kt **Cruise speed:** 24.3kt **Range:** 5km **Ceiling:** 10,000ft **Endurance:** 0.5h

Aselsan ▸ Tepegöz

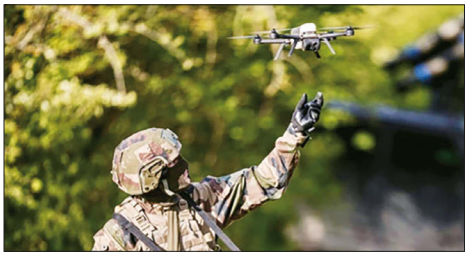
The Aselsan Tepegöz is a tethered, persistent surveillance system designed to provide jamming-resistant 24/7 surveillance, intelligence and early warning capability for forward operating bases, critical facilities, expeditionary force deployment and forward observers.

Asisguard ▸ Songar

Unveiled at IDEF 2019, the Songar is a rotary-wing UAS manufactured by Asisgurad, a division of Turkish company Asis. The aircraft can be acquired with or without a camera gimble and armed with either a 5.56mm remote machine gun, a Togan 81mm grenade launcher or a 40mm grenade thrower. The platform features both autonomous and manual flight control modes. In early 2020 Asisguard announced that the system had entered service with the Turkish Armed Forces. **Length:** 145cm **Width:** 145cm **Height:** 70cm **Rotor diameter:** 30cm **MTOW:** 45kg **Payload:** 25kg **Range:** 3km **Ceiling:** 9,200ft

Asseco ▸ Mayfly

The Mayfly UAV is a micro VTOL UAS produced in Poland by Asseco. It is designed to perform surveillance and observation duties in a variety of conditions, increasing situational awareness on the battlefield with minimal involvement of ground personal. The Polish Armed Forces awarded a contract worth US$1.19 million for six Mayfly Systems in September 2020. Each Mayfly system consists of four Mayfly UAVs and supporting hardware. **Max speed:** 19.44kt **Range:** 2km **Endurance:** 0.5h

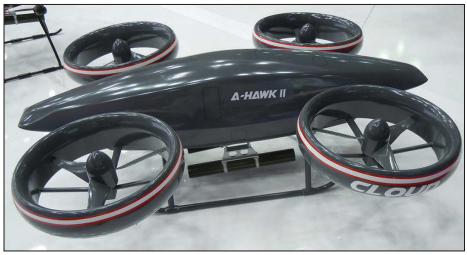


AVIC – Aviation Industry Corporation of China ▸ A-Hawk I (Cloud-1)

Part of a strike-capable ISTAR series of A-Hawk platforms is the A-Hawk I (Cloud-1) VTOL developed by AVIC. Reports indicate that the A-Hawk I enables soldiers to operate in urban counter-sniper areas and emergency battlefield transport missions. Applications also include cargo transport. **Length:** 347cm **Width:** 347cm **MTOW:** 175kg **Payload:** 65kg **Max speed:** 32.4kt **Ceiling:** 9,850ft **Endurance:** 0.5h

AVIC – Aviation Industry Corporation of China ▸ A-Hawk II (Cloud-2)

The A-Hawk II (Cloud-2) is an armed quadrotor UAV that is part of the strike-capable ISTAR series of A-Hawk platforms developed by Aviation Industry Corporation of China. No details have been released of its development history or even if the first flight of a full-sized platform has occurred. **MTOW:** 120kg **Max speed:** 32.4kt **Ceiling:** 16,400ft **Endurance:** 4h



AVIC – Aviation Industry Corporation of China ▸ AV500

The AV500 is an unmanned helicopter developed by AVIC. It is reported that the AV500 platform carried out a test flight at an altitude of more than 14,700ft in northwest China's Gansu Province in October 2013. **Length:** 720cm **Height:** 241cm **MTOW:** 500kg **Payload:** 160kg **Max speed:** 91.8kt **Cruise speed:** 64.8kt **Range:** 200km **Ceiling:** 13,100ft **Endurance:** 8h

AVIC – Aviation Industry Corporation of China ▸ AV500W

The AV500W unmanned helicopter, developed by AVIC's Helicopter R&D Institute, was unveiled at the Zhuhai Airshow in November 2016. It was reported that the platform fired weapons on its maiden flight in August 2017. **Length:** 720cm **Width:** 150cm **Height:** 240cm **Rotor diameter:** 1,000cm **MTOW:** 470kg **Payload:** 160kg **Max speed:** 110kt **Cruise speed:** 91.8kt **Ceiling:** 13,100ft **Endurance:** 4h

AVID Aerospace ▸ AVID EDF-8

The AVID EDF-8 is a micro-UAV for use in tight or indoor spaces, designed for use with the US Navy, inspecting ballast and fuel tanks. Duct design shrouds the fan for safety and protects it whilst providing lift. The platform can accommodate very light payloads weighing 0.5kg or less. **Length:** 35.56cm **Width:** 35.56cm **Height:** 43.18cm **Rotor diameter:** 25.4cm **MTOW:** 1.4kg **Payload:** 0.5kg **Range:** 1km **Ceiling:** 500ft **Endurance:** 0.5h

Avidrone Aerospace ▸ 210TL

Manufactured by Avidrone Aerospace, the 210TL is a tandem rotary UAS that is designed to autonomously transport cargo that can weigh up to 25kg. The platform was displayed at IDEX 2021 at Iris Automation's booth since it features their Casia Detect and Avoid (DAA) system which, in combination with Avidrone's G4 autopilot system, helps the platform autonomously complete its deliveries. **Payload:** 25kg **Max speed:** 54kt **Range:** 120km **Endurance:** 1.5h

BAE Systems/Malloy Aeronautics ▸ T-650

Debuted at DSEI 2021, the T-650 is a multi-role quadcopter UAS manufactured by BAE Systems in collaboration with Malloy Aeronautics. The electric-powered platform produces zero carbon and has several potential applications, such as cargo-carrying, casualty evacuation, close air support, maritime search and rescue, ISR, anti-submarine warfare or maritime mine countermeasures. **Payload:** 300kg **Max speed:** 75.59kt **Range:** 30km

Baykar ▸ Malazgirt Mini

The Malazgirt Mini is an autonomous VTOL UAV. Fielded since 2006, the Malazgirt Mini was the world's first operational mini unmanned helicopter system, according to the company. **Length:** 120cm **Height:** 90cm **Rotor diameter:** 180cm **MTOW:** 12kg **Payload:** 2kg **Max speed:** 50kt **Cruise speed:** 40kt **Range:** 4.57km **Ceiling:** 15,000ft **Endurance:** 1.5h

BCB International ▸ SQ-7

The SQ-7 is a rotary-wing VTOL UAV that prioritises flight stability and payload modularity. As the largest quadrotor design in the BCB International range of UAVs, the SQ-7 can carry a range of different payloads in its modular underbelly bay. Released in 2015, the SQ-7 is marketed at both civil and military customers. **Length:** 183cm **Width:** 183cm **Height:** 52cm **Rotor diameter:** 75cm **MTOW:** 12kg **Payload:** 6kg **Max speed:** 27kt **Cruise speed:** 22.68kt **Range:** 16km **Ceiling:** 3,280ft **Endurance:** 0.58h

Beijing Flightwin-innovation technology Co. Ltd ▸ Cres

Cres, also known as H50, is a single-rotor UAV fitted with a water-cooled rotary engine that has been designed for military and commercial missions. The aircraft can operate in high-altitude conditions and can be controlled in automatic or semi-automatic mode. **Length:** 320cm **Width:** 80cm **Height:** 120cm **MTOW:** 140kg **Payload:** 50kg **Max speed:** 43.2kt **Cruise speed:** 27kt **Ceiling:** 8,200ft **Endurance:** 2h

Beijing Sagetown Technologies Co. ▸ Z8

The Z8 is an octorotor UAV that has been designed for various roles such as observation, surveillance and agricultural use. The Z8 has a maximum take-off weight of 16kg with a battery and can carry a payload of up to five kilograms. **Length:** 130cm **Width:** 130cm **Height:** 48cm **Rotor diameter:** 35cm **MTOW:** 16kg **Payload:** 5kg **Max speed:** 19.5kt **Cruise speed:** 9.72kt **Range:** 5km **Ceiling:** 1,640ft **Endurance:** 0.67h

Bell Helicopter Textron ▸ HSVTOL

Bell, a subsidiary of Textron, revealed on 2 August 2021 the High-Speed VTOL (HSVTOL) UAS. According to Bell, the developmental UAS combines the hover capability of a helicopter with the speed, range and survivability of a fixed-wing fighter aircraft. The platform is scalable, ranging from a maximum take-off weight of 100,000lb to 4,000lb. **MTOW:** 45,359.2kg **Max speed:** 400kt

Boeing Defense, Space & Security ▸ Unmanned Little Bird H-6U

The Unmanned Little Bird H-6U is an MD 530F single-turbine helicopter that has been modified to demonstrate and showcase unmanned technology. It is envisioned that this optionally manned aircraft could be used for resupply, target identification and tracking, communications relay and weapons delivery, among other roles. **Length:** 700cm **Width:** 140cm **Height:** 240cm **Rotor diameter:** 840cm **MTOW:** 1,500kg **Payload:** 635kg **Max speed:** 145kt **Cruise speed:** 100kt **Range:** 430km **Ceiling:** 20,000ft **Endurance:** 6h

Chartis Federal ▸ MK4-RX

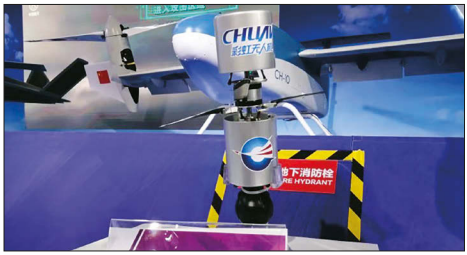
Manufactured by Chartis Federal, the MK4-RX is a small cargo-carrying UAV that can autonomously deliver up to 45lbs of cargo over a range of 17.5k. The quadcopter platform is being evaluated in the US Marines Tactical Resupply Unmanned Aircraft System (TRUAS) programme. It was awarded second prize in the January 2020 USN directed Tactical Resupply UAS Challange (PMA-263). **Payload:** 20.41kg

China Aerospace Science and Technology Corporation (CASC) ▸ CH-500

The CH-500 is a small, coaxial, rotary-wing, multipurpose UCAV and is manoeuvrable due to its tandem, dual-rotor arrangement without a tail rotor – also making it more compact. Its small size and ability to quickly react makes the platform ideal for smaller formations, giving Chinese commanders rapid response capability in providing last-minute airstrikes. **MTOW:** 150kg **Max speed:** 65kt **Cruise speed:** 54kt **Range:** 200km **Ceiling:** 13,450ft

China Aerospace Science and Technology Corporation (CASC) ▸ CH-817

Unveiled at the 13th China International Aviation and Aerospace Exhibition, held in Zhuhai between September and October 2021, the CH-817 is a micro UAV and loitering munition developed by the China Academy of Aerospace Aerodynamics, a subsidiary of CASC. Sometimes called the Rainbow-817 or Cai Hong-817, the VTOL man-portable platform is designed to perform tactical surveillance or strike missions. **MTOW:** 0.85kg **Max speed:** 34.99kt **Endurance:** 0.25h



China Aerospace Science and Technology Corporation (CASC) ▸ CH-906A

The CH-906A is a hexarotor platform designed for applications within a range of sectors, including the military, police, fire and rescue, forestry and environment protection agencies. Aside from standard reconnaissance roles, the platform is suited to communication relay, disaster monitoring, fire detection and urban anti-terrorism applications. **MTOW:** 15kg **Payload:** 5kg **Max speed:** 32.4kt **Cruise speed:** 25kt **Range:** 10km **Ceiling:** 984ft **Endurance:** 0.83h

China Aerospace Science and Technology Corporation (CASC) ▸ Sky Archer

The Sky Archer is a short-endurance unmanned quadcopter designed for military use. It weighs 38kg and can reportedly carry two 50mm recoilless rocket launchers. **MTOW:** 38kg **Range:** 5km **Endurance:** 0.5h

China Electronics Technology Group Corporation (CETC) ▸ CSC-002

The CSC-002 is a hybrid UAV with a 140kg maximum take-off weight and 6h flight endurance. Featuring four rotors and a pusher propeller, CETC claimed in November of 2018 that it has the largest take-off weight of any Chinese VTOL fixed-wing UAV. It is capable of fully automatic take-offs and landings. **Length:** 430cm **Width:** 610cm **Height:** 90cm **MTOW:** 140kg **Payload:** 30kg **Cruise speed:** 54kt **Range:** 720km **Endurance:** 6h

CM Drones ▸ DRIMP

The Drone for Reconnaissance and Intervention in Perilous Environments (DRIMP) is a multirotor UAV that has been designed specifically for counterterrorism operations, with the ability to operate in a maritime environment. CM Drones displayed the UAV at the SOFINS exhibition near Bordeaux in March 2017, although the system was unveiled for the first time at Eurosatory 2016 in Paris. **Payload:** 6kg

CopterPix Pro ▸ ERE-95

The CopterPix Pro ERE-95 Desert Storm is a medium hexarotor UAV capable of carrying almost half its platform weight in payload for a period of almost 30min. The company states that it has demonstrated an endurance of 50min over a distance of 26km with a payload of two kilograms. **Length:** 160cm **Width:** 160cm **Height:** 48cm **Rotor diameter:** 53cm **MTOW:** 13kg **Payload:** 6kg **Max speed:** 36.93kt **Cruise speed:** 23.33kt **Range:** 10km **Ceiling:** 8,202.1ft **Endurance:** 1h

CopterPix Pro ▸ ERE-150

The CopterPix Pro ERE-150 Desert Mule is a long-range, heavy-lift octorotor UAV designed for homeland security, defence, delivery, rescue and fire prevention missions. **Length:** 290cm **Width:** 290cm **Height:** 105cm **Rotor diameter:** 76cm **MTOW:** 38kg **Payload:** 15kg **Max speed:** 21.38kt **Cruise speed:** 15.55kt **Range:** 10km **Ceiling:** 4,921.26ft **Endurance:** 1h

CTRM Aero Composites ▸ Intisar 100

The Intisar 100 is a rotary-wing UAV that can provide aerial video surveillance and photography services. The platform is fitted with stabilised camera mounts, flight stabilisation and a video-receiving station. **Length:** 134cm **Width:** 40cm **Height:** 60.96cm **Rotor diameter:** 150cm **MTOW:** 13kg **Payload:** 5kg **Max speed:** 64.8kt **Cruise speed:** 43,200kt **Range:** 2km **Ceiling:** 800ft **Endurance:** 1h

CybAero ▸ APID 60

The CybAero APID 60 is a VTOL UAV designed for a variety of civil and military applications. The company states that the platform is in service with military and commercial operators. **Length:** 320cm **Width:** 95cm **Height:** 120cm **Rotor diameter:** 330cm **MTOW:** 160kg **Payload:** 55kg **Max speed:** 81kt **Cruise speed:** 32kt **Range:** 200km **Ceiling:** 12,000ft **Endurance:** 6h

CybAero ▸ APID One

APID One is a family of UAVs consisting of three models: Defence, for military clients, and Rescue and Ranger, for civilian and commercial clients. APID One Defence can be fitted with sensors and equipment to support military units. Areas of application include anti-submarine warfare, intelligence and protection of specific units or sensitive cargo. **MTOW:** 220kg **Range:** 200km **Endurance:** 6h

Dasal Havacılık Teknolojileri ▸ Albatros

Manufactured by Dasal Havacılık Teknolojileri, the Albatros is a quadcopter UAS with two variants based on its fitted payload. The Albatros GA-B (Ground Attack - Bomber) is fitted with four Togan munitions and an ISR camera. The Albatros MO-C (Military Operational Cargo) is configured to carry cargo primarily. Called the Heavy Class X8-3500, the UAS can also host several other payloads when utilised for civilian purposes. **Payload:** 70kg **Max speed:** 54kt **Range:** 22km **Endurance:** 0.75h

Dasal Havacılık Teknolojileri ▸ Cargo 150

The Cargo 150 is a cargo-carrying UAS first displayed at IDEF 2021. Manufactured by Dasal Havacılık Teknolojiler, the rotary-wing octocopter can carry up to 150kg of various payloads and can operate silently. **Width:** 450cm **MTOW:** 630kg **Payload:** 150kg **Range:** 40km **Endurance:** 0.75h

Defence Technology Institute ▸ VTOL UAV

The Defence Technology Institute launched the VTOL UAV R&D project in cooperation with the Naval Research and Development Office, Royal Thai Navy and private sector participants. The main intended use for the aircraft is to carry out reconnaissance missions from onboard warships, but it will also perform target acquisition and intelligence gathering to support naval operations. **Length:** 170cm **Rotor diameter:** 220cm **MTOW:** 22kg **Payload:** 2kg **Max speed:** 53kt **Cruise speed:** 54kt **Range:** 50km **Ceiling:** 2,000ft **Endurance:** 2h

DefendTex ▸ Drone40

The Drone40 is a tube-launched micro-UAS and loitering munition manufactured by DefendTex. Featuring a modular payload bay, Drone40 can be fitted with either an ISR, EW, smoke/flash grenade or laser designator. With any of these payloads installed, the platform is fully recoverable and reusable. Drone40 can also be fitted with an explosive munition, acting as a loitering munition with this payload. **Length:** 12cm **Width:** 18cm **Height:** 18,000cm **MTOW:** 0.3kg **Payload:** 0.12kg **Max speed:** 38.88kt **Range:** 20km **Endurance:** 1h

DefendTex ▸ Drone155

The Drone155 is a tube-launched mini-UAS and loitering munition manufactured by DefendTex. It is tube or ground-launched and can support a range of payloads, such as an ISR sensor, smoke/flash device and an RPG40 multi launcher. Drone155 is marketed as an expandable platform, and as such, it can also be fitted with an explosive munition, acting as a loitering munition with this payload. **Length:** 50cm **Width:** 130cm **MTOW:** 30kg **Payload:** 20kg **Range:** 80km **Endurance:** 2h

Digital Aerolus ▸ Aertos 121

The Digital Aerolus Aertos 121 ducted-fan quadrotor UAV is an improved version of the Aertos 120 infrastructure inspection platform. It is designed as an asset for first responders, such as police and fire services, as well as defence professionals. **Length:** 51cm **Width:** 51cm **Height:** 11cm **Rotor diameter:** 12cm **MTOW:** 2.4kg **Payload:** 0.65kg **Range:** 7km **Endurance:** 0.2h

DIODON Drone Technology ▸ Diodon HP30

The Diodon HP30 is an amphibious micro-drone manufactured by Diodon Drone Technology, which also produces the inflatable Diodon SP20. The HP30 is waterproof and thus particularly suitable for inspection missions in maritime environments and under heavy rain. **Length:** 24cm **Width:** 38cm **Height:** 12cm **Max speed:** 32.4kt **Range:** 4km **Endurance:** 0.5h

DIODON Drone Technology ▸ Diodon SP20

The Diodon SP20 is an inflatable drone and the smallest member of the Diodon family, manufactured by Diodon Drone Technology. The SP20 is waterproof, with a folding time under 60 seconds, and can be used in hard-to-reach areas, high sea conditions and heavy rain. **Length:** 55cm **Width:** 45cm **Height:** 19cm **Max speed:** 32.4kt **Range:** 2km **Endurance:** 0.38h

DJI ▸ Matrice 200

The Matrice 200 (M200) is a UAS series designed for aerial inspection and data collection. The M200 has weather- and water-resistant folding bodies and is compatible with DJI's X4S and X5S cameras, the Z30 zoom camera and the XT camera for thermal imaging. **Length:** 71cm **Width:** 22cm **Height:** 23cm **MTOW:** 6kg **Payload:** 2kg **Max speed:** 44.71kt **Range:** 7km **Ceiling:** 8,202.1ft **Endurance:** 0.58h

DJI ▸ Matrice 300 RTK

The Matrice 300 RTK is a rotary-wing UAV manufactured by DJI. Despite being primarily aimed at industrial applications, militaries can also utilise it for ISR tasks. In December 2021, the Ukrainian Border Guard acquired 60 units to patrol its borders with Russia and Belarus. **Length:** 81cm **Width:** 67cm **Height:** 43cm **MTOW:** 9kg **Payload:** 2.7kg **Max speed:** 44.71kt **Ceiling:** 16,404.2ft **Endurance:** 0.92h

DJI ▸ Matrice 600

The Matrice 600 (M600) is a fully integrated UAS that has been designed for professional aerial photography and industrial applications. The aircraft is powered by a battery, has a maximum take-off weight of 15.1kg and a maximum speed of 35kt. **Length:** 166cm **Width:** 150cm **Height:** 75cm **MTOW:** 15.1kg **Payload:** 6kg **Max speed:** 35kt **Cruise speed:** 30kt **Range:** 5km **Ceiling:** 14,763.78ft **Endurance:** 0.27h

DJI ▸ Mavic 2 (Series)

The Mavic 2 is a series of rotary-wing Micro UAS manufactured by DJI. The series features three platforms, the Mavic 2 Pro, Mavic 2 Zoom and Mavic 2 Enterprise. These variants consist of the same airframe, motor and communications equipment. The only difference is the payload attached to them. The Enterprise, the variant marketed at military operations, is fitted with a 12MP 1/2.3" CMOS sensor, with 2x optical and 3x digital zoom and can also hold a FLIR Uncooled VOx Microbolometer thermal sensor. Known military customers of the platform are Argentina, France, North Korea and the USA. **Length:** 21.4cm **Width:** 9.1cm **Height:** 8.4cm **MTOW:** 1.1kg **Max speed:** 38.88kt **Range:** 10km **Endurance:** 0.52h

DJI ▸ Mavic 3

The Mavic 3 is a rotary-wing UAV manufactured by DJI designed for commercial aerial photography and video capture. It is fitted with a Hasselblad L2D-20c two camera payload, features omnidirectional obstacle sensing and has an Advanced Return to Home (RTH) feature. Like its predecessor, the Mavic 2, the UAV is primarily aimed at private consumers. The Mavic 2, however, was also purchased by various Armed Forces, and it is likely the Mavic 3 will be too. **Length:** 34.7cm **Width:** 28.3cm **Height:** 10.77cm **MTOW:** 0.9kg **Range:** 30km **Ceiling:** 19,685.04ft **Endurance:** 0.77h

DJI ▸ Mavic Air 2

Succeeding the out of production Mavic Air, DJI's Mavic Air 2 is a micro-UAS equipped with a 1/2" CMOS image sensor that can capture a maximum video resolution of 4K in 60fps and still photographs up to 48MP. The UAS can be folded for easy storage and transportation and features Advanced Pilot Assistance Systems 3.0 to autonomously avoid obstacles and smoothly follow targets in complex scenarios. **Length:** 18.3cm **Width:** 25.3cm **Height:** 7.7cm **MTOW:** 0.57kg **Max speed:** 36.93kt **Range:** 18.5km **Ceiling:** 16,404.2ft **Endurance:** 0.57h

DJI ▸ Phantom 4 (Series)

Designed for aerial photograph applications by DJI, the Phantom 4 series of UAS includes the Phantom 4 Pro, Phantom 4 Pro V2.0, Phantom 4 Advanced and the Phantom 4 RTK. These UAVs consist of the same airframe, propulsion system and payload, making them mostly indistinguishable. The only notable differences are that the Phantom 4 RTK features an RTK module the other platforms do not possess. Equally, the Phantom 4 Advanced lacks the downward and lateral obstacle sensing and a 5.8GHz operating frequency that the other platforms possess. **Length:** 28.95cm **Width:** 28.95cm **Height:** 19.6cm **MTOW:** 1.39kg **Max speed:** 38.88kt **Range:** 14km **Endurance:** 0.5h

Doosan Mobility Innovation ▸ DS30

Manufactured by Doosan Mobility Innovation (DMI), the DS30, or Long Endurance Fuelcell Drone, is an octocopter rotary-wing UAV that is uniquely powered by hydrogen fuel cells. This power pack gives the UAV a non-payload endurance of 120min, a range of 90km and a low acoustic signature. During its up to two hour flight, the platform can perform ISR operations. In May 2021, the South Korean Defence Aqucotion Programme Administration (DAPA) procured an undisclosed quantity of the platform in a $734,000 contract. Deliveries are expected to begin in November 2021. **Length:** 199cm **Width:** 199cm **Height:** 75cm **MTOW:** 24.9kg **Payload:** 5kg **Range:** 90km **Endurance:** 2h

Drone Volt ▸ Hercules 2

The Hercules 2 is a rotary-wing UAV designed for tactical employment by military forces. It is intended to enhance the situational awareness of combat units by performing reconnaissance and surveillance missions using its stabilised camera. **Length:** 30cm **Width:** 30cm **Height:** 15cm **MTOW:** 2.5kg **Payload:** 1kg **Max speed:** 48.6kt **Range:** 10km **Endurance:** 0.45h

ECA Group ▸ IT180

The Infotron IT180 VTOL mini-UAS is designed to perform a range of missions in civilian and military sectors, such as surveillance, site protection, inspection, pollution control, fire-fighting and search and rescue. There are three versions (electrical, electrical long-endurance and gasoline) and each can carry payloads such as gyro-stabilised HD day/night video cameras, magnetometers and radiological sensors. It is in service with the French Army and other countries in Asia and the Middle East. In February 2021, it was announced the platform had received a series of upgrades. **Length:** 67cm **Width:** 52cm **Height:** 19cm **Rotor diameter:** 180cm **MTOW:** 27.7kg **Payload:** 10kg **Max speed:** 43kt **Cruise speed:** 35kt **Range:** 50km **Ceiling:** 9,000ft **Endurance:** 2h

Elbit Systems ▸ Magni

Magni is a mini-UAS manufactured by Elbit Systems. Designed to deliver real-time intelligence to manoeuvring forces, Magni can operate fully autonomously and be carried and launched by a single operator. **MTOW:** 2.5kg **Payload:** 0.35kg **Max speed:** 21.6kt **Range:** 3km **Ceiling:** 13,123.36ft **Endurance:** 0.5h

Elbit Systems ▸ Thor

Thor is a VTOL mini-UAS manufactured by Elbit Systems. The platform is designed for ISR missions and features a real-time HD data link and unique control software. According to reports, an unknown Southeast Asian army awarded Elbit Systems a $153 million contract in October 2019 for over 1,000 Thor systems. **Payload:** 3kg **Max speed:** 35.1kt **Cruise speed:** 21.6kt **Range:** 10km **Ceiling:** 6,561.68ft **Endurance:** 1.25h

Eli Airborne Systems ▸ ELIX-XL

The ELIX-XL is a small, man-portable, ruggedised quadrotor VTOL UAS designed to capture and transmit high-quality digital video during day or night over long distances. The aircraft is folded down to a small size of 62x28x18cm and is assembled without tools. **Length:** 110cm **Width:** 28.2cm **Height:** 19.29cm **MTOW:** 5.1kg **Payload:** 0.3kg **Max speed:** 23kt **Cruise speed:** 21.4kt **Range:** 7km **Ceiling:** 1,640ft **Endurance:** 1h

Elistair ▸ Orion

The Orion UAS is a tethered hexacopter UAV manufactured by Elistair. It can provide continuous aerial coverage over large areas for military and civil use, including ISR, law enforcement, asset protection and crisis monitoring. The system is equipped with Sony and FLIR EO/IR sensors, which provide surveillance for day and night use in any weather condition. Additionally, with its 30x optical zoom, the Orion can detect a moving person over ten kilometres. The Orion's successor, the Orion 2, was unveiled by Elistiar in November 2020. **Ceiling:** 328.08ft **Endurance:** 10h

Elistair ▸ Orion 2

The Orion 2 is a tethered hexacopter UAS manufactured by Elistair. With a tethered maximum altitude of 100m, the platform offers up to 24h of endurance that enables it to provide persistent surveillance through its EO/IR camera payload. The platform is modular, parts can be easily replaced and it can be folded down into two hardened mission cases between missions. It is mostly autonomous and requires a single operator. **Payload:** 2kg **Ceiling:** 328.08ft **Endurance:** 24h

EnergyOr ▸ H2Quad 1000

The H2Quad 1000 is a lightweight, rugged multirotor UAV that has been designed to deliver extended flight endurance under demanding weather conditions. The H2Quad 1000 is able to carry out commercial, medical or military applications and can fly a distance of up to 80km. **Length:** 85cm **Width:** 85cm **Height:** 20cm **Rotor diameter:** 40cm **MTOW:** 10kg **Payload:** 1kg **Max speed:** 5.4kt **Range:** 80km **Ceiling:** 3,280ft **Endurance:** 2h

ERAP Korea ▸ ED 815 Monster

ERAP's ED 815 Monster multipurpose octorotor UAS is designed for industrial and military applications. The number of rotors ensures stability, and the platform has an auto-return system. **Length:** 280cm **Width:** 280cm **Height:** 100cm **Rotor diameter:** 50cm **MTOW:** 35kg **Payload:** 15kg **Max speed:** 38kt **Endurance:** 1h

ERAP Korea ▸ EK 001 Blue Whale

The EK 001 Blue Whale is a large, rotary-wing UAV capable of carrying a payload of 23kg. It is in the early stages of development. The platform has a tail rotor of 0.6m. **MTOW:** 100kg **Payload:** 23kg **Cruise speed:** 56kt **Range:** 200km **Ceiling:** 11,480ft **Endurance:** 3.5h

ERAP North America ▸ ED 550M Nimble

The ED 550M Nimble is a battery-powered, multipurpose hexacopter designed for video and photo applications and capable of performing surveillance and search and rescue tasks. **Length:** 55cm **Width:** 55cm **MTOW:** 2.4kg **Payload:** 1kg **Max speed:** 27kt **Cruise speed:** 22kt **Range:** 10km **Endurance:** 1h

ERAP North America ▸ ED 550W

ERAP's ED 550W is a battery-powered quadrotor designed for investigation, law enforcement, military operations, search and rescue and surveillance. It is also built to operate in inclement weather and around water. It is water-resistant, capable of taking off from and landing on water as well as manoeuvring on the surface of the water. **Length:** 50cm **Rotor diameter:** 23.9cm **MTOW:** 1.6kg **Payload:** 0.4kg **Max speed:** 20kt **Cruise speed:** 16kt **Range:** 5km **Ceiling:** 2,500ft **Endurance:** 0.42h

ERAP North America ▸ ED 560M Cosmic

The ED 560M Cosmic UAV is a battery-powered, multipurpose hexacopter with a flight endurance of up to one hour. It has been designed to carry out surveillance, search and rescue and digital image-collection tasks. **Length:** 55cm **MTOW:** 2.4kg **Payload:** 1kg **Max speed:** 27kt **Cruise speed:** 23.1kt **Range:** 10km **Endurance:** 0.83h

ERAP North America ▸ ED 650

The ED 650 is ERAP's battery-powered hexarotor VTOL system which is designed for fire management, search and rescue and military and industrial surveillance. It can be used to carry out a wide variety of business applications. **MTOW:** 20kg **Payload:** 10kg **Max speed:** 38kt **Cruise speed:** 33kt **Range:** 10km **Endurance:** 1h

Evolve Dynamics ▸ Sky Mantis

Manufactured by Evolve Dynamics, the Sky Mantis is a rotary-wing mini-UAS. The airframe, charger, ground control station and spare battery can all be stored and carried in a single backpack by one operator. As standard, the platform is fitted with an EO/IR sensor. However, a range of other payloads is available. Sky Mantis features two add-on solutions that can increase its capabilities. The Infinity Tether allows a 48h continuous flight time via a tether, giving its user a persistent static ISR capability. The Field to Cloud system allows EO/IR video and telemetry from Sky Mantis's gimbal to be streamed anywhere in the world in under one second. **Length:** 20cm **Width:** 40cm **Height:** 13cm **MTOW:** 6.5kg **Endurance:** 1h

FlyingBasket ▸ FlyingBasket

The FlyingBasket uncrewed multi-copter FB3 is a VTOL UAS designed to conduct cargo delivery operations. With a payload capacity of 100kg, the system is designed for load lifting and transportation of heavy loads and is primarily aimed towards civilian applications but has potential for logistic missions in the defence sector. **MTOW:** 170kg **Payload:** 100kg **Endurance:** 0.83h

Free Horizons ▸ Argus Hercules Mark V

The Argus Hercules Mark V, currently in development, is part of the Argus family of UAVs, manufactured by Free Horizons, which also features the Argus Predator Mk VII, the Argus Predator Mk VII Pro and the Argus VTOL, in development too. This UAV will feature the highest maximum take-off weight capacity within the family, being up to 100kg. **Rotor diameter:** 31cm **MTOW:** 100kg **Payload:** 50kg **Max speed:** 23.33kt **Range:** 100km **Ceiling:** 1,640.42ft **Endurance:** 4h

Free Horizons ▸ Argus Predator Mark VII

The Argus Predator Mark VII is part of the Argus family of UAVs, manufactured by Free Horizons, which features also the Argus Predator Mk VII Pro, the Argus Hercules Mk V and the Argus VTOL. This UAV has 30kg of maximum take-off weight, while the Pro version can be loaded up to 42.52kg, allowing for the delivery of small cargo. It can be equipped as a fire extinguisher, grenade launcher, or for agro use, geological survey, and aerial data collection thanks to the company ADCS. **Rotor diameter:** 31cm **MTOW:** 30kg **Payload:** 18kg **Max speed:** 34.99kt **Ceiling:** 1,640.42ft **Endurance:** 0.58h

Free Horizons ▸ Argus Predator Mark VII Pro

The Argus Predator Mark VII Pro is part of the Argus family of UAVs, manufactured by Free Horizons, which features also the Argus Predator Mk VII, the Argus Hercules Mk V and the Argus VTOL. This UAV has 42.52kg of MTOW, while the basic version can be loaded up to 30kg. It can be equipped as a fire extinguisher, grenade launcher, transport drone of small cargo, for agro use, geological survey, and aerial data collection thanks to the company ADCS. **Height:** 69cm **Rotor diameter:** 31cm **MTOW:** 42.52kg **Payload:** 28kg **Max speed:** 27.21kt **Ceiling:** 1,640.42ft **Endurance:** 4h

Griff Aviation ▸ Griff 300

The Griff 300 UAV is a large, heavy-lift octorotor UAV. Its development programme was announced in late 2016. Roles include construction, film production, agriculture, search and rescue, law enforcement, civil services, fire services, cargo delivery and man overboard rescues, but the platform can also be used for military applications. **MTOW:** 300kg **Payload:** 225kg **Endurance:** 0.75h

Guided Systems Technologies ▸ SICX-10E

The SICX-10E is a rotary-wing UAV suitable for a range of military and civil roles, including tactical ISR, bomb damage assessment, homeland security, aerial surveillance, chemical detection and search and rescue. **Length:** 147cm **Width:** 33cm **Height:** 51cm **MTOW:** 11.3kg **Payload:** 4.54kg **Max speed:** 37.8kt **Cruise speed:** 27kt **Ceiling:** 12,000ft **Endurance:** 0.42h

Guided Systems Technologies ▸ SICX-75

The SICX-75 is a rotary-wing UAV designed to perform a range of military and civil missions, such as tactical ISTAR, bomb damage assessment, civil air surveillance, homeland security, chemical detection and infrastructure inspection. **Length:** 249cm **Width:** 81.3cm **Height:** 99cm **Rotor diameter:** 254cm **MTOW:** 77kg **Payload:** 45kg **Range:** 48km **Ceiling:** 10,000ft **Endurance:** 8h

Guided Systems Technologies ▸ SICX-290

The SICX-290 is a rotary-wing UAV being developed from the manned Mosquito single-seat sport helicopter. It is designed to undertake a range of military and civil missions, including tactical ISTAR, bomb damage assessment, civil air surveillance, homeland security, chemical detection, agricultural spraying and infrastructure inspection. **Length:** 490cm **Width:** 81cm **Height:** 210cm **Rotor diameter:** 595cm **MTOW:** 327kg **Payload:** 112kg **Max speed:** 75.6kt **Cruise speed:** 64.8kt **Range:** 48km **Ceiling:** 7,500ft **Endurance:** 7h

Hexadrone ▸ Tundra

The Tundra is a quadcopter rotary-wing UAV manufactured by Hexadrome. Highly modular in nature, the platform features detachable arms which can be configured in a number of ways, based on the user's requirement. Development of the UAV began in 2014 and it was formally unveiled by Hexadrome in May 2021. **Length:** 81cm **Width:** 81cm **Height:** 15cm **MTOW:** 16kg **Payload:** 5kg **Max speed:** 5.4kt **Cruise speed:** 3.78kt **Range:** 0.5km **Ceiling:** 1,640.42ft **Endurance:** 0.67h

High Eye ▸ Airboxer

Manufactured by High Eye, the Airboxer, or HEF 32, is a rotary-wing VTOL UAS designed to conduct maritime ISR applications. Powered by a twin-cylinder petrol engine and following a classic single-rotor helicopter configuration, the Airboxer is marketed as an affordable platform that can host up to 5kg of payloads. The UAV can be controlled manually and act autonomously. **MTOW:** 25kg **Payload:** 5kg **Cruise speed:** 70.19kt **Range:** 50km **Ceiling:** 10,000ft **Endurance:** 3h

Hoverfly Technologies ▸ LiveSky Sentry

The LiveSky Sentry is a fully autonomous, tethered quadcopter that has a 200ft service ceiling. The Sentry has been designed to meet IP 54 and MIL-STD-810G requirements for harsh environments but can also provide security coverage in commercial environments such as chemical facilities, schools and corporate campuses, data centres, emergency departments and with border security. **Length:** 50cm **Width:** 50cm **Height:** 27cm **Rotor diameter:** 35cm **MTOW:** 3.2kg **Payload:** 1kg **Range:** 0.06km **Ceiling:** 196.85ft

IAI Israel Aerospace Industries ▸ Rotem

The Rotem is a loitering munition based on a multi-rotor UAV. Manufactured by Israel Aerospace Industries (IAI), the quadcopter features an EO/IR camera payload that can identify and track a potential threat while the drone is moving. This target can be engaged by the 1.2kg warhead hosted by the Rotem. **MTOW:** 5.8kg **Payload:** 1.2kg **Max speed:** 200kt **Range:** 10km **Ceiling:** 1,000ft **Endurance:** 3h

IAI Malat Division ▸ Ghost

Developed to be versatile, Ghost is a manoeuvrable, rotary-wing mini-UAV designed for performing ISR missions in urban warfare, observation stakeout missions and covert special operations missions. It has forward and aft rotors and is similar in design to Boeing's Chinook helicopter. **Length:** 145cm **Width:** 11cm **Rotor diameter:** 75cm **MTOW:** 4.8kg **Max speed:** 35kt **Cruise speed:** 28kt **Range:** 4km **Endurance:** 0.7h

IAI Malat Division ▸ NRUAV

The Naval Rotary UAV (NRUAV) is designed for ship deck and/or unprepared area operation, real-time intelligence and battle damage assessment, electronic support measure activities, target acquisition and target range measurement. **Length:** 1,285cm **Height:** 300cm **Rotor diameter:** 110cm **MTOW:** 2,200kg **Payload:** 220kg **Max speed:** 60kt **Cruise speed:** 53kt **Range:** 150km **Ceiling:** 15,000ft **Endurance:** 6h

ideaForge ▸ NETRAv2

The NETRAv2 is an autonomous, man-portable VTOL UAV made of carbon-fibre composite and Kevlar. Capable of flying up to a height of 1,640ft, the NETRAv2 provides real-time HD video footage of the area of interest. Developed in collaboration with the Defence Research and Development Organisation, the NETRAv2 is deployed for military surveillance and reconnaissance missions and crowd control, as well as homeland security applications in India. **Length:** 90cm **MTOW:** 3kg **Range:** 5km **Endurance:** 0.83h

IDS - Ingegneria Dei Sistemi ▸ IA-3 Colibrì

The IA-3 Colibrì is a micro-class quadrotor UAV that has an empty weight of 2.2kg and can be used for surveillance and reconnaissance by military and law enforcement agencies, as well as for civil applications. **Width:** 35cm **Height:** 28cm **Rotor diameter:** 81cm **MTOW:** 5kg **Payload:** 1kg **Max speed:** 32.4kt **Cruise speed:** 27kt **Range:** 1km **Ceiling:** 1,640ft **Endurance:** 0.67h

IDS - Ingegneria Dei Sistemi ▸ IA-12A Stark

The IA-12A Stark is a small, rotary-wing UAV that features a dual propulsion system, swappable payload bay, retractable landing gear, single operator control, ground mission planning, autonomous flight and onboard recording of data. It has a rotor diameter of 1.8m. **Length:** 150cm **Height:** 74cm **Rotor diameter:** 180cm **MTOW:** 12kg **Payload:** 3.5kg **Max speed:** 53.9kt **Cruise speed:** 43.2kt **Range:** 20km **Ceiling:** 8,200ft **Endurance:** 2h

Indela ▸ H U Sky II

H U Sky II is a VTOL UAV for tactical reconnaissance and surveillance, aerial mapping, target designation and border control. **Length:** 430cm **Width:** 130cm **Height:** 153cm **Rotor diameter:** 480cm **MTOW:** 255kg **Payload:** 55kg **Max speed:** 62kt **Cruise speed:** 53kt **Ceiling:** 6,890ft **Endurance:** 5h

Indela ▸ I N Sky

The Indela I N Sky is a large, trailer-transported VTOL UAV for tactical reconnaissance and surveillance, which has a four-person crew and is controlled from a large containerised system. The system is fully autonomous for take-off, landing, travel and hover and can be launched from storage within 15min. **Length:** 300cm **Width:** 110cm **Height:** 113cm **MTOW:** 125kg **Payload:** 0.03kg **Max speed:** 54kt **Cruise speed:** 37kt **Range:** 100km **Ceiling:** 4,920ft **Endurance:** 5h

InstantEye Robotics ▸ InstantEye Mk2 Gen3

The InstantEye Mk2 Gen3 is a UAS that has been designed for military, commercial and first responder customers. The UAV is able to operate during day or night and in all weather conditions, including winds of up to 48km/h, and from a moving ground or maritime position. **Length:** 25cm **Width:** 25cm **Height:** 5.71cm **MTOW:** 0.85kg **Payload:** 0.3kg **Max speed:** 47.8kt **Cruise speed:** 32kt **Range:** 1.4km **Ceiling:** 12,000ft **Endurance:** 0.5h

InstantEye Robotics ▸ InstantEye Mk2 Gen4

The InstantEye Mk2 Gen4 small quadcopter UAV is designed to provide high-performance, low-cost capability that can be hand-launched/recovered by a single operator in any weather. It expands upon the capability of the InstantEye Mk2 Gen3, providing immediate tactical ISR in urban and rural environments. It supports Mobile Area Network capability using the Harris EMR radio system, as well as expanded lift capacity to support a range of payloads. **Length:** 53cm **Width:** 42cm **Height:** 10cm **MTOW:** 2kg **Payload:** 0.59kg **Max speed:** 30.4kt **Cruise speed:** 42.2kt **Range:** 3km **Ceiling:** 12,000ft **Endurance:** 0.75h

InstantEye Robotics ▸ InstantEye Mk-3 GEN4-HL

Manufactured by InstantEye Robotics, the InstantEye Mk-3 GEN4-Heavy Lift (HL) is a rotary-wing UAV that has been selected in the US Army's Render Safe Sets, Kits & Outfits (RS SKO) programme. The system is compatible with the InstantEye Enhanced Payload Delivery Mechanism (EPDM). The system can carry payloads up to three pounds when used with the EPDM. It provides full-time EO/IR capability to a range of viewing devices, including ATAK/Nett Warrior compatibility. **MTOW:** 1.81kg **Payload:** 1.36kg **Range:** 7.5km **Endurance:** 0.83h

InstantEye Robotics ▸ InstantEye Mk-3 Gen5-D1/D2

The InstantEye Mk-3 Gen5 is the smallest and most lightweight member of the InstantEye family of rotary-wing micro-UAS. Developed to enhance situational awareness at the tactical level, it features an integral EO/IR gimbal for surveillance as well as digital data communications and encryption tools. Due to its small size and low visual and acoustic signature, this system can perform stealth operations. **Length:** 19.4cm **Width:** 33cm **Height:** 4.4cm **MTOW:** 0.26kg **Payload:** 0.03kg **Max speed:** 17kt **Cruise speed:** 14kt **Range:** 4.5km **Ceiling:** 12,000ft **Endurance:** 0.45h

iSTAR UAV ▸ WASP

The WASP is a multirotor UAV that provides ISTAR capabilities and may be used for commercial, public safety and military applications. It is designed as an easy-to-operate platform that can be operated via the micro ground control station and can be used during both day and night. **Length:** 28cm **Width:** 55cm **Height:** 28cm **Rotor diameter:** 20cm **MTOW:** 2.7kg **Payload:** 0.3kg **Max speed:** 48.6kt **Cruise speed:** 38kt **Range:** 0.5km **Endurance:** 0.5h

Joyton ▸ Axiom P

Axiom P is a military-standard, rugged UAS with a carbon-fibre composite framework, designed to operate in hostile environments. The system has a three-axis gimbal for stable and flexible imaging, a ground control station and an optional wireless beacon device. **Length:** 75cm **Width:** 75cm **Height:** 75cm **Rotor diameter:** 25cm **MTOW:** 6.6kg **Max speed:** 20kt **Cruise speed:** 16.2kt **Range:** 10km **Ceiling:** 8,840ft **Endurance:** 0.75h

KAI – Korea Aerospace Industries ▸ NI-500VT

Manufactured by Korean Aerospace Industries, the NI-500VT is a rotary-wing UAS developed by Korean Aerospace Industries (KAI). KAI showcased the UAS in a promotional video during the Seoul ADEX 2021 exhibition. The NI-500VT is a tiltrotor UAV. It has four rotors, two tiltrotors on swivelling nacelles like the Osprey, and two more rotors on a shallow V-shaped tail.

KAI – Korea Aerospace Industries ▸ Night Intruder 600VT

Night Intruder 600VT is a UAV being developed by KAI based on an MD 500 twin-seat American commercial helicopter airframe in the 600kg class. With the VTOL nature of the aircraft, it is intended for operations in mountainous terrain or from aboard ships for the Republic of Korea (ROK) Army and ROK Navy. Its maiden flight was performed at the Goheung Aerospace Centre on 24 September 2019. **Length:** 900cm **Width:** 200cm **Height:** 250cm **MTOW:** 600kg **Endurance:** 6h

Kaman Aerospace ▸ Kargo

Unveiled by Karam in September 2021, the Kargo is a developmental cargo-carrying UAS. Marketed as reliable, affordable and maintainable, Kargo UAV features autonomous and sense and avoid systems and will begin full-scale flight trials in early 2022. Designed to provide cost-effective cargo hauling in its conformal pod or external sling load configuration, the UAV is aimed to meet the requirements of the US Marines Joint Tactical Autonomous Aerial Resupply System development programme. **Length:** 743.71cm **Width:** 743.71cm **Height:** 228.6cm **MTOW:** 970.69kg **Payload:** 362.87kg **Max speed:** 121kt **Range:** 926km **Ceiling:** 10,000ft

Kaman Aerospace/Lockheed Martin ▸ Unmanned K-MAX

The K-MAX optionally piloted helicopter was developed and manufactured by Kaman Aerospace and Lockheed Martin. It is an uncrewed variant of the crewed K-MAX helicopter, utilising the same basic design. It is powered by a Honeywell T5317A-1 turboshaft engine and can be used for cargo carrying missions. The USMC operated two Unmanned K-MAX units in Afghanistan from December 2011 for three years. In 2011, K-MAX became the first UAS to deliver cargo in theatre for the USMC to minimise ground combat logistics patrols' exposure to IEDs and roadside ambushes. **Length:** 1,585cm **Width:** 1,567cm **Height:** 414cm **Rotor diameter:** 1,473cm **MTOW:** 5,443kg **Payload:** 2,721kg **Max speed:** 100kt **Range:** 555km **Ceiling:** 15,000ft **Endurance:** 2.67h

King Abdullah II Design and Development Bureau ▸ Hex-Rotor UAV

At SOFEX 2016, the King Abdullah II Design and Development Bureau unveiled a family of UAS designed to carry out close-range surveillance missions. The Hex-Rotor UAV is the only rotary-wing UAS in this family. Intended to be mechanically simple and easy to use, the platform can carry reconnaissance sensors to provide enhanced situational awareness at the tactical level. **Length:** 125cm **Width:** 125cm **MTOW:** 7.5kg **Payload:** 1.5kg **Range:** 3km **Ceiling:** 3,280ft **Endurance:** 0.5h

King Abdullah II Design and Development Bureau ▸ Quadrotor UAV

The Quadrotor UAV is an electrically powered VTOL UAS developed by the King Abdullah II Design and Development Bureau (KADDB) of Jordan. Capable of operating fully autonomously, it is the first UAV to use an autopilot developed internally by KADDB. Designed to perform reconnaissance and object identification missions at the tactical level, it is intended to be simple to use and rapidly deployable. **Length:** 84cm **Width:** 84cm **MTOW:** 2kg **Payload:** 0.5kg **Max speed:** 19kt **Range:** 0.7km **Ceiling:** 984ft **Endurance:** 0.25h

Korea Aerospace Research Institute ▸ NARMA Tiltrotor UAV

The NARMA tiltrotor UAV is being developed by New AeRo Mission Accomplishment (NARMA), a spin-off company from Korean Aerospace Research Institute. **Width:** 100cm **Rotor diameter:** 50.8cm **MTOW:** 12kg **Payload:** 3kg **Cruise speed:** 43.2kt **Range:** 10km **Endurance:** 0.33h

Korea Aerospace Research Institute ▸ QTP-UAV

The Quad Tilt Prop UAV (QTP-UAV) is an electric platform that is designed to provide VTOL capability with high-speed horizontal flight. **Length:** 200cm **Width:** 220cm **Rotor diameter:** 110cm **MTOW:** 51kg **Payload:** 3kg **Max speed:** 86.39kt **Endurance:** 2h

Korea CNO Tech Co ▸ Grenade Launching UAS

Manufactured by Korea CNO Tech Co, the as-yet-unnamed developmental UAS has been selected by the Republic of Korea Army for trials scheduled for 2022. The hexacopter rotary-wing UAS is equipped with six 40mm grenade launchers that can be remotely controlled with a 2km radius. **Range:** 2km

Korean Air Tech Center ▸ KUS-VH

The Korean Air KUS-VH is a large, rotary-wing UAV based on the MD 500. The first flight of the platform took place in early 2017. It is similar to the Little Bird UAV, but the latter is optionally manned and the KUS-VH will not have a pilot's position. **Length:** 700cm **Width:** 140cm **Height:** 240cm **Rotor diameter:** 800cm **MTOW:** 1,350kg **Payload:** 400kg **Max speed:** 135kt **Cruise speed:** 108kt **Range:** 200km **Ceiling:** 13,100ft **Endurance:** 5h

Korean Air Tech Center ▸ KUS-VT tiltrotor

The KUS-VT is a tiltrotor UAV that first flew in October 2013 and was exhibited at ADEX 2013. The aircraft is designed to have a high airspeed and ceiling, and ship operations are a key application. **Length:** 350cm **Width:** 520cm **Height:** 120cm **Rotor diameter:** 520cm **MTOW:** 200kg **Max speed:** 108kt **Cruise speed:** 135kt **Endurance:** 5h

Laflamme Aero/General Dynamics ▸ LX300

Initially developed by Laflamme Aero, the LX300 is a multi-role rotary-wing tactical UAS. Featuring a tandem rotor configuration, with each blade fitted on either side of the platforms fuselage, the LX300 has a wide centre of gravity envelope. In combination with the platform's autopilot, this configuration allows the UAS to steadily host a range of payloads. A user can quickly fit these payloads with the M-Bark payload integration system. **Length:** 300cm **Width:** 180cm **Height:** 120cm **MTOW:** 550kg **Payload:** 180kg **Max speed:** 113.39kt **Ceiling:** 39,370.08ft **Endurance:** 10h

Laser Detect System (LDS) ▸ SpectroDrone

At the HLS & Cyber Expo in Israel in November 2016, Laser Detect System (LDS) unveiled its SpectroDrone sensor. The system has been designed to detect explosives, IEDs and other chemical compounds from standoff distances and can also analyse materials in real-time. **Range:** 3km

Leonardo Defence Systems ▸ Drako

Drako is a quadrotor electric VTOL UAV suitable for close-range surveillance and reconnaissance on SF and police missions, especially in urban areas. It is available in two configurations, K2000 and K5000. **Length:** 35cm **Width:** 35cm **Height:** 35cm **Rotor diameter:** 70cm **MTOW:** 4kg **Payload:** 1.7kg **Max speed:** 16kt **Cruise speed:** 12kt **Range:** 5km **Ceiling:** 7,000ft **Endurance:** 0.5h

Leonardo Defence Systems ▸ Spyball

The Spyball is a VTOL micro-UAV that can be used for local area surveillance and force protection missions, such as border and base perimeter security, convoy escort and IED detection, especially in urban areas. **Length:** 30cm **Width:** 3,000cm **Height:** 50cm **Rotor diameter:** 2,000cm **MTOW:** 2kg **Payload:** 0.15kg **Max speed:** 12kt **Cruise speed:** 8kt **Range:** 5km **Ceiling:** 6,900ft **Endurance:** 0.5h

Leonardo Helicopters ▸ AWHero

The AWHero is a UAS of the 200kg class for dual-use maritime and land, day and night operations. It was developed to provide a low-cost and low-maintenance solution for security, utility, tactical battlefield surveillance and maritime missions. Configurable with a wide range of sensors, it can transmit real-time radar information and EO device imagery to naval or land receivers. **Length:** 370cm **Width:** 120cm **Height:** 120cm **Rotor diameter:** 400cm **MTOW:** 200kg **Payload:** 85kg **Cruise speed:** 90kt **Endurance:** 6h

Leonardo Helicopters ▸ SW-4 Solo RUAS

The SW-4 Solo RUAS is an optionally crewed version of the PZL-Swidnik SW-4 light, single-engine helicopter. It can perform several roles, including ISR and cargo resupply both on land and at sea. In order to make it suitable for naval operations, an automatic take-off and landing system is equipped to enable it to be deployed from moving platforms such as naval vessels. **Length:** 106cm **Width:** 228cm **Height:** 313.9cm **Rotor diameter:** 900cm **MTOW:** 1,800kg **Payload:** 470kg **Max speed:** 140kt **Cruise speed:** 111kt **Range:** 940km **Ceiling:** 12,800ft **Endurance:** 4.7h

Liaz ▸ SkySpotter 150

The Liaz SkySpotter 150 is a large, rotary-wing UAV for military and civilian/commercial roles. Each UAS consists of two aircraft, two Liaz gyro-stabilised EO sensors, an operator console and a transport container. **Length:** 320cm **Width:** 115cm **Height:** 132cm **Rotor diameter:** 341cm **MTOW:** 150kg **Payload:** 40kg **Max speed:** 64.79kt **Range:** 100km **Ceiling:** 14,107.61ft **Endurance:** 5h

LIG Nex1 ▸ Multicopter-type Cargo Drone System (MCDS)

The Multicopter-type Cargo Drone System (MCDS) is, as its name suggests, a cargo-carrying UAS. Manufactured by LIG Nex1, the platform can carry a payload of up to 40kg and is aimed at both military and commercial use. The UAS is powered by a hybrid-type engine and features an automatic take-off and landing capability. **Payload:** 40kg **Endurance:** 1h

LIG Nex1 ▸ Multi-Purpose Unmanned Helicopter

The Multi-Purpose Unmanned Helicopter is a rotary-wing UAS manufactured by Lig Nex1. It is intended for tactical operations such as ISR due to its EO/IR sensor payload. The platform can be mounted on ships and can be controlled both manually and act autonomously. **MTOW:** 200kg **Max speed:** 86.39kt **Range:** 50km **Ceiling:** 11,811.02ft **Endurance:** 6h

LikeAbird ▸ RV-VTOL25 Taipan

The RV-VTOL25 Taipan is a multirole VTOL UAV that is able to perform ISR and close air support missions. **Length:** 260cm **Rotor diameter:** 250cm **MTOW:** 55kg **Max speed:** 43kt **Range:** 10km **Ceiling:** 11,500ft **Endurance:** 2h

Lockheed Martin ▸ Indago

Indago is a small quadrotor UAV with VTOL. It is equipped with a large-screen handset and is marketed as 'whisper-quiet' with a noise level of 62dB at three metres and 52dB at ten metres. Indago is used by domestic and international militaries, law enforcement and first responders and has been designed to carry out a range of applications, including agriculture, oil and gas, mapping construction and reconnaissance. **Length:** 81.3cm **Width:** 81.3cm **Height:** 17.8cm **MTOW:** 2.2kg **Payload:** 0.2kg **Max speed:** 21.8kt **Cruise speed:** 15kt **Range:** 2.5km **Ceiling:** 18,000ft **Endurance:** 0.83h

Malloy Aeronautics ▸ T-80

The T-80, or TRV-80, is a rotary-wing cargo-carrying UAV from Malloy Aeronautics. It is mainly branded as a UAV to allow users to test and evaluate payloads and other projects, such as UUV and UGV teaming. The platform is another member of the Malloy of cargo-carrying UAVs. The family also includes the T-150, T-400 and T-650. **Payload:** 30kg **Cruise speed:** 48.6kt **Range:** 55km

Malloy Aeronautics ▸ T-150

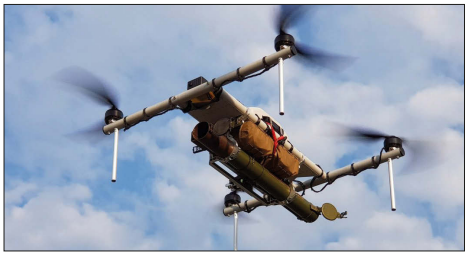
The T-150, or TVR-150, is a VTOL capable cargo-carrying UAS manufactured by Malloy Aeronautics and sold by Survice Engineering in the USA. The platform, which stands for Tactical Resupply Vehicle, is being evaluated in the US Marines Tactical Resupply Unmanned Aircraft System programme. In addition, the T-150 has taken part in Royal Navy Autonomous Advance Force trials in Crpyus in late 2020 and the Royal Marine Autonomous Advance Force 4.0 exercise in summer 2021. **Payload:** 68kg **Range:** 70km **Endurance:** 0.6h

Malloy Aeronautics ▸ T-400

The T-400, or TRV-400, is an electrically powered cargo-carrying UAV manufactured by Malloy Aeronautics. It is designed to carry up to 180kg of cargo autonomously and has also been photographed hosting offensive payloads. The Royal Navy has tested the platform since at least 2020. In 2021, Malloy was awarded a £300,000 contract to further develop the platform as part of the RN's Heavy Lift Challenge. **MTOW:** 370kg **Payload:** 180kg **Max speed:** 68.03kt **Cruise speed:** 68.03kt **Range:** 72km

Matrix UAV ▸ Demon

The Demon is a small quadrotor UAV designed for use with RPGs and small arms. It has semi-automatic manual control through a video channel, with a signal transmission that is based on the company's Chimera UAV. **Payload:** 5kg **Range:** 90km



Microdrones ▸ md4-1000

The md4-1000 is a small VTOL quadcopter UAV and is the middle platform of the company's family of md4 vehicles. It can be piloted or fly automatically using GPS waypoint navigation software. The md4-1000 is used for various military and civil applications, including security, search and rescue, research, surveillance and monitoring, industrial inspections and aerial photography. **Length:** 100cm **Width:** 100cm **MTOW:** 6kg **Payload:** 1.2kg **Max speed:** 31.1kt **Cruise speed:** 23.3kt **Range:** 0.5km **Ceiling:** 6,560ft **Endurance:** 1.47h

MMC ▸ HyDrone 1800

In April 2016, MMC launched the HyDrone 1800 UAV in Shenzhen, China. It is a hydrogen-fuelled UAV with an endurance of over four hours. The HyDrone 1800 has been designed to operate in temperatures below -20˚C and reach distances of over 100km. **Range:** 0.1km **Ceiling:** 16,405ft **Endurance:** 4h

MMIST - Mist Mobility Integrated Systems Technology ▸ Snowgoose (CQ-10)

The Snowgoose is a multipurpose aerial cargo delivery system that has reached IOC with the US Armed Forces. Capable of carrying a large payload and operating fully autonomously, the first CQ-10A version has been employed by US Special Operations Command (USSOCOM) to perform aerial resupply and reconnaissance missions. In 2015, an upgraded CQ-10B variant of the Snowgoose was introduced, which uses a gyrocopter system instead of the parafoil fitted to the original. This model can take off and land without a launch vehicle and has increased speed, range and endurance. **Length:** 290cm **Width:** 210cm **Height:** 150cm **Rotor diameter:** 207cm **MTOW:** 609kg **Payload:** 260kg **Max speed:** 34kt **Range:** 300km **Ceiling:** 25,000ft **Endurance:** 17h

MSP ▸ Tygrzyk

The Tygrzyk (Wasp Spider) is a quadrotor small UAV manufactured by the Polish company MSP. The aircraft is designed for tactical reconnaissance missions. MSP displayed the platform along with several other systems – such as the Capricorn Beetle and Darter UAS – at MSPO 2015 in Kielce, Poland. **MTOW:** 5.5kg **Payload:** 1.2kg **Range:** 4km **Endurance:** 0.58h

National Chung-Shan Institute of Science and Technology ▸ Magic-Eye

Magic-Eye is a conventional, rotary-wing UAV designed for short-range surveillance and target acquisition. The design is suited for Taiwan's mountainous terrain or for use from naval vessels. **Length:** 250cm **Width:** 50cm **Height:** 70cm **Rotor diameter:** 180cm **MTOW:** 35kg **Payload:** 15kg **Max speed:** 27kt **Cruise speed:** 20kt **Range:** 10km **Endurance:** 1h

NES&TEC ▸ Aris Beetle-Octo

The NES&TEC; Aris Beetle-Octo eight-rotor UAV is an electric platform designed to be very stable and able to operate in winds of 10m/s. It is primarily meant for commercial and civil operations but can also be used for military reconnaissance. **Length:** 110cm **Width:** 110cm **Height:** 50cm **Rotor diameter:** 50cm **MTOW:** 10kg **Payload:** 2kg **Max speed:** 13.5kt **Cruise speed:** 8.1kt **Range:** 2km **Ceiling:** 1,640ft **Endurance:** 0.3h

Norinco ▸ Sky Saker H300

The Sky Saker H300 is a rotary-wing UCAV. Equipped with an array of nose-mounted sensors as well as two launch tubes, the Sky Saker H300 can be used for correcting precision fire from other platforms in addition to performing its own strikes. It can also be employed in battlefield surveillance, laser illumination and battle damage assessment roles. Developed for export to foreign military customers, the Sky Saker H300 is likely intended to build upon successful Chinese exports of fixed-wing military UAS to African and Middle Eastern militaries. **MTOW:** 300kg **Payload:** 100kg **Max speed:** 86kt **Ceiling:** 9,840ft **Endurance:** 5h

Northrop Grumman ▸ MQ-8B Fire Scout

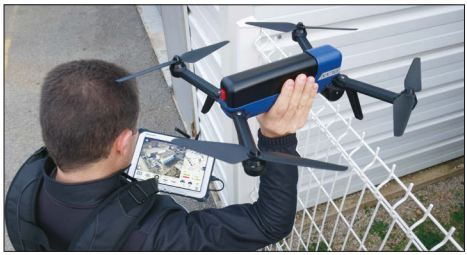
The MQ-8B Fire Scout is a rotary-wing UAV that provides situational awareness and precision targeting support for the US Armed Forces. The MQ-8B Fire Scout, based on the Fire Scout UAV System, has been designed to carry out ISTAR missions. The MQ-8B has since been superseded in production for the USN by another variant of the Fire Scout, the MQ-8C. In total, the USN has acquired 59 MQ-8 Fire Scouts units for $1.592 billion, 23 of these were the MQ-8B variant. **Length:** 920cm **Width:** 190cm **Height:** 290cm **Rotor diameter:** 840cm **MTOW:** 1,430kg **Payload:** 137kg **Max speed:** 125kt **Cruise speed:** 85kt **Range:** 203km **Ceiling:** 12,500ft **Endurance:** 7.75h

Northrop Grumman ▸ MQ-8C Fire Scout

The MQ-8C is a newer version of the Fire Scout and is based on a Bell 407 commercial helicopter. It offers a greater range, endurance and payload capacity than its earlier variant, the MQ-8B. The autonomous helicopter system, like its predecessor, provides an ISTAR capability. Combined, the USN has acquired 59 MQ-8 Fire Scouts units for $1.592 billion; 36 of these were the MQ-8C variant. **Length:** 1,260cm **Width:** 240cm **Height:** 330cm **Rotor diameter:** 1,070cm **MTOW:** 2,722kg **Payload:** 227kg **Max speed:** 135kt **Cruise speed:** 115kt **Range:** 2,272km **Ceiling:** 16,000ft **Endurance:** 12h

Novadem ▸ NX70

The NX70 is an all-weather, multipurpose micro-UAS designed and produced by France's Novadem. It can transport a range of military equipment such as medkits, smoke grenades or jammers. In addition, its payload features three cameras for ISR operations. **Length:** 27cm **Width:** 19cm **Height:** 13cm **MTOW:** 1kg **Range:** 5km **Ceiling:** 10,000ft **Endurance:** 0.75h



Novadem ▸ NX110m

Novadem's NX110m is a small, rotary-wing UAV designed to carry out close-range reconnaissance, urban warfare, mapping and IED location activities. It is operated using an ergonomic and portable ground control station that can be set up in two minutes. **Length:** 110cm **Width:** 110cm **Height:** 14cm **MTOW:** 2kg **Max speed:** 23.33kt **Cruise speed:** 16kt **Range:** 1km **Ceiling:** 7,217.85ft **Endurance:** 0.33h

Novadem ▸ NX160

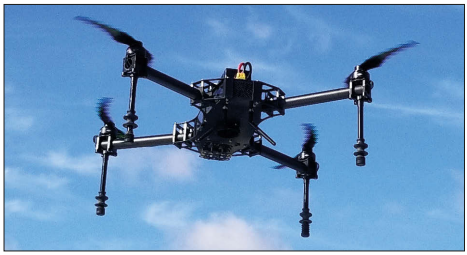
The NX160 is a developmental micro-UAV manufactured by Novadem. The platform utilises the same ground control station, datalinks and onboard avionics as the other member of its family, the NX70. Slated to be marketed at the end of 2021, the NX160 is designed to host CBRN detection equipment provided by Proengiun. **MTOW:** 8kg **Payload:** 2kg

Parrot ▸ Anafi USA

Parrot manufactures the Anafi USA quadcopter micro UAV. The short-range reconnaissance drone carries a triple camera payload capable of recording photographs and video in both the visual and thermal spectrum. France announced in January 2021 that it had ordered 300 Anafi systems. It ordered a second batch of 150 systems in December 2021. Parrot unsuccessfully offered the platform to the US Army for its Short Range Reconnaissance UAS programme. **Length:** 28.2cm **Width:** 37.3cm **Height:** 8.2cm **Range:** 4km **Ceiling:** 19,685.04ft **Endurance:** 0.53h

Planck Aerosystems ▸ Shearwater

The Planck Shearwater quadcopter UAS can land and launch from a moving platform. Its UAS navigation software enables autonomous operations with precision take-off and landing on moving vehicles or vessels without the assistance of a dedicated pilot or extensive installed hardware. **Length:** 70cm **Width:** 70cm **Height:** 15cm **Rotor diameter:** 30cm **MTOW:** 4kg **Payload:** 1kg **Max speed:** 45kt **Cruise speed:** 30kt **Range:** 17km **Endurance:** 0.45h



Polish Military University of Technology ▸ Wabik

The Wabik, or Lure, is a rotary-wing UAS developed by the Polish Military University of Technology. Capable of up to two hours of fight, the Wabik is designed to patrol specified areas, detecting and identifying potential threats autonomously. **MTOW:** 35kg **Payload:** 14kg **Max speed:** 64.79kt **Range:** 200km **Ceiling:** 9,842.52ft **Endurance:** 2h

Preneu ▸ Droneit Ruepel

The Preneu Droneit Ruepel rotary-wing UAV is a heavy-fuel platform that is designed to carry a range of payloads up to a weight of eight kilograms. **Length:** 180cm **Width:** 65cm **Height:** 60cm **Rotor diameter:** 210cm **MTOW:** 17kg **Payload:** 8kg **Max speed:** 65kt **Cruise speed:** 43.2kt **Range:** 20km **Endurance:** 1h

Pride Systems ▸ Attack Quadcopter

Debuting at IDEX 2021, the Attack Quadcopter is a loitering munition based on a rotary-wing mini-UAV that has been manufactured by the Armenian company Pride Systems. According to the manufacturer, the system is capable of precision strikes on stationary and mobile targets that can be performed manually by an operator or autonomously. With an MTOW of 5kg, the mini-UAV can each a maximum speed of 200km/h and can operate for 25 minutes. **Length:** 80cm **Width:** 60cm **MTOW:** 5kg **Max speed:** 107.99kt **Cruise speed:** 80.99kt **Endurance:** 0.42h

PT Bhinneka Dwi Persada ▸ Rajawali 350

Rajawali 350 is an ITAR-free, rotary-wing UAV. It is a localised version of UMS Skeldar's R-350 and has the ability to carry multiple payloads. **Length:** 310cm **Width:** 100cm **Height:** 130cm **Rotor diameter:** 350cm **MTOW:** 150kg **Payload:** 42kg **Max speed:** 65kt **Cruise speed:** 55kt **Range:** 80km **Ceiling:** 8,202.1ft

Quantum-Systems/ESG Elektroniksystem und Logistik ▸ Scorpion

Scorpion is an electric tri-copter UAS developed for reconnaissance missions in densely built-up areas. Its 2-in-1 design allows to remove copter arms and attach wings to transform the platform into a Vector configuration. The system is aimed at military and security applications. A military encrypted mesh IP link sends video streams up to a range of more than 15km. It has a maximum flight time of 45min. **Length:** 100cm **Width:** 85cm **Height:** 50cm **Rotor diameter:** 60cm **MTOW:** 0.01kg **Payload:** 0.5kg **Max speed:** 38.88kt **Cruise speed:** 29.16kt **Range:** 25km **Endurance:** 0.75h

Radar MMS ▸ BVS VT 500

The BVS VT 500 is a rotary-wing UAS used for a variety of military and civilian applications. It is most commonly used for operations involving the surveillance of ice, forest areas, pipelines and power facilities. It is often used to support search and rescue missions as well as counterterrorism and patrol and border security operations. **Rotor diameter:** 600cm **MTOW:** 500kg **Payload:** 150kg **Max speed:** 83.69kt **Range:** 320km **Endurance:** 5.5h

Ramzay ▸ RZ-500

Manufactured by the Ukrainian firm Ramzay, the RZ-500 is a multipurpose combat rotary-wing UAS. Unveiled at the June 2021 Arms and Security exhibition in Kyiv, the autonomous platform can host both munitions and an ISR payload. **MTOW:** 500kg **Range:** 300km **Ceiling:** 13,123ft **Endurance:** 2h

Raphe mPhibr ▸ MR-20

Manufactured by the Indian firm Raphe mPhibr, the MR-20, is a cargo-carrying UAS. Capable of carrying 20kg of cargo, the platform was the subject of an emergency procurement contract awarded by the Indian Army in September 2021. **Payload:** 20kg **Endurance:** 0.75h

Rheinmetall ▸ Museco

The Museco is a UAV designed for surveillance tasks. The rotary-wing platform can host several payloads, including several cameras and sensors. It is controlled by a modular GCS designed to fit in vehicles or containers and can operate autonomously. **Length:** 320cm **Height:** 110cm **Rotor diameter:** 350cm **MTOW:** 125kg **Range:** 100km

Robot Aviation ▸ SkyRobot RX100

The SkyRobot RX100 is a single-rotor UAV that has been designed for safety missions, including national security, inspection and monitoring, resource management and emergency. **Length:** 0.3cm **Height:** 0.1cm **Rotor diameter:** 320cm **MTOW:** 65kg **Range:** 100km **Ceiling:** 9,840ft **Endurance:** 4h

Rostec ▸ Bas-200

Manufactured by JSC Russian Helicopters, which is part of Rostec, the Bas-200 is a rotary-wing UAS that was first presented at MAKS 2021. Capable of carrying up to 50kg, the platform can be used to carry cargo or in agricultural work. Additionally, with an ISR payload attached, the platform can conduct monitoring and SAR missions. **Length:** 390cm **Height:** 120cm **MTOW:** 200kg **Max speed:** 86.39kt **Range:** 0.1km **Ceiling:** 12,795.28ft **Endurance:** 4h

RotorX ▸ Palledrone

Developed by RotorX, the Palledrone is an autonomous cargo-carrying hexacopter that has been designed to carry a 45kg cargo. While carrying a cargo of this weight, the Palledrone can autonomously follow a pre-planned route for five minutes across a distance of eight kilometres. The platform can also be outfitted with retransmission capability as well as an ISR payload. The platform has been involved in the previous two US Army Expeditionary Warrior Experiments. **Length:** 320cm **MTOW:** 72.57kg **Payload:** 45kg

Russian Helicopters (VR-Technologies) ▸ VRT300

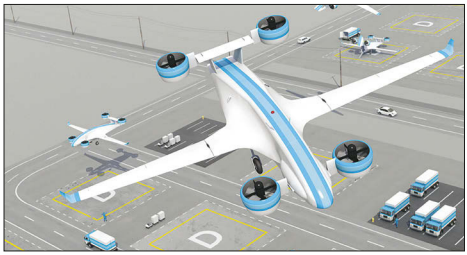
The VRT300 is the latest VTOL drone to be unveiled by Russian Helicopters and is mainly marketed for ice reconnaissance on Russia's Northern Sea Route. The system, which uses a coaxial rotor scheme, has a maximum take-off weight of 300kg, a payload weight of 70kg and an operational range of up to 150km. **MTOW:** 300kg **Payload:** 70kg **Max speed:** 97.2kt **Cruise speed:** 87kt **Range:** 150km **Endurance:** 5h

S.A.S Technology ▸ SARISA SRS-1A

The SARISA SRS-1A is a quadcopter rotary-wing UAS that was unveiled at DEFEA 2021. Manufactured by the Greek company Spirit Aeronautical Systems (SAS) Technology, the platform features two rails underneath its fuselage that can host different payload configurations. The configuration displayed at DEFEA featured a twin-rocket launcher armed with HYDRA 70mm rockets. **Length:** 165cm **Width:** 218cm **Height:** 45cm **MTOW:** 60kg **Payload:** 25kg **Endurance:** 0.33h

Sabrewing Aircraft Company (SACO) ▸ Rhaegal-B

Manufactured by Sabrewing Aircraft, the Rhaegal, or the VQ-X Aleut, is a cargo-carrying UAV that has an internal cargo hold volume of 16m3. With the capability of both a VTOL and CTOL, the four-turbine platform has the ability to carry a payload of 2,445kg while taking off vertically and the ability to carry payloads of 4,545kg while operating as a CTOL platform. **Length:** 1,460cm **Width:** 1,700cm **Height:** 460cm **MTOW:** 6,257kg **Payload:** 4,545kg **Max speed:** 245.68kt **Cruise speed:** 200kt **Range:** 1,850km

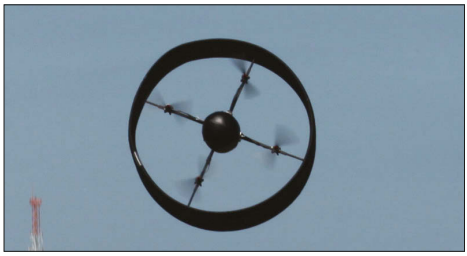


Santos Lab ▸ Libélula

Libélula (Dragonfly) is a quadrotor developed to meet Brazilian Army specifications for a UAV to provide tactical reconnaissance at platoon level. A civilian version of the Libélula UAV is also available. **Length:** 180cm **Width:** 180cm **Height:** 80cm **Rotor diameter:** 90cm **MTOW:** 1.5kg **Payload:** 0.2kg **Max speed:** 77.8kt **Cruise speed:** 65kt **Range:** 8km **Endurance:** 0.33h

Santos Lab ▸ Orbis

Orbis is a quadrotor UAV that is able to transition after take-off and fly in fixed-wing mode, combining the flexibility of a rotary-wing platform with the aerodynamic efficiency of a fixed-wing aircraft. **Length:** 100cm **Width:** 100cm **Height:** 30cm **Rotor diameter:** 90cm **MTOW:** 1.5kg **Payload:** 0.2kg **Max speed:** 21kt **Cruise speed:** 16kt **Range:** 10km **Endurance:** 1h



Schiebel ▸ Camcopter S-100

The Camcopter S-100 is a rotary-wing tactical UAS manufactured by Scheibel. The S-100 is a modular platform that integrates a range of payloads, such as EO/IR payload, search and rescue systems, lidar scanners, ESM sensors, searchlights, and loudspeakers. Over the last 15 years, the S-100 has been in operation with over 25 customers and has completed over 2,000 deck landings onto a wide variety of single-spot sea-going vessels in the maritime domain. **Length:** 310cm **Width:** 124cm **Height:** 112cm **Rotor diameter:** 340cm **MTOW:** 200kg **Payload:** 50kg **Max speed:** 120kt **Cruise speed:** 55kt **Range:** 200km **Ceiling:** 18,000ft **Endurance:** 6h

Scion UAS ▸ SA-400 Jackal

The SA-400 Jackal is a heavy-payload-capability, long-endurance VTOL UAS that had its first flight in 2013. It is an optionally piloted vehicle, so it can be used before Federal Aviation Administration UAS regulations on airspace integration are introduced. In October 2014, it was announced that Scion UAS had completed a series of capability demonstrations of the SA-400 Jackal, which successfully concluded the flight test programme for the aircraft. **Length:** 589cm **Height:** 209cm **Rotor diameter:** 635cm **Payload:** 45.36kg **Max speed:** 80kt **Cruise speed:** 60kt **Range:** 200km **Ceiling:** 6,889.76ft **Endurance:** 3h

Skydio ▸ X2D

Skydio manufactures the X2D UAS. It provides a reconnaissance capability due to its dual-sensor payload that includes both a 12mp colour and FLIR Boson 320x256 longwave IR sensor. In addition, the UAS features six 4k cameras, which enable obstacle avoidance and, when blended with the 12mp camera's image, create a 360˚ live view with up to 100x zoom and electronic image stabilisation. In February 2021, it was reported that the platform had been downselected in the U.S. Army's SRR programme. Skydio announced on 4 May 2021 that the platform had completed its development and was now in production and available to order. **Length:** 26.4cm **Width:** 22.4cm **Height:** 8.3cm **MTOW:** 1.32kg **Range:** 10km **Endurance:** 0.58h

Sky-Hero ▸ Loki Mk2

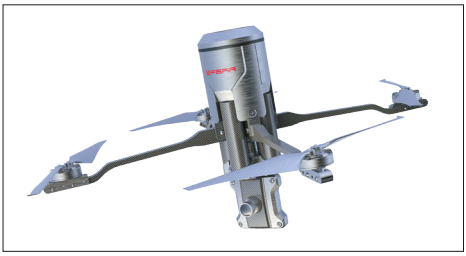
Manufucedd by Sky-Hero, the Loki Mk2 is a quadcopter rotary-wing UAV. The platform was designed, in collaboration with the Belgium Police, to provide the military and law enforcement with the ability to detect threats in complex terrains, such as dense urban areas. The hand-launched platform can be operated without any training and features an in-built camera payload that transmits a live video feed with no latency and no frozen images. **Endurance:** 0.27h

SpearUAV ▸ Ninox 40

The Ninox 40 is the smallest and lightest member of the Ninox family of encapsulated immediate-action UAVs, which also features the Ninox 66 and Ninox 130 (see separate entries). Manufactured by SpearUAV, the platform is ISTAR capable micro-UAV for tactical and micro-tactical ground units. Uniquely, the encapsulated drone can be launched from a 40mm grenade launcher, a handheld launcher tube or like a conventional UAV. India, Israel and the US are all interested in the Ninox 40. **Width:** 4cm **MTOW:** 0.25kg

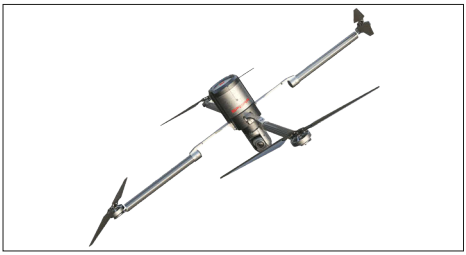
SpearUAV ▸ Ninox 66

The Ninox 66 is part of the SpearUAV family of ISTAR capable encapsulated immediate-action UAVs, which also features the smaller Ninox 40 and larger Ninox 103. (see separate entries). With a payload capacity of 700g, the Ninox 66 is designed for an immediate launch from stationary or mobile platforms, such as tanks, IFV and other vehicles. **Payload:** 0.7kg **Endurance:** 0.83h



SpearUAV ▸ Ninox 103

The Ninox 103 achieves the longest operational range and has the highest payload capacity of the SpearUAV family of ISTAR capable encapsulated immediate-action UAVs, which also features the Ninox 40 and Ninox 66 (see separate entries). It can be launched near-instantaneously from large scale air, sea and land platforms. In addition, it has an endurance of up to one hour. **Payload:** 1.5kg



ST Engineering Aerospace ▸ USTAR-X

ST Aerospace is developing the Universal Surveillance and Tracking Rotorcraft-X (USTAR-X) rotary-wing UAV for a variety of military and civil missions, including reconnaissance and surveillance, search and rescue, aerial photography, disaster response, environmental survey and industrial inspections. The platform was unveiled at the Singapore Airshow in February 2014. **Rotor diameter:** 50cm **MTOW:** 1.5kg **Payload:** 0.25kg **Max speed:** 16kt **Range:** 0.92km **Endurance:** 0.42h

ST Engineering Aerospace ▸ USTAR-Y

ST Aerospace is developing the Universal Surveillance and Targeting Rotorcraft-Y (USTAR-Y) hexarotor UAV for a variety of military and civil missions, including reconnaissance and surveillance, search and rescue, aerial photography, disaster response, environmental survey and industrial inspections. **Rotor diameter:** 70cm **MTOW:** 5kg **Max speed:** 22kt **Range:** 0.92km **Endurance:** 0.58h

Steadicopter ▸ Black Eagle 50

Manufactured by Steadicopter, the Black Eagle 50 family are rotary-wing VTOL UAVs designed to provide ISR capabilities to maritime and land operators. The platform comes in three variants, featuring three different powerplants: the gasoline-powered Black Eagle 50, the electric-powered Black Eagle 50E and the hybrid Black Eagle 50H. For military applications, the Black Eagle 50 family supports a variety of interchangeable payloads comprising EO/IR, synthetic aperture radar and other intelligence-gathering sensors for missions such as ISTAR. **Length:** 254cm **Rotor diameter:** 216cm **MTOW:** 35kg **Payload:** 5kg **Max speed:** 70kt **Cruise speed:** 47kt **Range:** 150km **Ceiling:** 9,998.2ft **Endurance:** 4h

STM Savunma Teknolojileri Muhendislik ve Ticaret ▸ Boyga

The Boyga is a quadcopter mini-UAS manufactured by STM. It features a high level of autonomy and is designed to drop 81mm and 60mm mortar shells onto ground targets. STM announced the drone in December 2021. **Length:** 80cm **Width:** 80cm **Height:** 50cm **MTOW:** 17kg **Max speed:** 29.16kt **Range:** 5km **Ceiling:** 9,842.52ft **Endurance:** 0.5h

STM Savunma Teknolojileri Muhendislik ve Ticaret ▸ Kargu

The Kargu, or Kargu-2, is a quadcopter loitering munition and UAS manufactured by Turkish company STM. Designed for asymmetric warfare or anti-terrorist operations, the platform provides ISR and precious strike capabilities. The platform can perform fully autonomous navigation and strike manoeuvres; these actions must be approved by an operator in line with the Man-in-the-Loop principle. **Length:** 60cm **Width:** 60cm **Height:** 43cm **MTOW:** 7.06kg **Payload:** 1.3kg **Max speed:** 38.88kt **Range:** 5km **Ceiling:** 9,186.35ft **Endurance:** 0.5h

STM Savunma Teknolojileri Muhendislik ve Ticaret ▸ Togan

The Togan is a rotary-wing reconnaissance UAV developed by STM. This system is specifically designed to complement the Alpagu fixed-wing and Kargu rotary-wing attack UAVs by increasing threat awareness within the operational area. Designed for counterterrorism operations or asymmetric warfare scenarios, the Togan prioritises lightness and portability. **Length:** 78cm **Width:** 78cm **MTOW:** 7.5kg **Max speed:** 39kt **Range:** 10km **Ceiling:** 3,280ft **Endurance:** 0.75h

SwissDrones Operating AG/ADASI ▸ SDO 50 V2 VTOL

Manufactured by Swiss Drones, the SDO 50 V2 is a multi-purpose, unmanned helicopter system that features a Fletner double rotor system. The platform can be operated within or beyond visual line of sight and features an integrated autopilot system that allows autonomous take-off and landing procedures as well as autonomous flight patterns. Uniquely, the platform features a Flettner double rotor system and is capable of carrying a payload that is heavier than its own empty weight of 42kg. **Length:** 232cm **Width:** 70cm **Height:** 92cm **Rotor diameter:** 282cm **MTOW:** 87kg **Payload:** 45kg **Max speed:** 38.88kt **Ceiling:** 6,561.68ft **Endurance:** 2.5h

Tactical Robotics ▸ Cormorant

Cormorant, formerly known as AirMule, is a compact, single-engine VTOL UAV. Internal lift rotors enable the aircraft to fly in obstructed (eg mountainous, wooded, urban) terrain where helicopters are unable to operate. The UAV offers capabilities for emergency responders in routine, day-to-day operations and in situations such as earthquakes and floods, as well as military operations such as casualty evacuation and logistics. **Length:** 620cm **Width:** 220cm **Height:** 180cm **Rotor diameter:** 180cm **MTOW:** 1,682kg **Payload:** 500kg **Max speed:** 97.19kt **Cruise speed:** 80.99kt **Range:** 600km **Ceiling:** 12,000ft **Endurance:** 2.6h

Taekyung Electronics ▸ Searchlight Drone

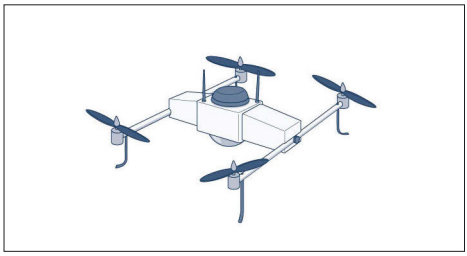
The Searchlight Drone is a rotary-wing small UAS manufactured by Taekyung Electronics. The platform can be utilised for EO/IR reconnaissance, logistics operations, surveillance patrol, object tracking and warfighting experiments, in addition to civilian applications such as search and rescue. The platform is being utilised by several Republic of Korea Army units, and its display at AUSA 2021 show it is also being marketed to US customers. **MTOW:** 24kg **Max speed:** 48.6kt **Endurance:** 0.42h

Teal Drones ▸ Golden Eagle

Teal's Golden Eagle is a small, lightweight quadrotor UAV designed for easy and rapid deployment at platoon level with a range of more than three kilometres. The platform was unveiled in August 2020 and, according to the company, is designed to fit into the same market space as DJI UAVs but has the advantage of being designed and manufactured in the USA with US proprietary rights. **Length:** 40cm **Width:** 40cm **Height:** 15cm **Rotor diameter:** 15cm **MTOW:** 1kg **Payload:** 0.04kg **Max speed:** 43.45kt **Range:** 3.7km **Endurance:** 0.83h

Tekever ▸ VR1 Colibri

The Vertical Ray 1 (VR1) Colibri is the smallest system in the Vertical Ray family of products. It is collapsible and man-portable in a 40l rucksack. The VR family is available with sensors including HD EO to view large areas of terrain, IR sensors for day/night capability and search and rescue missions and precision-zoom sensors for target identification. **Length:** 50cm **Width:** 50cm **Height:** 20cm **Rotor diameter:** 50cm **MTOW:** 2.8kg **Max speed:** 18.9kt **Cruise speed:** 13.5kt **Range:** 2km **Ceiling:** 820ft **Endurance:** 0.5h



Teledyne FLIR ▸ Black Hornet 3

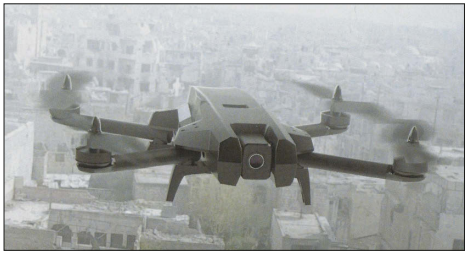
The Black Hornet 3 is the next generation of the PD-100 Black Hornet, the world's smallest nano-UAS. This new model of the Black Hornet provides the ability to navigate in GPS-denied environments, enabling the warfighter to maintain situational awareness, threat detection and surveillance. **Length:** 16.8cm **Width:** 8cm **Height:** 5cm **Rotor diameter:** 12.3cm **MTOW:** 0.03kg **Max speed:** 11.6kt **Cruise speed:** 8kt **Range:** 2km **Ceiling:** 984.25ft **Endurance:** 0.4h

Teledyne FLIR ▸ Black Hornet VRS

The Black Hornet Vehicle Reconnaissance System (VRS), based on an adaption of the Black Hornet Personal Reconnaissance System (PRS), is a nano-UAS enabling the warfighter to maintain situational awareness, threat detection and surveillance for battle damage assessment, pre-deployment, route and point reconnaissance and targeting information without the need for warfighters to exit a vehicle. **Length:** 16.8cm **Width:** 800cm **Height:** 500cm **Rotor diameter:** 12.3cm **MTOW:** 0.3kg **Max speed:** 11.6kt **Cruise speed:** 9kt **Range:** 2km **Endurance:** 0.4h

Teledyne FLIR ▸ ION M640x

The ION M640x is a short-range micro-UAS manufactured by Teledyne FLIR. Developed from the ION M440, the quadcopter can be folded for easier transportation and features a high-powered discrete mission computer for advanced autonomous functions. It is equipped with an EO/IR camera payload, which hosts a Teledyne FLIR 640 thermal imager and a near IR laser illuminator. **Length:** 56.4cm **Width:** 56cm **Height:** 12.4cm **MTOW:** 1.88kg **Max speed:** 19.99kt **Endurance:** 0.58h



Teledyne FLIR ▸ PARC

The Persistent Aerial Reconnaissance and Communications (PARC) platform is a tethered hexarotor designed for military and commercial applications. PARC is able to provide communications or surveillance for a period of days using a Kevlar cord-thin microfilament for data and power. **Length:** 300cm **Width:** 300cm **Height:** 150cm **Rotor diameter:** 75cm **MTOW:** 6kg **Payload:** 3kg **Ceiling:** 400ft **Endurance:** 168h

Teledyne FLIR ▸ PD-100 Black Hornet

The PD-100 Black Hornet personal reconnaissance system (PRS) is designed for dismounted close-combat soldiers, providing them with an immediate reconnaissance capability with minimal increase in personal equipment weight. The palm-sized, rotary-wing UAV is capable of flying outdoors and in confined areas. Initial prototypes were flown in 2008, and the Hornet achieved its first flight by early 2009. **Length:** 12cm **Width:** 8cm **Height:** 5cm **Rotor diameter:** 12cm **MTOW:** 1.3kg **Max speed:** 6kt **Cruise speed:** 10kt **Range:** 1km **Endurance:** 0.42h

Teledyne FLIR ▸ R80D SkyRaider

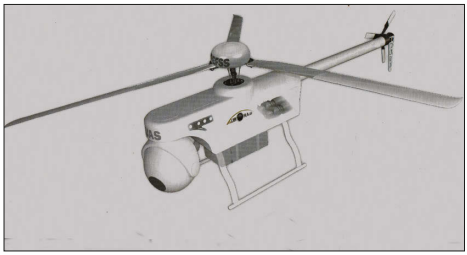
The military-grade R80D SkyRaider VTOL small UAS is an open-architecture, multi-mission aircraft. Manufactured by Teledyne FLIR System exclusively for US DoD and Federal Agencies, the platform includes a modular power system with multiple embedded NVIDIA Tx2 processors for real-time AI, including object detection and classification. The platform has been procured by the USMC and has been selected in a US Army programme. **Length:** 80cm **Width:** 80.01cm **Height:** 34.29cm **Rotor diameter:** 53cm **MTOW:** 6.5kg **Payload:** 2kg **Max speed:** 26.95kt **Cruise speed:** 21.6kt **Range:** 8.2km **Ceiling:** 15,000ft **Endurance:** 0.67h

Teledyne FLIR ▸ SkyRanger R70

The SkyRanger R70 is a quadcopter UAV designed for surveillance and observation and package delivery up to a weight of two kilograms. The platform is a larger variant of the SkyRanger R60. The platform can withstand sustained winds up to 65kph, operate up to 15,000ft, and host numerous payloads. **Length:** 80cm **Width:** 80cm **Height:** 50cm **Rotor diameter:** 20cm **MTOW:** 8.5kg **Payload:** 4kg **Max speed:** 27kt **Cruise speed:** 21.6kt **Range:** 8km **Ceiling:** 15,000ft **Endurance:** 0.67h

Tianjin Aurora UAV ▸ 5A-03

The Tianjin Aurora UAV 5A-03 is a large, heavy-fuel, three-blade, rotary-wing reconnaissance platform with a double turboshaft engine and a main rotor diameter of 3.4m. The system is a larger version of the company's 5A-01 platform. **Length:** 297cm **Width:** 340cm **Height:** 91cm **Rotor diameter:** 340cm **MTOW:** 220kg **Payload:** 100kg **Max speed:** 64.8kt **Cruise speed:** 64.8kt **Ceiling:** 16,400ft **Endurance:** 1.5h



Timestech ▸ Strike Eagle TIM-X100

The Strike Eagle TIM-X100 is a rotary-wing UAS designed to perform reconnaissance and surveillance missions. Part of the Strike Eagle series of rotary-wing drones developed by Timestech, the TIM-X100 prioritises lightness, durability and modularity. Capable of carrying a variety of proprietary sensors produced by Timestech, this UAS can be customised to suit the needs of different users in both the commercial and military sectors. **MTOW:** 10kg **Payload:** 2.5kg **Max speed:** 29kt **Ceiling:** 16,400ft **Endurance:** 1h

Timestech ▸ Strike Eagle TIM-X150

The Strike Eagle TIM-X150 is a rotary-wing UAS designed to perform reconnaissance and surveillance missions. Part of the Strike Eagle family of rotary-wing drones, the TIM-X150 can lift the heaviest payload of all the UAS in this series. Capable of carrying a variety of proprietary sensors produced by Timestech, it can be customised to suit the needs of different users in both the commercial and military sectors. **MTOW:** 18kg **Payload:** 7kg **Max speed:** 29kt **Endurance:** 2h

Titra Teknoloji A.S ▸ ALPIN

ALPIN is a rotary-wing UAS manufactured by Titra Teknoloji A.S. Displayed at IDEF 2021; the UAS is adapted from a two-person crewed helicopter. The aircraft can autonomously take off, perform its assigned mission and then land. These missions could be ISTAR tasks, utilising the UAS' EO/IR gimbaled camera, cargo-carrying duties or other roles such as mapping and imaging applications, agricultural tasks, and meteorological studies. **Payload:** 160kg

Turkish Aerospace ▸ R100

Developed by Turkish Aerospace, R100 is a rotary-wing UAS with ISR and cargo capabilities. It was unveiled at the Paris Air Show in 2019. The platform has a maximum endurance of six hours and can provide a real-time video feed. **Length:** 340cm **Height:** 100cm **Rotor diameter:** 300cm **MTOW:** 130kg **Payload:** 50kg **Max speed:** 59.4kt **Cruise speed:** 50.22kt **Range:** 50km **Ceiling:** 13,000ft **Endurance:** 6h

UAV Solutions ▸ Phoenix 30

The Phoenix 30 is a VTOL quadrotor UAV designed for use by military and commercial customers. Applications include ISR, law enforcement, search and rescue, first response, agriculture, inspection and anti-poaching. It is in service with Bulgarian and Romanian forces. **Length:** 50.8cm **Width:** 50.8cm **Height:** 30cm **Rotor diameter:** 15cm **MTOW:** 4.53kg **Payload:** 0.91kg **Max speed:** 24kt **Cruise speed:** 15.5kt **Range:** 3.2km **Ceiling:** 10,000ft **Endurance:** 0.5h

Uavos ▸ ISR-350-5

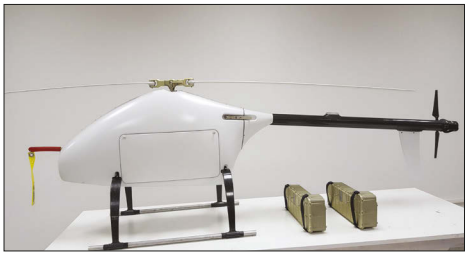
The ISR-350-5 is an unmanned helicopter developed by Uavos and ISR Unmanned Technologies. It has been designed to carry out commercial and security operations and is manufactured in the UK. It is controlled by Uavos' autopilot and is based on the UVH-170 UAV also designed by Uavos. **Length:** 320cm **Height:** 84cm **Rotor diameter:** 260cm **MTOW:** 41kg **Payload:** 5kg **Max speed:** 65kt **Cruise speed:** 32.4kt **Range:** 350km **Ceiling:** 8,202.1ft **Endurance:** 6h

Uavos ▸ UVH-290E

The Uavos UVH-290E rotary-wing UAV forms the basis of the Surveyor-H UAS and is designed for a range of commercial roles, such as environmental monitoring and package delivery, and military applications, such as reconnaissance, targeting and jamming. **Length:** 243cm **Width:** 75cm **Height:** 86cm **Rotor diameter:** 320cm **MTOW:** 107kg **Payload:** 5kg **Max speed:** 54kt **Cruise speed:** 38kt **Range:** 300km **Ceiling:** 6,800ft **Endurance:** 5h

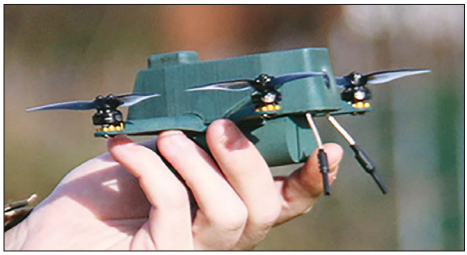
Uavos ▸ UVH-EL

The Uavos UVH-EL rotary-wing UAV is the air vehicle component of the Surveyor-HE UAS – larger versions of the company's UVH-290E UAV and Surveyor-H system respectively. However, the UVH-EL has a shorter endurance and lower payload capacity, as it is powered by lithium-ion batteries as opposed to the four-stroke engine of the UVH-290E. The improved platform was unveiled at DSEI in September 2019 after test flights in early 2018. **Length:** 220cm **Width:** 63cm **Height:** 66cm **Rotor diameter:** 250cm **MTOW:** 25kg **Payload:** 5kg **Max speed:** 65kt **Cruise speed:** 32.4kt **Range:** 67km **Ceiling:** 11,480ft **Endurance:** 1.5h



UAVTEK ▸ Bug Nano

The Bug Nano is a micro UAS developed by UAVTEK in partnership with BAE Systems and General Dynamics Land Systems. The quadcopter platform can host a range of payloads, such as an ISR camera, loudspeaker, microphone, and UAVTEK is in the process of gaining certification to equip it with smoke deployers and flashbangs. In July 2020, UAVTEK announced it had been awarded a contract to supply the British Army with the system. By December 2020, 30 had been delivered for trials. **MTOW:** 0.25kg **Payload:** 0.1kg **Max speed:** 42.76kt **Range:** 2km **Endurance:** 0.67h



UAVTEK ▸ Proteus

Manufactured by UAVTEK, Proteus is a quadcopter mini UAS. It is man-packable and can be folded to fit inside a ruggedised carry case. Hosting an ISR payload as standard, the UAS can easily be configured to carry up to 1kg of cargo. The platform utilises the same ground control station and battery packs as the entire UAVTEK fleet. **Length:** 23cm **Width:** 26cm **Height:** 11cm **MTOW:** 2.2kg **Payload:** 1kg **Max speed:** 43.2kt **Ceiling:** 19,685.04ft **Endurance:** 0.75h

Ukrspecexport ▸ People's Copter (PC-1)

The Ukrspecsystems PC-1 multirotor UAV is a small, lightweight system designed for both military missions, such as reconnaissance and civil security missions (eg emergency response), and commercial missions, such as infrastructure and building inspections. It is assessed that Ukrspecsystems is affiliated with investment firm Ukrinmash, a participant of the Ukroboronprom state concern which operates internationally and has more than 80,000 employees. **Length:** 56cm **Width:** 50cm **Height:** 15cm **Rotor diameter:** 30cm **MTOW:** 5.2kg **Payload:** 1kg **Max speed:** 29.1kt **Cruise speed:** 19.5kt **Range:** 5km **Ceiling:** 3,280ft **Endurance:** 0.63h

UMS Skeldar ▸ R-350

The R-350 is an ITAR-free, rotary-wing VTOL TUAV. It contains a jet-turbine engine propulsion system. This allows it to use heavy fuels, meaning the R-350 can operate in higher-altitude regions. **Length:** 310cm **Width:** 100cm **Height:** 130cm **Rotor diameter:** 350cm **MTOW:** 150kg **Payload:** 30kg **Max speed:** 78.3kt **Cruise speed:** 54kt **Range:** 90km **Ceiling:** 6,550ft **Endurance:** 3h

UMS Skeldar ▸ Skeldar V-150

The Skeldar V-150 is a fully autonomous modular VTOL UAV manufactured by UMS Skeldar. It is designed to support tactical operations for surveillance, emergency response, homeland security and defence in both the land and naval domains. The platform has multiple payload capabilities and can carry up to 12kg in its nose and 30kg in the main payload bay, giving it a total payload capacity of 42kg. In addition, it has an endurance of 4h+ and a maximum airspeed of 120km/h. **Length:** 320cm **Width:** 99.4cm **Height:** 100cm **Rotor diameter:** 350cm **MTOW:** 150kg **Payload:** 42kg **Max speed:** 64.79kt **Range:** 100km **Ceiling:** 10,000ft **Endurance:** 4h

UMS Skeldar ▸ Skeldar V-200

UMS Aero Group AG and Saab formed a joint venture company called UMS SKELDAR to produce the Skeldar V-200 UAV. The Skeldar V-200 is designed as a flexible and highly versatile system to carry out a wide range of applications such as reconnaissance, identification, target acquisition and EW. A number of COTS high-resolution EO/IR, SAR and EW sensors are available. **Length:** 400cm **Width:** 120cm **Height:** 130cm **Rotor diameter:** 460cm **MTOW:** 235kg **Payload:** 40kg **Max speed:** 75kt **Cruise speed:** 60kt **Range:** 90km **Ceiling:** 10,000ft **Endurance:** 5h

UMS Skeldar ▸ Skeldar V-200B/Sea Falcon

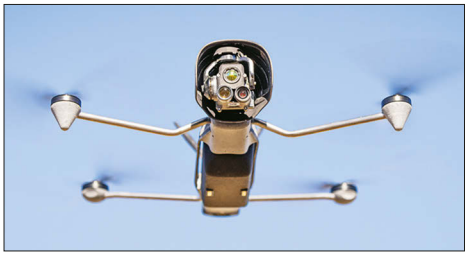
The Skeldar V-200B, an improved variant of the Skeldar V-200 VTOL UAV, has been designed for maritime applications. Unveiled in 2018 by UMS Skeldar, the V-200B has a larger payload capacity and increased reliability over its predecessor. The German Navy signed a contract on 3 August 2018 to become the launch customer for the system. In April 2021, it purchased three additional systems to use on its K130 corvettes for a reported €70 million ($84 million). On 8 November 2021, UMS Skeldar announced that ESG Elektroniksystem- und Logistik-GmbH had completed the programme. In the German Navy, the platform is designated the Sea Falcon. **Length:** 400cm **Height:** 130cm **Rotor diameter:** 460cm **MTOW:** 235kg **Payload:** 45kg **Max speed:** 75kt **Range:** 90km **Ceiling:** 10,000ft **Endurance:** 5h

Vanguard Defense Industries ▸ ShadowHawk

The ShadowHawk is a VTOL UAV that can be transported and launched/recovered within a small area. The ShadowHawk is able to maintain aerial surveillance at 700ft. Any data gathered by the UAV whilst it is airborne is used to update a server in real-time via the Internet from a terminal designated by the operator. **Length:** 213cm **Width:** 100cm **Height:** 76cm **Rotor diameter:** 194cm **MTOW:** 31.75kg **Payload:** 10kg **Max speed:** 48.6kt **Cruise speed:** 32.4kt **Range:** 14km **Ceiling:** 6,889.76ft **Endurance:** 3h

Vantage Robotics ▸ Vesper

In 2018, the US Army selected Vantage Robotics to rapidly develop portable, Short-Range Reconnaissance (SRR) UAV prototypes to be deployed with intelligence, surveillance and reconnaissance (ISR) and provide situational awareness in mission-critical environments. In nine months, with a $2.5 million contract, Vantage developed Vesper, building on the design of its Snap UAV. **Length:** 31cm **Width:** 35cm **Height:** 6cm **Rotor diameter:** 12cm **MTOW:** 0.7kg **Max speed:** 38.88kt **Range:** 8km **Ceiling:** 10,000ft **Endurance:** 0.83h

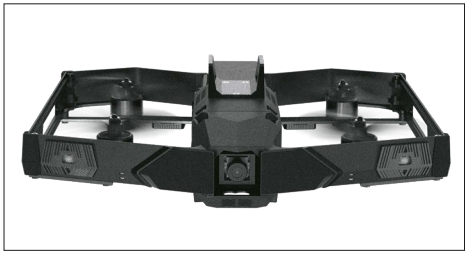


Velos Rotors ▸ VELOS V2

Manufactured by Velos Rotors, the VELOS V2 is a rotary-wing UAS. The aircraft has a fully redundant design that allows it to remain operational even if major components fail. In addition, the UAS can host several payloads such as EO/IR cameras, LiDAR sensors and dropboxes. **MTOW:** 16kg **Max speed:** 70.19kt **Range:** 40km **Endurance:** 1.5h

XTEND ▸ Xtender

Launched in September 2020, the Xtender is a rotary-wing micro UAV designed for close-quarters battle ISR tasks. Instead of a conventional GCS, an operator uses a single-handed controller and an AR headset to directly see what the UAV's camera payload is capturing in real-time. The XTEND manufactured UAV is reportedly in service with the Israeli military forces and was the subject of a US Department of Defence procurement contract in early 2021. **Length:** 29.97cm **Width:** 29.97cm **Height:** 9.91cm **MTOW:** 1.2kg **Payload:** 0.15kg **Range:** 2km



Zala Aero Group ▸ ZALA 421-02X

The ZALA 421-02X is a rotary-wing UAV suitable for various military and civil tasks, including ship- or land-based reconnaissance and surveillance, real-time target acquisition, bomb damage assessment and gas and radioactivity real-time analysis. It is an improved version of the ZALA 421-02 UAV. **Length:** 288cm **Width:** 75cm **Height:** 110cm **Rotor diameter:** 312cm **MTOW:** 90kg **Payload:** 30kg **Max speed:** 49kt **Cruise speed:** 40kt **Range:** 50km **Ceiling:** 9,840ft **Endurance:** 4h

Zala Aero Group ▸ Zala 421-21

The Zala 421-21 is a small, quiet, rotary-wing UAV designed for various missions, including ship- and land-based reconnaissance and surveillance, bomb damage assessment and real-time target acquisition. It is a traditional VTOL system that can carry a range of payloads for different missions. It is intended to be easy to operate in various environments and has a reconnaissance range of two kilometres. **Height:** 22cm **Rotor diameter:** 60cm **MTOW:** 1.5kg **Max speed:** 32kt **Range:** 2km **Ceiling:** 3,280ft **Endurance:** 0.67h

Zala Aero Group ▸ Zala 421-22

The Zala 421-22 is a rotary-wing UAV designed for ship- or land-based reconnaissance and surveillance, bomb damage assessment and real-time target acquisition. The VTOL UAV has been designed with reliable flight characteristics and can use payloads from fixed-wing Zala 421-16E. The platform has a reconnaissance range of five kilometres. **MTOW:** 8.5kg **Max speed:** 45kt **Range:** 5km **Ceiling:** 3,280ft **Endurance:** 0.67h

Zala Aero Group ▸ ZALA 421-24

The first quadcopter in the ZALA line of UAVs, the ZALA 421-24 features a folding design and has a low acoustic and visual signature. With a range of 1.5km and an endurance of 30 minutes, the platform is designed to be easily transported and operated by a single user to provide ISR capabilities. **Length:** 53cm **Width:** 55cm **Height:** 19cm **MTOW:** 3.5kg **Range:** 1.5km **Endurance:** 0.5h

Zhong Hang Zhi Technology (ZHZ) ▸ TD10

The TD10 is a developmental large unmanned helicopter with coaxial rotor blades. Its payload of five tonnes makes it ideal for troop and cargo transportation. It is a further development of the company's large T333 rotary-wing UAV. **Length:** 1,410cm **Width:** 620cm **Height:** 670cm **Rotor diameter:** 1,680cm **MTOW:** 15,000kg **Payload:** 5,000kg **Max speed:** 148.5kt **Cruise speed:** 132.3kt **Range:** 1,200km **Ceiling:** 19,685ft **Endurance:** 5.5h

Zhong Hang Zhi Technology (ZHZ) ▸ TD220

The TD220 is an electric, coaxial dual-rotor UAV manufactured by Zhong Hang Zhi (ZHZ). The aircraft, which debuted at the 2014 Singapore Airshow, is designed to carry out civil and commercial surveillance missions. The platform is fitted with the HeliAP flight control system, allowing it to function autonomously in all flight segments. **Length:** 250cm **Height:** 180cm **MTOW:** 300kg **Payload:** 50kg **Cruise speed:** 54kt **Range:** 50km **Ceiling:** 13,124ft **Endurance:** 5h

Ziyan Unmanned Aerial Vehicle Company ▸ Blowfish

The Blowfish is a rotary-wing UAV produced by Ziyan Unmanned Aerial Vehicle Company. It has been designed as a general transport aircraft, used to either airdrop supplies or land for off-loading by ground personnel. Ziyan displayed the system at IMDEX 2017 in Singapore, following its first flight in 2016 and a commitment to production. **Length:** 175.5cm **Width:** 60cm **Height:** 62cm **MTOW:** 50kg **Payload:** 12kg **Max speed:** 78.5kt **Cruise speed:** 54kt **Ceiling:** 16,732ft **Endurance:** 0.83h

Ziyan Unmanned Aerial Vehicle Company ▸ Infiltrator

The Infiltrator UAV is produced by Ziyan Unmanned Aerial Vehicle Company. It has been designed with the same configuration as a standard helicopter and can be fitted with four air-to-ground missiles. Applications include offensive operations, reconnaissance, search and rescue, special operations and counterterrorism. The Infiltrator can carry a standard payload of eight kilograms and has a maximum payload weight of ten kilograms. **Length:** 180cm **Width:** 49cm **Height:** 60cm **Rotor diameter:** 187cm **MTOW:** 26kg **Payload:** 10kg **Max speed:** 97.2kt **Cruise speed:** 64.79kt **Ceiling:** 16,732.28ft **Endurance:** 0.9h

Ziyan Unmanned Aerial Vehicle Company ▸ Ranger

The Ranger is a rotary-wing UAV produced by Ziyan UAV Company. It has been designed for surveillance use, including tactical, paramilitary and commercial missions. **Length:** 175cm **Width:** 42cm **Height:** 46.5cm **Rotor diameter:** 175cm **MTOW:** 15.8kg **Payload:** 7kg **Max speed:** 86.4kt **Cruise speed:** 70kt **Ceiling:** 16,700ft **Endurance:** 0.9h

ZM Interactive ▸ xFold Dragon

Manufactured by ZM Interactive (ZMI), the xFold is a range of UAS' displayed at IDEX 2021. Out of the four systems displayed, the Dragon is the largest and is most suited to military usage. Its flexible configuration means it can be operated as a quadcopter, hexacopter, octocopter or dodecacopter. Each of these has different performance attributes. At its maximum, the platform has a payload capacity of 450kg. **Payload:** 450kg

Z-sistem ▸ CRH

CRH (Çatal Rotorlu Helikopter) is an intermesh dual-rotor UAV being developed by Z-sistem. The system, designed to meet military and industrial standards, is composed of an aerial UAV platform, controller tablet and whip antenna. The start-up, take-off, flight and landing are designed to be automatic. In case of link-loss, CRH autonomously follows an emergency scenario and lands at a predefined area. **Length:** 180cm **Width:** 180cm **Height:** 80cm **Rotor diameter:** 250cm **MTOW:** 50kg **Payload:** 10kg **Max speed:** 47kt **Cruise speed:** 40kt **Range:** 15km **Ceiling:** 12,000ft **Endurance:** 2h

Loitering munitions ▸ ADASI ▸ Rash 1M

Displayed at IDEX 2021, the Rash 1M is a precision-guided munition that has been designed to strike small-to-medium-sized targets with precision. The munition is manufactured by ADASI, a subsidiary of the EDGE Group. As reported by Shephard, it is possible to integrate this platform onto most existing aircraft systems. **Length:** 0.6m **Weight:** 2.5kg **Max speed:** 288km/h **Range:** 9km **Effective altitude:** 15,000ft

ADASI ▸ Rash 2-H

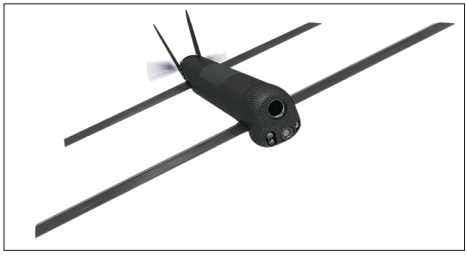
Unveiled at Dubai Airshow 2021, the Rash 2-H is a guided munition that has been designed to strike small-to-medium-sized targets with precision. The munition is manufactured by ADASI, a subsidiary of the EDGE Group. As reported by Shephard, it is possible to integrate this platform into most tactical UAVs and crewed aircraft. **Range:** 8.6km

ADASI ▸ Rash 2M

Unveiled at IDEX 2021, the Rash 2M is a fixed-wing guidance kit for mortars and other in-house designed payloads and can strike medium-sized targets with precision. The munition is manufactured by ADASI, a subsidiary of the EDGE Group. As reported by Shephard, it is possible to integrate this platform onto most existing aircraft systems. **Length:** 1m **Weight:** 14.5kg **Max speed:** 540km/h **Range:** 18.2km **Effective altitude:** 25,000ft

AeroVironment ▸ Switchblade 300

The Switchblade 300 is a man-portable, tube-launched loitering munition manufactured by AeroVironment. The platform is rapidly deployable by one operator from either a self-contained ground launcher tube, which can be fitted to land, sea or air platforms, or from a Multipack Launcher also offered by AeroVironment. The 300 provides the operator with real-time video/GPS coordinates for information-gathering, targeting or feature/object recognition before performing a precision strike with minimum collateral damage. **Length:** 0.36m **Width:** 0.61m **Weight:** 2.5kg **Max speed:** 161km/h **Range:** 10km **Effective altitude:** 15,000ft **Endurance:** 0.17h

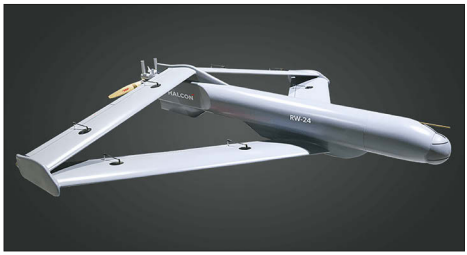


AeroVironment ▸ Switchblade 600

The Switchblade 600 is a man-portable tube-launched loitering munition manufactured by AeroVironment. Compared to its smaller Switchblade 300 sibling, the 600 is heavier, has quadruple the range, and can engage non-LoS armoured targets. On 31 March 2021, the United States Special Operations Command awarded AeroVironment a $26 million contract for an undisclosed number of Switchblade 600 units. On 28 September 2021, USSOCOM awarded a second contract worth $20.32 million for an additional batch of Switchblade 600 units. The deliveries of both batches are scheduled to be delivered before the end of 2023. **Weight:** 22.7kg **Max speed:** 185.07km/h **Range:** 40km **Endurance:** 0.67h

HALCON ▸ RW-24

Manufactured by HALCON, the RW-24 is a smart loitering munition that can autonomously strike ground targets with its 8kg payload. This is due to it utilising a Global Navigation Satellite System, which combines GPS, GLONASS and other satellite-based navigation systems. **Weight:** 45kg **Range:** 100km **Endurance:** 2h



HALCON ▸ Shadow 25

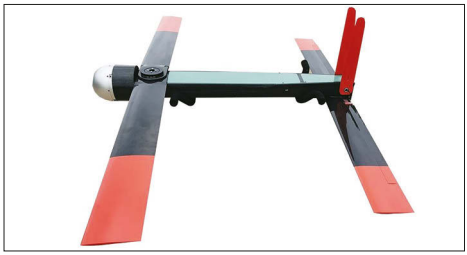
The Shadow 25 is a jet-powered loitering munition that has a cruising speed of 450km/h, an endurance of up to one hour, a range of up to 250km and a payload capacity of 25kg. HALCON, a subsidiary of the EDGE Group, displayed its Shadow family of high-speed loitering munitions for the first time at IDEX 2021. The Shadow 25 is the lighter and smaller member of the Shadow family. **Length:** 2.84m **Width:** 2.36m **Weight:** 80kg **Range:** 250km **Effective altitude:** 25,000ft **Endurance:** 1h

HALCON ▸ Shadow 50

The Shadow 50 is an autonomous loitering munition that has a range of up to 140km, a cruise speed of 200km/h, an endurance of 40min, and can deliver precision strikes against fixed targets with the fitted up to 50kg payload. HALCON, a subsidiary of the EDGE Group, displayed its jet-powered Shadow family of high-speed loitering munitions for the first time at IDEX 2021. The Shadow 50 is heavier, larger and possess twice the payload capacity of its smaller Shadow 25 sibling. **Length:** 3.07m **Width:** 4.05m **Weight:** 85kg **Range:** 140km **Effective altitude:** 15,000ft **Endurance:** 0.67h

Havelsan/Transvaro Elektron ▸ Fedei

Developed by Havelsan and Transvaro, the Fedei, or Bouncer, is a loitering munition first displayed in October 2021. Part of a broader protection system, the developmental loitering munition is designed to protect critical facilities, infrastructures, critical locations and organizations with scattered forces, like the Gendarmerie.



Hindustan Aeronautics Limited (HAL) ▸ CATS ALFA-S

The Combat Air Teaming System (CATS) Air-Launched Flexible Asset - Swarm (ALFA-S) is a loitering munition manufactured by Hindustan Aeronautics Limited (HAL) in collaboration with Newspace Research and Technologies. The ALFA-S is housed in an unpowered container which, after being launched from an aircraft, can glide for 100km before releasing the propeller-powered ALFA-S, dramatically increasing the range of the loitering munition. **Length:** 1.5m **Weight:** 25kg **Max speed:** 100km/h

Hindustan Aeronautics Limited (HAL) ▸ CATS Hunter

The Combat Air Teaming System (CATS) Hunter is an air-launched multi-purpose weapon carriage system. Manufactured by Hindustan Aeronautics Limited (HAL), the system operates like an air-to-surface cruise missile. However, once at its target, the system drops its 250kg munition before autonomously returning to base or a designated area to be recovered. **Weight:** 600kg **Range:** 250km

IAI Israel Aerospace Industries ▸ Green Dragon loitering munition

The Green Dragon is a silent, tactical, low-cost loitering munition system designed to provide small ground units and SOFs with significant situational awareness and firepower in a compact envelope. The all-electric electro-optically guided system is stored, transported and launched from a sealed canister and as many as 12-16 Green Dragon units can be carried on a small vehicle and launched upon request.

IAI Israel Aerospace Industries ▸ Harop

The Harop, and the Maritime Harop variant, is a standoff loitering munition system manufactured by Isreal Aerospace Industries. Equipped with EO/IR seekers, the combat-proven platform is capable of loitering, detecting and then destroying specific targets on either land or sea by locking onto their radio emissions. **Length:** 2.5m **Width:** 3m **Weight:** 125kg **Range:** 150km **Endurance:** 40h

IAI Israel Aerospace Industries ▸ Harpy

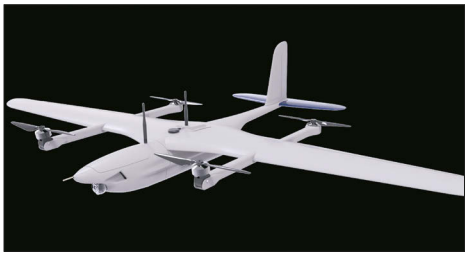
The Harpy is an Israeli anti-radiation, loitering munition. It is designed to attack radar systems and is optimised for the suppression of enemy air defences and destruction of enemy air defences missions. The latest version of the platform is called the Harpy NG, or Harpy Next Generation. Mountable on both naval or land platforms, the unmanned munition is operational with serval air forces. **Length:** 2.7m **Width:** 2.1m **Weight:** 135kg **Max speed:** 416.7km/h **Range:** 200km **Effective altitude:** 15,000ft **Endurance:** 2h

IAI Israel Aerospace Industries ▸ Mini Harpy

The Mini-Harpy is a multi-purpose loitering munition manufactured by Isreal Aerospace Industries. Equipped with an EO/IR camera payload and up to 8kg warhead, the loitering munition has the ability to attack any target from any direction at any angle. **Weight:** 40kg **Max speed:** 370.4km/h **Range:** 100km **Effective altitude:** 5,000ft **Endurance:** 2h

LIG Nex1 ▸ Loitering Munition

The Loitering Munition is a fixed-wing UAV and, as its name suggests, a loitering munition manufactured by Lig Nex1. It can perform both ISR tasks with an EO/IR sensor and strike missions due to its 500g munition. The platform is VTOL capable and has been re-engineered for military use from an existing commercial drone. **Max speed:** 78.29kt **Cruise speed:** 68.03kt



STM Savunma Teknolojileri Muhendislik ve Ticaret ▸ Alpagu

The Alpagu is a fixed-wing kamikaze drone developed by Turkey-based OEM STM. The loitering munition comes in a number of variants and has been designed for lightness and portability and intended to be used in anti-terror and asymmetric warfare scenarios. It can neutralise targets or carry out ISR missions within a range of five kilometres. **Length:** 1.25m **Width:** 0.65m **Weight:** 1.9kg **Max speed:** 92.6km/h **Range:** 5km **Effective altitude:** 400ft **Endurance:** 0.17h

Turkish Aerospace ▸ Simsek

The Simsek (Şimşek), or Lightning, is a high-speed target drone system that enables autonomous high-speed and low-altitude threat stimulation of aircraft and missiles for air-to-air, ground-to-air, anti-aircraft gunnery systems' tracking and live-fire training. In an April 2021 speech, the head of Turkish Aerospace Industries (TAI), Temel Kotil, stated that the platform could now be utilised as a loitering munition or kamikaze UAV that could be launched from larger UAVs and could carry a 5kg munition. **Length:** 230cm **Wingspan:** 150cm **MTOW:** 75kg **Payload:** 5kg **Max speed:** 350kt **Cruise speed:** 200kt **Ceiling:** 15,000ft **Endurance:** 45 min/s

Unknown Manufacturer (Palestine) ▸ Shehab

The Shehab is a Palestinian loitering munition that carries a 5kg explosive payload. According to Hamas' militant wing, the platform is indigenously produced. However, the platform has broad similarities with the Qasef built in Iran. Footage released by the IDF evidenced that the loitering munition was utilised in the May 2020 Israel–Palestine conflict.

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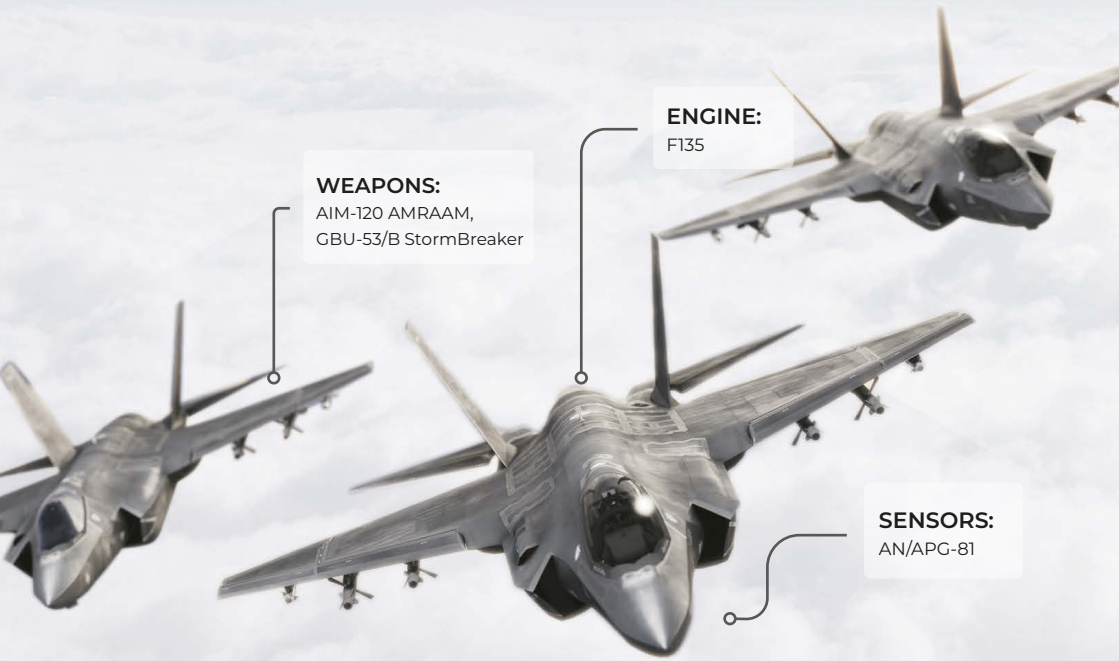

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UVision ▸ HERO-20

The HERO-20 is the smallest in the UVsion family of loitering munitions. With its small size, the HERO-20 is portable in a man-pack and designed for anti-personnel strikes with its 200g warhead. **Weight:** 1.8kg **Range:** 10km **Endurance:** 0.33h

UVision ▸ HERO-30

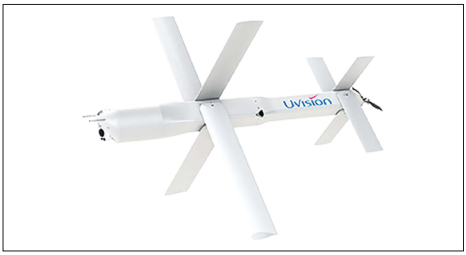
The HERO-30 is a short-range loitering munition manufactured by UVision. It is man-pack portable and can be deployed from a canister within minutes. Once airborne, the HERO-30 is powered by an electric motor and can be operated autonomously, semi-autonomously, or manually depending on the mission. Armed with an ISR sensor and a 500g warhead, the loitering munition can abort a strike before re-engaging when the situation is preferable. **Length:** 0.78m **Width:** 0.8m **Weight:** 0kg **Max speed:** 277.8km/h **Range:** 40km **Effective altitude:** 1,500ft **Endurance:** 0.5h

UVision ▸ HERO-70

The HERO-70 is a lethal loitering system in the HERO series by UVision. Like its siblings, it is man-pack portable, launched by a canister and powered by an electric motor. It features an EO/IR sensor and a 1.2kg warhead. **Weight:** 7kg **Range:** 40km **Endurance:** 0.75h

UVision ▸ HERO-120

Unveiled at Paris Air Show 2019, HERO-120 is a loitering munition system manufactured by Uvision. It is fitted with a 4.5kg warhead and is designed to carry out accurate strikes against mid-range targets such as vehicles, tanks, concrete fortifications and personnel with minimal collateral damage. In June 2021, the USMC announced the HERO-120 had been selected for its Organic Precision Fire Mounted (OPF-M) programme. **Length:** 1.34m **Width:** 1.41m **Weight:** 12.5kg **Max speed:** 185.2km/h **Range:** 40km **Effective altitude:** 1,500ft **Endurance:** 1h



UVision ▸ HERO-250

The HERO-250 is a gasoline-powered loitering munition manufactured by UVision. This weapon system is designed for operating units in urban areas carrying out strikes against armoured vehicles, tanks and moving targets. **Weight:** 25kg **Range:** 150km **Endurance:** 3h

UVision ▸ HERO-400

The HERO-400 is a loitering munition manufactured by UVision. Part of the HERO family, the HERO-400 is capable of accurate strikes against a range of targets. It is launched from a canister and is powered by a gasoline engine once airborne. According to reports, in October 2021, the HERO-400 was trailed by representatives of various branches of the US Armed Forces. **Weight:** 40kg **Range:** 150km **Endurance:** 4h

UVision ▸ HERO-400EC

The HERO-400EC is a loitering munition manufactured by UVision. Different from the HERO-400, the HERO-400EC has an electric motor that enables it to silently above a target, ready to respond to pop-up threats. In addition, it features an EO/IR sensor alongside its 10kg warhead, allowing it to locate, track and strike static or moving targets. **Length:** 2.1m **Width:** 2.3m **Weight:** 40kg **Max speed:** 185.2km/h **Range:** 150km **Effective altitude:** 59,055.12ft **Endurance:** 2h

UVision ▸ HERO-900

The HERO-900 is a lethal loitering system in the HERO series by UVision. It is capable of long-range multipurpose operations. This weapon system is designed for strategic operations requiring powerful munitions. **Weight:** 97kg **Range:** 250km **Endurance:** 7h

UVision ▸ HERO-1250

The HERO-1250 is the largest lethal loitering system in the HERO series by UVision. It is capable of long-range multipurpose operations. This weapon system is designed for strategic operations requiring powerful munitions. **Weight:** 125kg **Range:** 200km **Endurance:** 6h

WB Group ▸ Warmate 2

The Warmate 2 is a loitering munition manufactured by WB Group. Much bigger than the original warmate, the platform is designed to launch and operate from a vehicle. The mostly autonomous loitering munition features an EO/IR camera and can be fitted with various warheads, including high explosives, thermobaric, anti-tank and training. The platform is not recoverable, meaning, unlike its predecessor, it is not also classified as a UAS. **Weight:** 30kg **Max speed:** 160km/h **Range:** 20km **Effective altitude:** 1,640.42ft

WB Group ▸ Warmate TL

The Warmate Tube Launch (TL), or Warmate 3, is a loitering munition manufactured by WB Electronics. Despite being smaller than its Warmate and Warmate 2 predecessors, the Warmate 3 maintains the family's 1.4kg high-explosive anti-tank and thermobaric warheads. As its name reveals, the TL is a tube-launched platform, and therefore it features a wing-folding mechanism. In September 2021, it was announced by WB Group that an undisclosed customer would be receiving 1000 units of the platform by early 2022. **Length:** 1.1m **Width:** 1.7m **Weight:** 4.5kg **Max speed:** 120km/h **Effective altitude:** 1,640.42ft **Endurance:** 0.5h

Zala Aero Group ▸ KYB

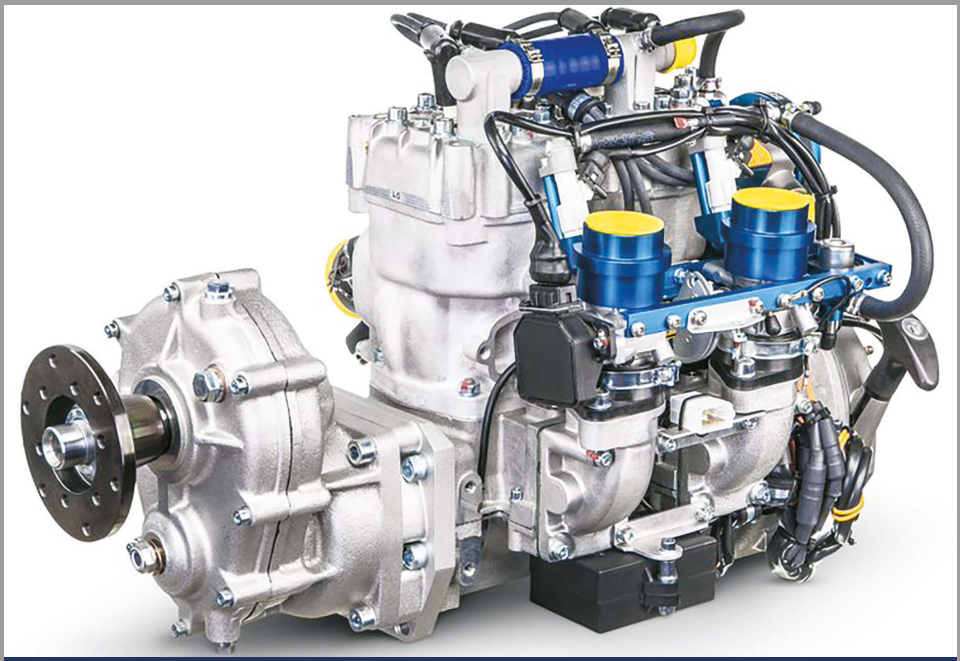
The KYB, or Kub, is a loitering munition manufactured by the Zala Aero Group. The platform features a flying-wing design with a pusher propeller. It is designed to deliver a 3kg munition payload to target coordinates specified manually by the user or acquired from a payload targetting image. **Length:** 0.95m **Width:** 1.21m **Max speed:** 130km/h **Range:** 7km **Endurance:** 0.5h

Zala Aero Group ▸ Lancet-1

The Lancet-1 is a one-use loitering munition manufactured by Zala Aero Group. It is equipped with coordinate, electro-optical and combined aiming systems. In addition, the Lancet-1 features a video communication channel that broadcasts target images to confirm the target engagement. The platform has an MTOW of 5kg and can carry a 1kg payload. Using this payload, it can strike targets up to 40km away. **Weight:** 5kg **Max speed:** 110km/h **Range:** 40km **Endurance:** 0.5h

Zala Aero Group ▸ Lancet-3

The Lancet-3 is a one-use loitering munition manufactured by Zala Aero Group. The platform has an MTOW of 12kg and can carry a 3kg payload. Using this payload, it can strike a target up to 40km away. It is equipped with coordinate, electro-optical and combined aiming systems. In addition, the Lancet-1 features a video communication channel that broadcasts target images to confirm the target engagement. **Weight:** 12kg **Max speed:** 110km/h **Range:** 40km **Endurance:** 0.67h



EQUIPMENT

UAV ENGINES

The following section provides data on a selection of engines produced for UAVs.

Entries are arranged alphabetically by manufacturer and engine name. The specifications are those supplied by the OEMs. Further information can be obtained by contacting these companies directly.

If you think your product should be listed, please contact the team at insight@shephardmedia.com to ensure it appears in the *Shephard Defence Insight* online database (plus.shephardmedia.com) and is included in the next handbook edition.

ABOVE: The 35 Engine Series consists of the 3503 and H35 liquid-cooled two-stroke (inline) engines that are suitable for UAVs and other lightweight platforms such as light and ultralight aviation, hovercrafts, gyro- or helicopters. (Photo: Hirth Engines)

3W INTERNATIONAL

3W-28i

The 3W International 3W-28i engine is designed for use with model aircraft and small UAVs with a weight of 8-20kg. The 3W-28i engine is available in both pusher and tractor versions. Length: 22.5cm Width: 10.6cm Height: 16.4cm Weight: 1.2kg Cruise power: 2.82 mechanical hp

AIE – ADVANCED INNOVATIVE ENGINEERING

40S

The 40S is a compact, lightweight, multi-fuel engine designed specifically for small unmanned aerial, ground and maritime vehicles, hybrid systems and portable power units. It is a single-rotor Wankel design that integrates Advanced Innovative Engineering's Self-Pressurising-Air Rotor Cooling System, which the company says significantly increases the time before overhaul and ease of maintenance and provides for a lower total cost of ownership. Width: 11cm Height: 15.1cm Weight: 2kg

80S

The 80S is a propulsion solution for small, hybrid unmanned vehicles and VTOL platforms or lightweight auxiliary power units. Its single-rotor Wankel rotary engine uses a patented, liquid cooling system (Self-Pressurising-Air Rotor Cooling System) which Advanced Innovative Engineering says provides increased endurance and extended time between overhauls. Width: 15cm Height: 19.1cm Weight: 5kg

225CS

The 225CS is a single-rotor Wankel rotary engine designed for civil and defence unmanned vehicles. It has a high power-to-weight ratio, which the company says makes it suitable for a range of applications, including small/medium-sized tactical aerial vehicles, VTOL and hybrid vehicles. The engine has been designed specifically for use in high-performance and long-endurance operations, and the engine's space envelope has been minimised to simplify vehicle integration. It uses Advanced Innovative Engineering's Compact Self-Pressurising-Air Rotor Cooling System. Width: 21.3cm Height: 27.4cm Weight: 10kg

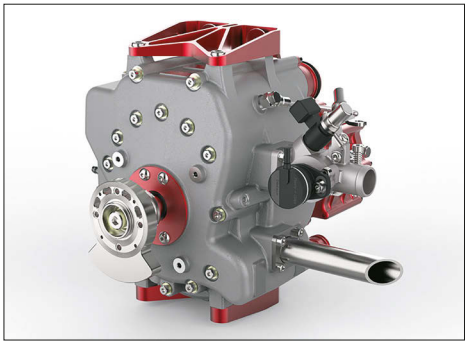
650S

The 650S is a single-rotor Wankel rotary engine designed to power large UAVs, hybrid-electric vehicles and maritime systems. It has a high power-to-weight ratio, low vibration and low operating cost. Advanced Innovative Engineering's Self-Pressurising-Air Rotor Cooling System provides increased engine life and eliminates wet oil loss while increasing the engine's time between overhauls. Width: 33cm Height: 36cm Weight: 28kg

AUSTRO ENGINE

AE50R

The AE50R is an aviation gasoline single rotary engine with an output of 40.4kW. The engine is certified according to European Aviation Safety Agency Part 22H. Weight: 27.8kg



The 80S is a propulsion solution for small, hybrid unmanned vehicles and VTOL platforms or lightweight auxiliary power units. (Photo: AIE – Advanced Innovative Engineering)

AE300

The AE300 is a turbocharged jet-fuel engine, certified for manned and unmanned aircraft. This liquid-cooled, in-line, four-cylinder engine has a double overhead camshaft and is capable of producing up to 170hp. According to the OEM, it has a time between overhaul of 1,800h and has accumulated more than 730,000 flight hours. Weight: 185kg

AE330

The AE330 is a turbocharged jet-fuel engine, certified for manned and unmanned aircraft. An evolution of the AE300 engine, this liquid-cooled, in-line, four-cylinder engine produces 132kW and has a double overhead camshaft. According to the OEM, the time between each overhaul is 1,000h. Weight: 185kg

BENTAL MOTION SYSTEMS

B-013

The B-013 is a permanent magnet sensorless motor for micro-UAVs. It is designed for long life and reliability and sealed to improve endurance in harsh environmental conditions. The motor can be supplied as part of the air vehicle's propulsion system, tailored to customer needs. Weight: 56kg

B-020

The B-020 is a permanent magnet brushless motor able to power mini-UAVs of up to 8kg. This motor is compact, lightweight and efficient, designed to drive propellers about 30cm in size. Designed for long life and reliability, the B-020 is sealed to improve endurance in harsh environmental conditions. The system's driver/controller is supplied as a separate unit. Weight: 0.46kg

B-047-017

The B-047-017 permanent magnet brushless motor is Bental Motion Systems' largest UAV powerplant. The compact, lightweight motor is designed to drive propellers of about 60cm in diameter. It has an integrated encoder for commutation feedback purposes and for controlling the propeller's angular position during landing. Designed for long life and reliability,

the B-047-017 is sealed to improve endurance in harsh environmental conditions. Weight: 1.4kg

CONTINENTAL MOTORS

Centurion

The Centurion is a family of water-cooled, turboprop, diesel engines originally developed by Thielert. Based upon Mercedes-Benz automotive technology, all engines in the Centurion range utilise digital fuel-injection technology and a high compression ratio to produce more power and greater fuel efficiency. Available in several different configurations, including the 1.7 and 2.0, Centurion engines have been employed on a range of platforms, including the MQ-1C Gray Eagle military UAS. Length: 81.6cm Width: 77.8cm Height: 63.6cm Weight: 134kg Cruise power: 133 mechanical hp

COSWORTH

AE1

The AE1 is a lightweight, heavy-fuel diesel combustion engine designed for use in UAVs. The AE1 is intended to achieve maximum efficiency with minimum maintenance. It employs a compression/ignition cycle in a two-stroke configuration.

DANIELSON AIRCRAFT SYSTEMS

Trident 100TD2

The Trident 100TD2 is a compression-ignition engine that is capable of operating on various types of heavy fuel. It is claimed to offer up to a 40% reduction in fuel consumption compared to comparative designs, while a dual-stage turbocharging system improves reliability at altitudes and reduces its low acoustic and

thermal signatures. The engine is built to comply with the European Aviation Safety Agency CS-E standard. Weight: 90kg

Trident 140TD2

The Trident 140TD2 is a compression-ignition engine designed for MALE platforms. Based on the Trident 100TD2, it is a lightweight, four-cylinder design that is intended to provide improved fuel efficiency. Weight: 125kg

Trident 180TD2

The Trident 180TD2 is a compression-ignition engine designed for heavier UAVs up to the 2t class. The design is intended to improve efficiency, while being lighter and smaller than most traditional engines. Weight: 145kg

ELBIT SYSTEMS

R902 (W)

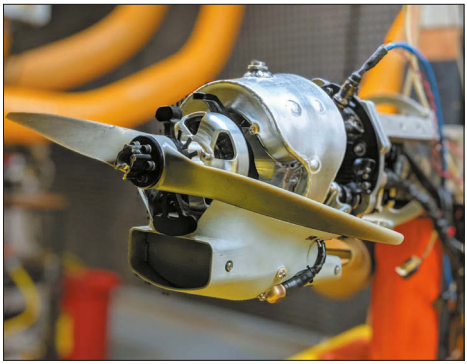
The R902 (W) is a rotary engine capable of producing up to 70hp. It is an improved version of the R802 – originally developed by UK-based UAV Engines – that is designed to be both more powerful and quieter than its predecessor. Operating on the Wankel principle, it delivers a high power-to-weight ratio whilst maintaining a relatively compact size. These engines have been used to re-engine the Israeli Air Force Hermes 450 fleet. Weight: 40kg Cruise power: 70 mechanical hp

EPROPELLED

PMU500

ePropelled's PMU500 provides complete power solutions for aviation applications. The PMU500 takes in three-phase sinusoidal AC voltages from starter generators like the ePropelled SG500 and converts them to DC voltages to power onboard avionics, servos and payloads. Input AC voltages will vary by the revolutions per minute of the starter generator or alternator and using active rectification and switching regulation the PMU500 will supply the required DC output voltages.

The NW-44 supports aircraft weighing approximately 18-34kg. It features fuel injection and core and subsystem components alleviate ITAR and end-of-life concerns. (Photo: Northwest UAV)



HFE INTERNATIONAL

DA150 EFI

The DA150 EFI Mil Spec is a two-stroke, fuel-injected engine used on UAS and target drones. The system has been tested at altitudes of up to 20,000ft with temperatures ranging from -23°C to 49°C. The engine has an optional 500W three-phase brushless starter alternator that is direct-driven on the engine crankshaft. Weight: 6.81kg

HIRTH ENGINES GMBH

23 Engine Series

The 23 Engine Series is an air-cooled, reed-valve-controlled, two-cylinder, two-stroke boxer engine series with electronic fuel injection. Engines in the series use advanced closed-loop control and feature automatic altitude and temperature compensation to reliably start and operate in extreme weather conditions. The engine series has a maximum performance of 36.7kW (50hp) at 6500rpm and can produce a maximum torque of 53Nm at 6300rpm. Length: 28.6cm Width: 57cm Height: 38.8cm Weight: 22kg

32 Engine Series

The 32 Engine Series is a fan-cooled, two-cylinder two-stroke (inline) engine series that is suitable for UAVs and other lightweight platforms such as light and ultralight aviation, hovercraft, gyro or helicopters. Engines in the series produce a maximum power of 40.4kW (55hp) at 5500rpm and have a maximum torque of 72Nm at 5000rpm. Length: 37.7cm Width: 58.7cm Height: 38.3cm Weight: 31kg Cruise power: 59.98 mechanical hp

33 Engine Series

The 33 Engine Series is an air-cooled, reed-valve-controlled, single-cylinder, two-stroke engine series with electronic fuel injection, electronic throttle servo and integrated 2kW starter/generator. They use advanced closed-loop control and features automatic altitude and temperature compensation to reliably start and operate in extreme weather conditions. The maximum performance of engines in the series is 20.6kW (28hp) at 6500rpm and they produce a maximum torque of 32.3Nm (23,8 ft. lb) at 5800rpm. Length: 44.2cm Width: 54.3cm Height: 38cm Weight: 12.7kg

35 Engine Series

The 35 Engine Series consists of the 3503 and H35 liquid-cooled two-stroke (inline) engines that are suitable for UAVs and other lightweight platforms such as light and ultralight aviation, hovercraft, gyro or helicopters. The 3503 variant produces a maximum performance of 52kW (70hp) at 6500rpm and a maximum torque of 77.3Nm at 6000rpm. The H35 variant produces 43kW (58hp) at 5200rpm and has a maximum torque of 79Nm at 5000rpm. Length: 47.2cm Width: 41cm Height: 36cm Weight: 36kg Cruise power: 64.97 mechanical hp

35 HF Engine Series

The 35 HF Series is a NATO compliant water-cooled, reed valve controlled two-cylinder, two-stroke (inline) engine series with air-assisted direct injection. The series is suitable for use in maritime, military and civilian machines; such as light sport aircraft and UAVs. The engine ignition is

controlled by the engine ECU. The engine series produces a maximum torque of 67.5Nm at 6000rpm and has a maximum performance of 44kW (60hp) at 6300rpm. Length: 48.18cm Width: 45.3cm Height: 43.3cm Weight: 36kg Cruise power: 55.98 mechanical hp

41 Engine Series

The 4103 out of the 41 Engine Series is an air-cooled, rotary-valve-controlled, two-stroke boxer engine with electronic fuel injection and optional integrated 500W starter/generator. It uses advanced closed-loop control and features automatic altitude and temperature compensation to reliably start and operate in extreme weather conditions. According to DIN 70020, the engine has a maximum performance of 5.96kW (8hp) at 6700rpm. It has a speed range between 1800-6500rpm. Length: 28.2cm Width: 28.6cm Height: 30.8cm Weight: 3.4kg

42 Engine Series

The 42 Engine Series is a two-cylinder, two-stroke, air-cooled boxer engine series with electronic fuel injection, electronic throttle servo and an integrated 1kW starter/generator. The maximum performance of engines in the series is 11kW (15hp) at 6500rpm according to DIN 70020. They have a speed range between 1800-6500rpm. Featuring automatic altitude and temperature compensation, engines in the series are capable of operating in a wide variety of environments. Length: 21.8cm Width: 32.6cm Height: 37.5cm Weight: 5.7kg

KOBAYASHI PRECISION INDUSTRY

BT-86

Kobayashi's BT-86 UAV engine has a rotational speed of 1,800rpm. The engine has achieved an accumulated flight distance of 24,000km. Length: 16cm Height: 20.5cm Weight: 2.95kg

LYCOMING ENGINES

DEL-120

The DEL-120 is a diesel cycle engine for manned and unmanned aircraft optimised for use with jet fuels. Length: 61cm Width: 74cm Height: 79cm Weight: 160kg

Orbital UAV's engines incorporate an air-assisted FlexDI direct injection system to provide heavy-fuel capability and reduced fuel consumption on two-stroke and four-stroke models. (Photo: Orbital UAV)

EL-005

The EL-005 is a two-stroke Otto cycle spark-ignited engine for unmanned aircraft, which is optimised for use with jet fuels. It has field-demonstrated levels of reliability on the Textron Systems' Aerosonde Mk 4.7G sUAS.

iE²

The TEO-540 Integrated Electronic Engine (iE²) product line is built around an aviation-grade electronic engine control system that provides continuously optimising thermal and propulsion control and auxiliary electrical power generation capability. Tested on the Northrop Grumman Firebird, the iE² architecture includes multimode, mid-flight selectable operating behaviour to optimise performance and fuel consumption in take-off, cruise and loiter conditions.

NORTHWEST UAV (NWUAV)

NW-44

The NW-44 is a Northwest UAV designed multi-fuel, purpose-built propulsion system for the UAS industry. Depending on mission requirements, the NW-44 supports aircraft weighing approximately 18-34kg. The NW-44 features a fuel injection system. Its core and subsystem components alleviate ITAR and end-of-life concerns, according to the manufacturer. Weight: 4.3kg Cruise power: 3.5 mechanical hp

NW-88

The NW-88 is a multi-fuel, purpose-built engine for the UAS industry. Borrowing design elements from the combat-proven NW-44 Engine, the NW-88 engine is designed to alleviate ITAR and end-of-life concerns, according to the manufacturer. Depending on mission requirements, this 'Made in the USA' engine can handle aircraft weighing approximately 34-68kg. The NW-88 incorporates a two-stroke engine with fuel injection, a twin-cylinder head with dual ignition per cylinder, dual-piston rings and military-grade connectors. The NW-88 propulsion system is a plug-and-play solution for Tier III aircraft. Weight: 7.4kg Cruise power: 7.2 mechanical hp

ORBITAL UAV

RedBack FlexDI HFDI.75

Orbital UAV's engines incorporate an air-assisted FlexDI (direct injection) system to provide heavy-fuel capability and reduced fuel consumption on two-stroke and four-stroke models. The fuel system technology has been proven on a range of consumer applications with both gasoline and heavy fuels. Features include high specific power, low fuel consumption, cold-start capability, low engine noise, automatic altitude compensation, electronic oil metering and rugged hardware for extreme environmental conditions. Cruise power: 4.75 mechanical hp

RedBack FlexDI HFDI.150

Orbital UAV's engines incorporate an air-assisted FlexDI direct injection system to provide heavy-fuel capability and reduced fuel consumption on two-stroke and four-stroke models. The fuel system technology has been proven on a range of consumer applications with both gasoline and heavy fuels. Cruise power: 10 mechanical hp

RedBack FlexDI HFDI.300

Orbital UAV's engines incorporate an air-assisted FlexDI direct injection system to provide heavy-fuel capability and reduced fuel consumption on two-stroke and four-stroke models. The fuel system technology has been proven on a range of consumer applications with both gasoline and heavy fuels. Features include high specific power, low fuel consumption, cold-start capability, low engine noise, automatic altitude compensation, electronic oil metering and hardware to satisfy extreme environmental conditions. Cruise power: 20 mechanical hp

PBS VELKÁ BÍTEŠ

TJ20A

The TJ20A is a small engine designed for UAV applications. The engine is controlled by a fuel pump, electronic valves and sensors integrated in the system. Platforms that the engine has been applied to include the F-16 Fighting Falcon, L-29 Delfín, Venom and Viper Jet XXL aircraft. The TJ 20A can operate at an altitude of up to 1,969ft. Length: 31.6cm Width: 12.1cm Weight: 2.1kg

TJ23U

The PBS TJ23U is a small jet engine designed for unmanned systems. Length: 31.6cm Weight: 1.98kg

TJ40-G1

The TJ40-G1 is a compact turbojet engine developed by PBS Velká Bíteš. Designed to power UAVs, the engine has been optimised for delivering a high thrust-to-weight ratio with minimum fuel consumption. Length: 30.4cm Width: 14.7cm Weight: 3.3kg Cruise power: 201 mechanical hp

TJ80

The TJ80 is a turbojet engine with an integrated starter generator, designed for missiles and UAV systems. The TJ80 can operate at temperatures from -40°C to +50°C and at a maximum operating altitude of 32,808ft. Length: 51.4cm Width: 23.5cm Weight: 12kg Cruise power: 1,006 mechanical hp

TJ100

The TJ100 is a small turbojet engine with an integrated starter generator, designed for UAV and UCAV systems. The air intake for the TJ100 is 1.7kg/s. It can operate at a maximum altitude of 32,800ft. Length: 62.5cm Width: 27.2cm Weight: 19.5kg Cruise power: 1,006 mechanical hp

TJ150

The TJ150 is a turbojet engine designed for UAVs, missiles and target drones. According to the OEM, its compact design and low fuel consumption are among its main advantages. Length: 52cm Width: 27.2cm Weight: 19.6kg Cruise power: 805 mechanical hp

TP100

The TP100 is a light turboprop engine designed for UAVs and manned aviation. The TP100 can operate at a maximum altitude of 30,000ft, with a maximum starting altitude of 19,680ft. The engine has been designed in a way that enables it to be placed in either pusher or tractor mode on the host aircraft. Length: 89.1cm Width: 33cm Height: 39.8cm Weight: 61.6kg Cruise power: 966 mechanical hp

TS100

The PBS TS100 is a turboshaft engine designed for light helicopters and UAVs. It has a maximum continuous power mode of 160kW, and the engine can be operated in cold temperatures below -30°C without preheating. Length: 82.9cm Width: 33cm Height: 39.8cm Weight: 56.7kg Cruise power: 215 mechanical hp

QINETIQ TARGET SYSTEMS

Hurricane

Hurricane is an air-cooled, horizontally opposed, two-cylinder, two-cycle engine for UAV applications. It is capable of operating at higher than 16,400ft above mean sea level. Weight: 7.5kg Cruise power: 26 mechanical hp

WAE-342

The WAE-342 is a twin-cylinder, two-stroke engine developed by QinetiQ Target Systems (formerly Meggitt Target Systems) for integration on unmanned systems. Weight: 7.5kg Cruise power: 26 mechanical hp

Whirlwind

Whirlwind is a liquid-cooled, single-rotor Wankel engine with integral radiators and a water pump. It is capable of operating at altitudes higher than 23,000ft above mean sea level. Weight: 13.5kg Cruise power: 42 mechanical hp

RCV ENGINES

DF35 (Air Cooled)

RCV Engines' 2kW fuel-injected, single-cylinder engine is a high-power, lightweight, four-stroke design that uses a patented rotary valve combustion system. The ideal characteristics of the RCV combustion system enable the engine to work equally well on both gasoline and all the kerosene-based heavy fuels: JP5, JP8, etc with no mechanical changes. The four-stroke cycle ensures low fuel consumption. Length: 10.4cm Width: 8cm Height: 18.4cm Weight: 1.9kg Cruise power: 2.95 mechanical hp

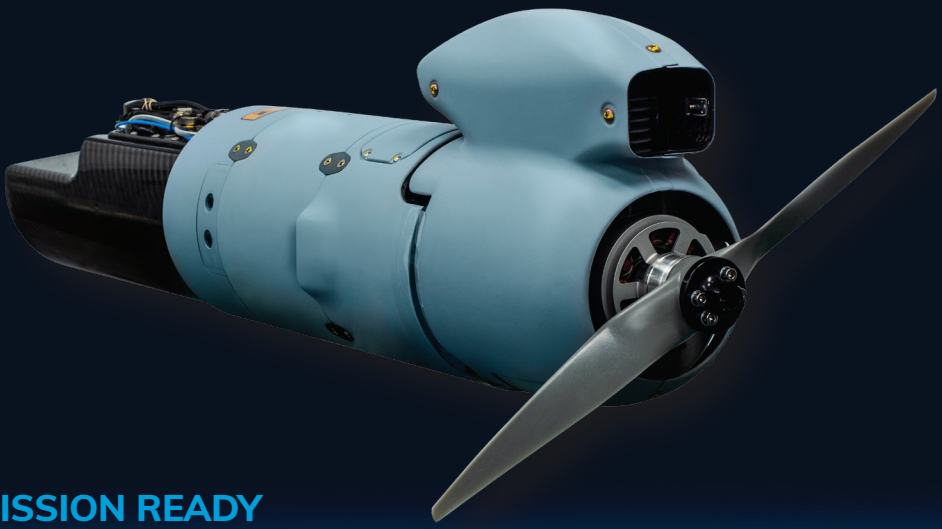
DF35 (Liquid Cooled)

RCV Engines' 2kW fuel-injected, single-cylinder engine is a high-power, lightweight, four-stroke design that uses a patented rotary valve combustion system. The ideal characteristics of the RCV combustion system enable the engine to work equally well on both gasoline and all the kerosene-based heavy fuels: JP5, JP8, etc with no mechanical changes. The four-stroke cycle ensures low fuel consumption. The liquid cooling is ideal for applications where the engine is internal to the vehicle and not exposed to direct airflow like hybrid. Length: 10.4cm Width: 8cm Height: 18.4cm Weight: 1.9kg Cruise power: 2.95 mechanical hp

DF70 (Air Cooled)

RCV Engines' 70cc 4kW twin-cylinder, heavy-fuel engine is a high-power, lightweight, four-stroke design that uses a rotary valve combustion system. The characteristics of the RCV combustion system enable the engine to work equally well on both gasoline and all kerosene-based heavy fuels: JP5, JP8, etc with no mechanical changes. The four-stroke cycle ensures low fuel consumption. The DF70 has been successfully trialled on a number of platforms, including ducted fan, helicopter, fixed-wing designs, unmanned marine and as hybrid generator

POWERING THE WORLD'S BEST TACTICAL UAVS



MISSION READY

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system. Length: 12.1cm Width: 26.3cm Height: 16.2cm Weight: 2.9kg Cruise power: 5.63 mechanical hp

DF70 (Liquid Cooled)

RCV Engines' 70cc 4kW twin-cylinder, heavy-fuel engine is a high-power, lightweight, four-stroke design that uses a rotary valve combustion system, enabling it to work equally well on both gasoline and all kerosene-based heavy fuels: JP5, JP8, etc with no mechanical changes. The four-stroke cycle ensures low fuel consumption. The DF70 has been successfully trialled on a number of platforms, including ducted fan, helicopter, fixed-wing designs, unmanned marine and as hybrid generator system. The liquid cooling is ideal for applications where the engine is internal to the vehicle and not exposed to direct airflow like hybrid. Length: 14.7cm Width: 26.3cm Height: 15.4cm Weight: 2.9kg Cruise power: 5.63 mechanical hp

DF140 (Liquid Cooled)

RCV Engines' 140cc 4kW twin-cylinder, heavy-fuel engine is a high-power, lightweight, four-stroke design that uses a rotary valve combustion system. The characteristics of the RCV combustion system enable the engine to work equally well on both gasoline and all kerosene-based heavy fuels: JP5, JP8, etc with no mechanical changes. The four-stroke cycle ensures low fuel consumption. The DF140 has been successfully trialled on a number of platforms, including ducted fan, helicopter, fixed-wing designs. The liquid cooling is ideal for applications where the engine is internal to the vehicle and not exposed to direct airflow like hybrid. Length: 21.8cm Width: 26.3cm Height: 18.7cm Weight: 4.8kg Cruise power: 11.53 mechanical hp

RICARDO UK

Wolverine 3

The Wolverine 3 is claimed to be the first engine developed expressly to power UAVs. It runs on military JP-8 fuel and incorporates a 500W starter-generator that provides electricity to operate payloads such as cameras, communications devices and weapon systems. The starter generator expands options for stopping and restarting the engine while in flight to extend the range or reduce noise for silent, low-altitude operations. Length: 19.3cm Width: 26.7cm Height: 17.5cm

ROLLS-ROYCE

AE 3007

The AE 3007 series is a family of turbofan engines marketed by Rolls-Royce for both commercial and military applications. Capable of developing up to 3,600kg of thrust, these engines have been used to power the Cessna Citation and Embraer Legacy business jets, the Global Hawk and Triton military UAS and the Embraer ERJ military aircraft. Having been in production since the 1990s, the engines have collectively amassed more than 70 million flying hours. Length: 292cm Width: 98cm Height: 98cm Weight: 746kg

ROLLS-ROYCE NORTH AMERICA

Adour Mk951

The Adour Mk951 is the latest configuration in the Adour/F405 engine family. The engine powers several aircraft, including the BAE Systems Hawk trainer aircraft, the Boeing T-45 Goshawk jet aircraft and the Taranis UCAS demonstrator. The engine is operated by more than 20 armed forces worldwide and has accumulated over eight million flight hours. Length: 195.58cm Weight: 667kg

ROTAX

Rotax 912

The Rotax 912 is a series of four-cylinder engines originally developed for use in light aircraft. As a relatively compact and lightweight package, it has also been employed to power commercial and military UAVs. Available in three major variants, which produce between 80-100hp, the Rotax 912 has been in production for over 25 years, with more than 50,000 engines produced. Weight: 56.6kg Cruise power: 100 mechanical hp

Rotax 914

The Rotax 914 is a turbocharged, four-stroke, four-cylinder aircraft engine that can develop a maximum of 115hp. Produced alongside its 80hp Rotax 912 counterpart since 1996, the Rotax 914 has been used to power a vast range of light aircraft, autogyros and military UAVs, such as the RQ/MQ-1 Predator A and the IAI Heron. More than 50,000 Rotax 912 and 914 engines have been sold since 1989, and they have collectively accumulated over 45 million flight hours. Length: 56.1cm Width: 57.6cm Weight: 78kg Cruise power: 115 mechanical hp

ROTRON POWER

RT300

The RT300 rotary engine is designed to deliver a high power-to-weight ratio in a compact and lightweight package, allowing for greater fuel and payload flexibility. Suitable for small-to-medium UAV platforms, the RT300 offers low levels of torsional vibration and zero radial vibration in the mid-to-high revolutions per minute range, contributing to improved durability and higher-endurance life cycles. Length: 26.8cm Width: 17cm Height: 24cm Weight: 11.9kg

RT300HFE

The RT300HFE rotary engine is suitable for small-to-medium UAV platforms. This compact, single-rotor engine utilises fuel management techniques to achieve reliability in operation, a high power-to-weight ratio, low fuel consumption and starting under extreme operating conditions. The RT300HFE offers low torsional vibration and zero radial vibration at mid-to-high revolutions per minute, contributing to durability and higher-endurance life cycles. Length: 26.8cm Width: 17cm Height: 24cm Weight: 11.9kg

RT600

The RT600 rotary engine is designed to deliver a high power-to-weight ratio in a compact and lightweight package, allowing for greater fuel and payload flexibility. Suitable for small-to-medium UAV platforms, the RT600 offers low levels of torsional vibration and zero radial vibration in the mid-to-high revolutions per minute range, contributing to improved durability and higher-endurance life cycles. Length: 36.6cm Width: 17cm Height: 24cm Weight: 21.2kg Cruise power: 61 mechanical hp

RT600HFE

The RT600HFE rotary engine is suitable for small-to-medium UAV platforms. This compact, twin-rotor engine uses fuel management techniques to achieve reliability in operation, a high power-to-weight ratio, low fuel consumption and starting under extreme operating conditions. The RT600HFE offers low levels of torsional vibration and zero radial vibration in the mid-to-high revolutions per minute range, contributing to durability and higher-endurance life cycles. Length: 36.6cm Width: 17cm Height: 24cm Weight: 21.2kg

SKY POWER

SP-28 Series

The 2-stroke SP-28 CR is Sky Power's smallest single-cylinder engine. The engine is suited for fixed-wing uncrewed aircraft with an MTOW up to 25kg. The SP-28 CR engine is equipped in the standard configuration with one spark plug and a single ignition unit. The carburettor is rear (CR) mounted. Weight: 1.34kg Cruise power: 2.2 mechanical hp

SP-55 Series

The 2-stroke single-cylinder SP-55 TS ROS with 55ccm is the largest single-cylinder engine in Sky Power's range. The engine series is equipped in the standard configuration with two spark plugs per cylinder as well as a rear output shaft (ROS) for additional equipment mounting. The engine is used by customers for fixed-wing, helicopter and VTOL aircraft near an MTOW of 25kg. The engine is equipped in the standard configuration with a twin ignition unit. The cylinder is cast aluminium and the crankcase is CNC machined in order to be able to adjust customer-specific parts to it. The series contains the SP-55 FI TS ROS, the SP-44 TS ROS and the SP-55 FI TS Generator application. Weight: 2.58kg Cruise power: 3.89 mechanical hp

SP-55 FI TS Hybrid

The SP-55 FI TS Hybrid is a two-stroke engine developed by Sky Power for UAV applications. The engine features controllable via CAN (optional generator start input), battery voltage 36 75V (nominal 48V), max power 2kW at 48V DC, generator current sensor, external load current sensor (via CAN), temperature monitoring, overload derating, programmable battery charging current, automatic throttle regulation due to external load current sensor and advanced combustion engine start. Length: 31.6cm Width: 26.11cm Height: 24.15cm

SP-56 Series

Sky Power's SP-56 TS ROS UAV is a 2-stroke single-cylinder engine with 56ccm. The rear output shaft is the smallest dual cylinder engine in the Sky Power portfolio. It is also the newest, forged from using the proven SP-28 parts. The SP-56 TS ROS is equipped in the standard configuration with one spark plug per cylinder due to its compact size. The dual cylinder boxer style offers a low vibration power-dense two-stroke option for the below for UAVs up to 35kg.The cylinder is cast aluminium and the crankcase is CNC machined in order to be able to adjust to customer-specific requirements or mounting plates. Weight: 2.52kg Cruise power: 4.56 mechanical hp

SP-110 Series

The 2-stroke dual cylinder Sky Power SP-110 TS ROS (rear output shaft) with 110ccm is a UAV engine. Designed and built from the same core architecture as other dual cylinder engines in Sky Power's portfolio, the engine system offers power density and reliability in all operational scenarios.The SP-110 TS ROS has achieved 1,000s of hours globally in all environmental conditions, with a key user flying in desert conditions with high continuous ambient temperature and sand particulates. The engine series consists of the SP-110 TS ROS, the SP-100 TS ROS (exhaust on top) and the SP-110 FI TS ROS. Weight: 4kg Cruise power: 9.25 mechanical hp

SP-170 Series

The Sky Power SP-170 2-stroke dual cylinder with 170ccm is the mid-range propulsion system designed for aircraft from 60-80kg MTOW. This engine size has completed 100s of hours of maritime operations for EMSA in a range of operating conditions.The SP-170 TS ROS is equipped with dual spark plugs per cylinder for redundancy and a rear output shaft for user adaptability. An optional starter generator can be included, allowing for hybrid functionality, increasing this engine's operational capacity. The series consists of the SP-170 TS ROS, the SP-170 TS ROS (exhaust on top), the SP-170 FI TS ROS and the SP-170 HF FI TS ROS. Weight: 4.56kg Cruise power: 12.47 mechanical hp

SP-180 Series

The SP-180 hybrid Wankel is the flagship of the Sky Power International propulsion portfolio. The Wankel features a patented internal clean-sheet design, centred around the single-cylinder 180ccm configuration.
Due to the nature of Wankel, this propulsion system is light and has a much smaller space envelope than the comparative two-stroke equivalent.The ability to mount this engine at 90 degrees (vertically) adds to its flexibility. The SP-180 series contains the SP-180 HF SRE, the SP-180 SRE hybrid and the SP-180 SRE hybrid demonstrators. Weight: 11kg Cruise power: 22.92 mechanical hp

SP-210 Series

The 2-stroke dual cylinder Sky Power International SP-210 engine series with 210ccm is the most popular dual in Sky Power's propulsion portfolio, positioned in the 60~100kg UAS tier. Current operational conditions include maritime and desert environments with 1000s hours achieved to date. The SP-210 has a dual spark for redundancy and a rear output shaft for user flexibility. The series comprises the SP-210 TS ROS, the SP-210 TS ROS (exhaust on top), the SP-210 FI TS ROS and the SP-210 HF FI TS ROS. Weight: 6.56kg Cruise power: 16.89 mechanical hp

SP-275 Series

The Sky Power SP-275 2-stroke dual cylinder with 275ccm is the company's largest and most powerful dual cylinder, making it the most versatile 2-stroke engine in its portfolio. The series consists of the SP-275 TS ROS, SP-275 TS ROS (exhaust on top), the SP-275 FI TS ROS, the SP-275 TS CR and the SP-275 TS CR 03.This power-dense propulsion system is most suited to platforms within a 100-150kg MTOW range due to its dimensions and power output. This engine size has been manufactured for over a decade and accrued more than 10,00 operational hours. Weight: 7.86kg Cruise power: 21.45 mechanical hp

SP-480 SRE

The SP-480 SRE is a lightweight, four-stroke, hybrid rotary engine with a compact design. The SP-480 can accommodate a higher payload in field operations and features hybrid-boost power. It can be powered by gas or heavy fuel and can be cooled by water cooling of the housing and oil cooling of the rotor (active cooling). Sky Power introduced the SP-480 SRE engine at the Xponential trade show in May 2018. It is now out of production. Weight: 14kg Cruise power: 70 mechanical hp

SUTER INDUSTRIES

TOA 288

The TOA 288 engine is a twin-cylinder, horizontally opposed, air-cooled, two-cycle engine, with a fuel-saving electronic engine management system and mixture lubrication. It is produced in Switzerland by Suter Industries in cooperation with Compass Aircraft Europe (CAE). It is suitable for pusher and tractor installations. The engine has automatic altitude and temperature calibration and runs on gasoline. According to the manufacturer, a heavy-fuel variant will be available in the future. The engine displacement is 288cm3. Length: 23.7cm Width: 47cm Height: 33.7cm Weight: 10.8kg Cruise power: 18 mechanical hp

TUSAŞ ENGINE INDUSTRIES (TEI)

PD170

The PD170 is a turbo diesel engine initially developed to meet the engine requirement of Turkish Aerospace Industries' indigenous Anka UAV. Development began in December 2012 under the Turkish Operative UAV Engine Development Project – a collaboration between Tusaş Engine Industries and the Undersecretariat for Defence Industries. Weight: 165kg Cruise power: 170 mechanical hp

PD222ST

Manufactured by Tusaş Engine Industries, the PD222ST is a turbo diesel aviation engine designed to meet the needs of MALE UAVs. It has a 220HP (± 2) power target at departure, a single-stage turbocharging system, high altitude capability, low fuel consumption and lightweight aluminium block design. Weight: 163kg Cruise power: 199.92 mechanical hp

TJ90

The TJ90 is a turbojet engine developed by Tusaş Engine Industries to meet the domestic military higher-thrust UAV engine requirement. The project began in January 2011, and a collaboration agreement was signed in 2012 for use of the engine on Turkish Aerospace Industries' Simsek platform. Length: 41.3cm Weight: 3.6kg

UAV ENGINES

AR682

The compact AR682 engine has been developed to power UAVs which have limitations on propeller diameter and therefore cannot use a reduction drive. Length: 60.8cm Height: 44cm Weight: 51kg Cruise power: 75 mechanical hp

AR682R

The AR682R has been developed to power UAVs which require up to 120bhp. It is based on the proven AR642 core that was designed to meet UK Civil Aviation Authority, European Joint Aviation Requirements and US Federal Aviation Administration certifications for manned flight. Length: 68cm Height: 49cm Weight: 56.5kg Cruise power: 90 mechanical hp

AR731

According to UAV Engines, the AR731 had the highest power-to-weight ratio of any rotary engine in the world when it was introduced. It was specifically designed for use in small target drones and short-life UAVs. The engine's time between overhauls is 10-50h, depending on duty cycle. Length: 60cm Width: 32.8cm Height: 26.2cm Weight: 9.9kg Cruise power: 38 mechanical hp

AR741

The AR741 was developed from the mature AR731 target drone engine to meet the needs of small surveillance-type UAVs. Length: 60cm Width: 32.8cm Height: 26.2cm Weight: 10.7kg Cruise power: 38 mechanical hp

AR801-50

The AR801 is a lightweight, single-rotor, liquid-cooled engine designed and developed for UAVs requiring 35-60bhp, with direct drive to the propeller or vehicle gearbox. It has the facility to mount alternators between 0.9-2kW. Weight: 24.4kg Cruise power: 40 mechanical hp

AR801R

The AR801R is a lightweight, single-rotor, liquid-cooled engine with an integrated reduction drive designed and developed specifically for UAVs requiring 35-55bhp. Length: 56.3cm Width: 36.3cm Height: 34cm Weight: 29.5kg Cruise power: 40 mechanical hp

UAV FACTORY USA

UAV28-EFI

The UAV28-EFI is a turnkey fuel-injected engine system developed for small UAVs with a maximum take-off weight of up to 25kg. The engine is particularly suitable for long-endurance UAVs that have a fuel consumption of 400g/kWh in cruise mode and a low acoustic signature. A 20min engine swap time allows the user to maximise UAV flight time. The life of the engine is greater than 500h, and the engine comes calibrated and flight-ready. Weight: 1.5kg

UNITED ENGINE CORPORATION (NPO SATURN)

36MT

The Saturn 36MT is a 100hp turbofan engine designed for powering UAVs and providing mid-flight propulsion to cruise missiles. It has been installed on a wide variety of such platforms, including the Kh-59 MK, Orion-E UAS and ME family of air-launched cruise missiles and the 3M-54E/E1 and 3-M14E series of ship-launched missiles. Length: 85cm Width: 33cm Weight: 10kg Cruise power: 100 mechanical hp

EQUIPMENT

C-UAS SYSTEMS

This section includes systems designed to jam, disrupt or destroy hostile UAS threats, both on the battlefield and in defence of critical infrastructure.

Entries are arranged alphabetically by manufacturer and system name. The specifications are those supplied by the OEMs. Further information can be obtained by contacting these companies directly.

If you think your product should be listed, please contact the team at insight@shephardmedia.com to ensure it appears in the *Shephard Defence Insight* online database (plus.shephardmedia.com) and is included in the next handbook edition.

ABOVE: The DroneGun Tactical is a UAS countermeasure designed for two-hand operation. The product includes directional antennas in a lightweight robust rifle-style design, featuring a control panel user interface to select and engage the range of jamming frequencies for target defeat. (Photo: DroneShield)

AARONIA AG

Aaronia AARTOS DDS

The Aaronia Drone Detection Software (DDS) is able to detect UAS based on the directional real-time measurement of the electromagnetic emissions of the aircraft and its remote control. The only limitation of its detection range is the distance between the UAV and its operator. The Aaronia DDS gives a warning the moment the remote control is on air before the UAS itself is airborne. Weight: 25kg Detection range: 10,000m

ADSYS CONTROLS

PATS

The Passive Aerial Threat Surveillance (PATS) sensor produced by Adsys Controls is a detection and tracking system capable of monitoring airspace for extremely low-signature airborne threats such as small UAS. PATS offers full hemispherical threat surveillance. Up to 50 different threats can be simultaneously tracked by the sensor, which feeds into other sensor systems for warning and countermeasures. Length: 31.75cm Width: 31.75cm Height: 24.13cm Weight: 10kg Field of View - Azimuth: 360° Field of View - Elevation: 70° Maximum Signals Tracked: 50 Detection range: 10,000m

ALLEN-VANGUARD CANADA

Ancile

At DSEI 2017, Allen-Vanguard unveiled the Ancile, a new electronic shield designed to defeat the threat of commercial unmanned systems. The Ancile electronic shield prevents the intended drone mission from being successful by using Allen-Vanguard's RF inhibition technology through jamming and electronic attack.

ASCENT VISION

C-UAS Operator Assist

Operator Assist software contributes to force protection by utilising algorithms to detect and track objects in the air and on the ground. This increases the likelihood of detecting targets that go unnoticed by an unassisted operator.

ASCENT VISION TECHNOLOGIES

X-MADIS

The eXpeditionary Mobile Air Defense Integrated System (X-MADIS) is a portable, fully integrated C-UAS system for fixed site, mobile and on-the-move operations. Combining four all-threat air surveillance radars, an RF detection sensor, a gyro-stabilised imaging system and an electronic warfare system, the X-MADIS detects, locates, tracks, identifies and neutralises sUAS and drone swarms. These components are integrated with AVT's C-UAS Suite software, for complete command and control of the entire kill chain. Detection range: 30,000m

ASELSAN

İhasavar

The İhasavar anti-drone jammer system is designed to be a cost-effective, man-portable solution that does not need any sensor systems to disrupt hostile UAVs. The software-defined RF jammer system is based on the Kirpi manpack jammer, with the omnidirectional antennas removed and combined with a rifle-style device. Its high-gain directional antenna disrupts signals between the UAV operator and aircraft. Weight: 14kg

İhtar

The İhtar anti-drone system consists of a radar, EO and jamming systems designed to counter mini-UAS and is available in fixed and deployable configurations. It detects and tracks multiple UAS, using a thermal camera, and has directional jamming capability for specific targets or omnidirectional jamming for swarm attacks. İhtar uses Aselsan's Gergedan IHA C-UAS jammer and is operated from a centralised C2 station. Detection range: 5,000m

AVNON GROUP

Skylock C-UAS

Skylock, an Avnon Group company, has developed a C-UAS system that is intended to bring sensors, jammers and a laser effector into a single deployable system. Typical uses for such systems include perimeter security for critical national infrastructure such as airport, as well as static military facilities. The Skylock system was unveiled at Eurosatory 2018 but the company also promotes customised solutions, including a wearable system. Detection range: 20,000m

AVTOMATIKA CONCERN

Sapsan-Bekas

Unveiled at ARMY-2019 in Moscow, the Sapsan-Bekas is a C-UAS system comprising active radar, video and EO tracking, signal detection and jamming subsystems. The system is intended to counter both civilian and military UAVs. It is vehicle mounted and effective in a frequency range from 400MHz to 6GHz. Detection range: 10,000m

BLIGHTER SURVEILLANCE SYSTEMS

A400 Series Radars

Blighter's A400 series of air security radars are electronic-scanning, modular, non-rotating radar systems operating at Ku band. The A400 series builds on the company's Blighter B400 series of ground surveillance radars. The radar systems use a passive electronically scanned array and frequency modulated continuous wave technologies to provide reliable, slow and small drone detection in all weather conditions and in complex environments. Length: 12.8cm Width: 66.6cm Height: 50.3cm Weight: 25kg Detection range: 20,000m

BLIGHTER SURVEILLANCE SYSTEMS/ CHESS DYNAMICS/LITEYE SYSTEMS

AUDS

The Anti-UAV Defence System (AUDS) is designed to disrupt and neutralise UAVs engaged in hostile airborne surveillance and potentially malicious activity. The AUDS combines directional RF inhibition capability, electronic-scanning radar, EO tracking/classification and target detection. The system is a smart sensor and effector

The İhasavar anti-drone jammer system is designed to be a cost-effective, man-portable solution that does not need any sensor systems to disrupt hostile UAVs. (Photo: Aselsan)

package, capable of remotely detecting small UAVs and then tracking and classifying them before providing the option to disrupt their activity. Detection range: 10,000m

BOEING DEFENSE, SPACE & SECURITY

CLWS

Developed by Boeing, Compact Laser Weapon System (CLWS or CLaWS) is a medium-range, low-power laser C-UAS system. According to the reports, the CLWS prototype has been approved by the US DoD as the first ground-based laser system for use by ground troops. The system is currently being tested by US Marine Corps and USAF.

CACI INTERNATIONAL

SkyTracker

SkyTracker is a technology suite that detects, identifies, tracks and mitigates UAS threats. The system provides continuous 24h automated monitoring in all weather conditions. The suite forms the basis of the Corian FS (Fixed Site), Corian D (Dismounted) and Corian M (Mobile) C-UAS systems. Detection range: 10,000m

JN3141 Remote Control UAV Jammer

The JN3141 Remote Control UAV Jammer is an individual and portable EW device which enables users to gain control of enemy rotor UAV. This allows the user to take over and land the small UAV. The device is commonly used to prevent reconnaissance of military sites and commercially sensitive operations. Detection range: 30,000m

CHESS DYNAMICS

Hawkeye AD

Hawkeye Air Defence (AD) is an integrated sensor suite optimised for acquisition, tracking, classification and engagement of air targets from fixed and mobile platforms. The system's combination of frequency-modulated, continuous-wave Doppler radar and EO sensors enables operation against a wide range of targets 24h a day in all weather conditions. It is derived from the Sea Eagle naval fire control system for the land domain. Length: 62.3cm Width: 60.6cm Height: 85.6cm Diameter: 93.5cm Weight: 100kg Detection range: 15,000m

COBHAM ANTENNA SYSTEMS - USA

Cobham C-UAS

Unveiled at the AUVSI 2017 trade show in Dallas, Texas, the Cobham C-UAS primarily consists of wideband omnidirectional, directional helix (single- or dual-band), directional flat panel and high-power directional antennas to counter the unlawful use of commercial UAS.

CS (COMMUNICATIONS & SYSTÈMES)

Boreades

Boreades is a modular anti-UAV system developed by CS. This suite combines multi-sensors and multi-effectors in order to enable the detection, identification and neutralisation of rogue drones. Although aimed at the civilian market, CS has been selected by the French Ministry of the Armed Forces to produce a military version of Boreades for their mobile anti-UAV system tender. Detection range: 1,000m

DEDRONE

DroneDefender

DroneDefender is a directed-energy UAS countermeasure that disrupts the adversary's control of the aircraft, neutralising it so that no remote action (including detonation) can occur, minimising platform damage and risk to public safety. Weight: 7kg Detection range: 400m

DroneTracker

The DroneTracker software provides airspace monitoring and management through a browser interface. DroneTracker allows users to configure multiple sensors, active and passive countermeasures and alerts for automatic 24/7 operation. The software displays real-time airspace information and detects and identifies UAVs with analysis and pattern recognition capabilities. Detection range: 9,000m

DELFT DYNAMICS

DroneCatcher

The DroneCatcher is designed to protect military, government and commercial installations, including military bases, airports, prisons and parliament buildings. The system was unveiled in 2017 but had been shown in prototype form since 2015 and was first demonstrated in 2016. It is not believed to be in use. Length: 53cm Width: 53cm Height: 35cm Weight: 6kg Detection range: 20m

DEPARTMENT 13

Mesmer

Mesmer is a commercial counter-drone platform that uses RF protocol manipulation to automatically identify, stop, redirect, land or take total control of a target drone or other radio-controlled device. The system works by taking control of and manipulating radio frequency protocols of a UAS, allowing the operator to seize control of an aircraft and safely bring it to the ground. According to its manufacturer, Mesmer can also perform forensics on hostile UAS, remotely gathering intelligence and

intercepting feeds. Length: 50.8cm Width: 48.26cm Height: 26.67cm Weight: 45kg Detection range: 1,000m

DETECT

DroneWatcher

The DroneWatcher app enables users to detect UAS flying in civil airspace with the help of Android devices for personal and business privacy protection. Depending on the strength of the device's Wi-Fi signal, the DroneWatcher app can detect up to 85% of non-encrypted Wi-Fi or RF-controlled drones at ranges from 400-800m. The user receives an audible and visual alert when a UAS is detected. Detection range: 800m

DIEHL DEFENCE

HPEM

The High-Power Electro-Magnetics (HPEM) is a C-UAS system developed by Diehl Defence. It is intended to protect both military installations and public events against threats posed by sUAS.

DRONESHIELD

DroneCannon RW

The DroneCannon Remote Weapon (RW) soft-kill C-UAS jammer is designed for use on remote weapon stations as part of a combined hard-kill/soft-kill layered system. Its integration capability allows other manufacturers of unmanned weapons systems to add a soft-kill option to their existing products, which may already be in service. Weight: 10kg Detection range: 500m

DroneGun

DroneGun enables controlled management of an adversarial UAS, causing no damage to the UAV or surrounding area. It either forces the drone to perform a vertical controlled landing on the spot or to return back to its starting point, helping to track the UAV operator. Weight: 7.3kg Detection range: 2,000m

DroneNode

In October 2018, DroneShield released the DroneNode, a C-UAS jamming device. This portable, compact system can be used for law enforcement missions and is also effective against swarm attacks. It is designed to require little training to operate. Length: 52.5cm Width: 44cm Height: 24cm Weight: 17.2kg Detection range: 1,000m

FarAlert Sensor

DroneShield's FarAlert Sensor is a remotely configurable, weather-resistant UAS surveillance system. It is able to distinguish UAS activity from common environmental noise sources at varying distances, depending on the environment. The system was unveiled in 2017. Length: 73cm Width: 35cm Height: 68cm Weight: 15kg Detection range: 1,000m

WideAlert Sensor

DroneShield's WideAlert Sensor provides 180° coverage of local acoustic activity at close range. Small and compact, it is designed to be inconspicuous and weather-resistant. Length: 10cm Width: 6.8cm Height: 10cm Detection range: 200m

ELETTRONICA

ADRIAN

The ADRIAN (Anti-Drone Interception, Acquisition, Neutralisation) system is designed to disable small, low-flying drones operating in urban environments. A suite of multispectral sensors, including acoustic detectors, EO/IR cameras, a radar and radio link interceptors, ensure that the system remains effective in densely populated built-up areas. Thanks to a modular architecture, the system can be configured to suit different customer requirements.

ELTA SYSTEMS

Drone Guard

The Drone Guard, also designated as ELI-3040, detects low-signature, low-level and low-speed airborne targets and has adapted 3D radars with UAV detection and tracking algorithms, alongside EO sensors for visual identification of the target. The system consists of ELM-series 3D radar (AD26D or AD26B), EO sensor (such as POP), and jammer. Detection range: 20,000m

ENTERPRISE CONTROL SYSTEMS (ECS)

BlackTALON Counter-Drone System

The BlackTALON Counter-Drone System provides detection, location, identification, tracking and RF inhibition of drones. BlackTALON Model 982 incorporates Radar and RF sensors for drone detection, identification, location, and tracking; an electro-optical sensor for drone verification and video tracking; and a multi-channel RF inhibitor for drone defeat.

Claw Directional Inhibitor System

The Claw Inhibitor system provides directional inhibition capability over five independent RF bands (GNSS, 433 MHz, 915 MHz, 2.4 GHz and 5.8 GHz). Claw is designed to defeat and neutralise UAV threats.

FLEX FORCE/RADIO HILL TECHNOLOGIES

Dronebuster

The Dronebuster is a handheld C-UAS detection and jamming system, developed by Radio Hill Technologies. The system has been designed for military, federal and local law enforcement use and is effective on Group 1 and Group 2 UAS. The Dronebuster Block 3B has an endurance of over 90min of continuous jamming and over 30h endurance in RF detection mode or 3h and 10h respectively for the earlier Block 3 variant. Length: 56cm Width: 14cm Height: 26cm Weight: 2.3kg Detection range: 1,000m

Dronebuster-LE

The Dronebuster-LE is a handheld C-UAS detection and jamming system that has been designed for commercial purposes, including aviation, campus and event security and fire-fighting. Dronebuster-LE, which has an endurance of over three hours of continuous jamming, has RF detection and is able to cover a range of frequencies. Length: 46cm Width: 23cm Height: 10.2cm Weight: 1.6kg

GENERAL DYNAMICS LAND SYSTEMS

MEHEL 2.0

The Mobile Expeditionary High-Energy Laser (MEHEL) is a C-UAS-capable vehicle that employs directed energy to neutralise targets. MEHEL 2.0 was first seen at AUSA 2016, with General Dynamics Land Systems developing the system in partnership with Boeing and US Space and Missile Defense Command (USAMDC). The five-kilowatt laser is mounted on a Stryker armoured vehicle, with the system operating autonomously.

HENSOLDT SENSORS/MYDEFENCE COMMUNICATION

Xpeller

The Xpeller C-UAV system detects intruding aircraft over critical areas at long ranges and can neutralise them using electronic countermeasures, thereby minimising the risk of collateral damage. The modular Xpeller product family consists of radars, IR cameras and long-range jammers from Hensoldt, close-in RF detectors from Danish company MyDefence and short-range optical/acoustic/RF sensors from Dedrone. In early 2017, a lightweight jamming system from Hensoldt subsidiary Hensoldt South Africa (formerly GEW Technologies) was added to Xpeller. Range: 4km

HIGH AND MIGHTY

Skynet

The Skynet anti-drone system is a portable C-UAS device that resembles a rifle. It is operated with a manpack system and has a charging time of 90min and eight hour endurance in standby. Weight: 5.7kg Detection range: 2,000m

IAI ISRAEL AEROSPACE INDUSTRIES

Iron Drone Interceptor

The Drone Guard is a multi-sensor multi-layer C-UAS solution. Some of its key uses include disrupting communication, GPS signals and threat detection. The Iron Drone Interceptor UAV, developed by the Israel Aerospace Industries, can be integrated with the Drone Guard and launched along with other drones in order to counter multiple targets. Functionality is completely autonomous. Detection range: 4,500m

IXI TECHNOLOGY

Dronekiller

The IXI Dronekiller is a handheld C-UAS device that employs software-defined radio technology to detect and affect Class 1 and Class 2 UAS devices without the use of broadband jamming. The Dronekiller can disable drones operating in seven frequency bands and is effective up to 1,000m. The system is designed to be compact and lightweight in order to be deployed by ground forces and security response teams at checkpoints and forward outposts. Length: 61cm Width: 10cm Height: 24cm Weight: 3.4kg Detection range: 1,000m

JSC "RUSSIAN ELECTRONICS"/KRET

Repellent Anti-UAV Complex

The Repellent Anti-UAV EW complex is a counter-drone system that has been designed to neutralize and disrupt enemy small and medium-sized UAV, remotely piloted aircraft system (RPAS) and UAS. It is most commonly used to prevent terrorist attacks, espionage and other malicious activity targeting both critical military and civil infrastructure. The system was developed by JSC Scientific & Technical Center of Electronic Warfare (STC-EW) and is manufactured by KRET. Range: 30km

KELVIN HUGHES

SMS-D

Kelvin Hughes has developed the Single Mast Solution-D (SMS-D) for UAS detection. It is designed for detection and real-time tracking of small aerial targets, using an integrated, medium-range, radar-based surveillance system. It was unveiled in March 2017 at the UK Home Office Security and Policing exhibition. Detection range: 1,500m

LEONARDO ELECTRONICS

Falcon Shield

Falcon Shield is a C-UAV system, which provides users with a rapidly deployable, scalable and modular technology able to detect, disrupt, deny and defeat the potential threat of hostile UAS. The system provides users with a multispectral sensing capability and, through the integration of an electronic attack capability, a multi-layered threat response.

MC-CLIC

Anti-UAV Rifle

MC-Clic presented its anti-UAV rifle for the first time at the SOFINS 2017 exhibition in France. The rifle, which was developed to meet a security requirement from the government of the Principality of Monaco, has an endurance of 90 minutes. Detection range: 1,000m

METEKSAN SAVUNMA

KAPAN Anti-Drone System

The KAPAN Anti-Drone System has been developed by Turkish defence manufacturer Meteksan Savunma Sanayi for effective defence against single UAV and UAV swarm threats. It consists of different sub-systems such as radars, cameras and Radio-Frequency (RF) jammers along with an optional laser system to launch effective countermeasures. The Retinar OPUS system serves as the basic sensor of the anti-drone platform. Detection range: 2,500m

Retinar FAR-AD Drone Detection Radar

The Retinar FAR-AD Drone Detection Radar, developed by Meteksan Savunma, is a radar system for protection against mini/micro-UAVs and threats from land. Based on a solid-state RF design, it serves as the primary sensor of the security forces against drones. It uses a pulse-compression pulse-Doppler waveform to scan large areas and monitor threats. Detection range: 7,000m

MITSUBISHI ELECTRIC

Drone Deterrence System

First unveiled at the LIMA 2017 exhibition by Mitsubishi Electric, the Drone Deterrence System began to be developed in 2014 and made its first sale in Japan in 2016. Its first scheduled delivery to a government customer was in late March 2017. The detection and jamming RF detection specifications cited by the company are 920MHz, 2.4GHz and 5.7GHz. Weight: 24kg Detection range: 3,000m

MYDEFENCE COMMUNICATION

Eagle

Eagle is a radar that provides 360° detection and tracking of drones by classifying the specific radar signature of a UAS. The Eagle radar does this by analysing the fast-rotating propellers and provides real-time information on direction, range and speed. Eagle is suited for mobile scenarios where fast deployment is required due to its easy set-up and low weight. Length: 19cm Width: 54cm Height: 64cm Diameter: 0.19m Weight: 23kg Detection range: 1,000m

Pitbull C-UAS Jammer

In June 2018, MyDefence launched the Pitbull wearable C-UAS solution, which utilises smart jamming to defeat enemy drones. Pitbull was developed to have a minimal impact on other signals while jamming, in an effort to maintain the user's own communications. Weighing just 775g, the C-UAS jammer is a tactical solution, designed to be worn on the uniform. Length: 16.5cm Width: 9cm Height: 6cm Weight: 0.78kg Detection range: 1,000m

Watchdog

Watchdog is a standalone or linked RF drone sensor that is capable of providing make/model information to the user by searching for control signals and video feeds to and from the drone. The system is specifically suited for stationary installations such as perimeter protection at prisons and military camps, but it can also be mounted on vehicles. Length: 4.3cm Width: 10cm Height: 17.4cm Weight: 0.52kg Detection range: 1,000m

Wingman 101

Wingman 101 is a wearable drone detector designed for dismounted soldiers. It is an extremely lightweight and versatile platform that can be carried on the torso or on the outside of the soldier's clothes, such as on a tactical vest or backpack straps, to optimise performance. Length: 3.9cm Width: 8.2cm Height: 15.3cm Weight: 0.46kg Detection range: 1,000m

Wingman 103

The Wingman 103 is the flagship product of the Wingman series of wearable, intuitive drone detection systems. It is a ruggedised version, designed for the requirements of SOF, with the capability to withstand extreme temperatures from -30°C to +65°C. The system was unveiled in May 2018. Length: 4.2cm Width: 9.6cm Height: 16.6cm Weight: 0.73kg Detection range: 1,000m

Wolfpack

Wolfpack is a 360° RF sensor capable of providing make/model information to the user by searching for control signals and video feeds from drones. Information is displayed on the company's IRIS C2 interface, which provides situational awareness for the operator. Length: 31.5cm Width: 31.5cm Height: 26cm Weight: 5kg Detection range: 1,000m

NORTHROP GRUMMAN

MAUI

The Mobile Application for UAS Identification (MAUI) is an acoustic sensor that operates on smartphones using the microphone to detect Group 1 (small, lightweight) UAVs, defined as UAS weighing less than 10kg, flying lower than 1,200ft and flying slower than 100kt, as well as larger Group 2 UAVs. The MAUI software-based approach leverages COTS mobile devices to provide BLoS detection and identification of UAS threats in high-noise environments.

Venom

Venom is a vehicle-based, remote-controlled laser designator/rangefinder targeting mast system that incorporates Northrop Grumman's Lightweight Laser Designator Rangefinder 2 (LLDR 2) on a universal, stabilised and gimballed mount. The system can be used to provide target designation for the delivery of precision-guided munitions.

OPENWORKS ENGINEERING

SkyWall

SkyWall allows an operator to capture and bring down UAS, using a combination of a compressed gas-powered launcher and projectile or net. Damage to the UAS and the surrounding area is minimised by controlling its descent, and it can subsequently be forensically analysed intact. Length: 130cm Width: 28cm Height: 31cm Weight: 12kg Detection range: 100m

PHANTOM TECHNOLOGIES

Eagle108

Eagle108 is a TUAV jammer, designed to neutralise unauthorised UAS/quadcopters from entering secured

The Bystra Redeployable Radar is designed for detecting and localising air targets at short ranges and for supporting air defence units that cover tactical battle groups against attacks from the air. (Photo: PIT-Radwar S.A)

areas. The system is managed by a computer, which displays a general detection azimuth and jamming status. Once a threat is detected, the system sends an automatic command to the jamming unit and blocks all radio communication channels, including GPS signals and video links. Weight: 60kg Detection range: 2,000m

PIT-RADWAR S.A

Bystra

The Bystra Redeployable Radar is designed for detecting and localising air targets at short ranges and for supporting air defence units that cover tactical battle groups against attacks from the air. The Bystra is a multifunction and multi-mission, trailer-mounted radar with various applications, including detection and tracking of typical air threats such as combat aircraft and helicopters as well as missiles, UAVs and mortar shells. Detection range: 80,000m

Soła

Soła is a multi-mission 3D radar, which has been designed to detect and track air targets. The radar output data contains full information about the detected targets, including three location coordinates, speed, heading and classification of helicopters as a separate target category. Detection range: 60,000m

PURETECH SYSTEMS

Dispatch Drone-to-Alarm

In September 2018, PureTech Systems released its latest drone capability feature, the Dispatch Drone-to-Alarm. The alarm can originate from sensor sources capable of providing a location, including access control, acoustic buried/fence sensor, contact alarm, PureActiv geospatial video analytics, radar, unattended ground sensor and user input.

RADA ELECTRONIC INDUSTRIES

CHR

RADA Electronic Industries' Compact Hemispheric Radar (CHR) is a family of sensors used in active protection systems for land vehicles. The CHR family comprises active protection (RPS-10), all-threat air surveillance (RPS-12), 3D perimeter surveillance (RHS-14) and hostile fire location (RPS-15). The system provides threat data to enable the neutralisation of threats. Length: 22cm Width: 53cm Height: 33cm Weight: 0.02kg Detection range: 15,000m

pMHR

Portable Multi-Mission Hemispheric Radar (pMHR) is the smallest in the family of MHRs manufactured by Israeli company RADA Electronic Industries. It provides hostile fire location as part of the RPS-40/41 system, all-threat air surveillance (RPS-42) and 3D perimeter surveillance (RHS-44). It was unveiled at the AUSA exhibition in October 2017. Weight: 20kg Detection range: 10,000m

RAFAEL ADVANCED DEFENSE SYSTEMS

Drone Dome

Drone Dome is made up of three main components: RADA Electronic Industries' RPS-42 radar; Controp's MEOS observation; and Netline's C-Guard RD and NetSense subsystems for detection and jamming. The radar's long detection range also works against a small target at closer range. Detection range: 16,000m

RAYTHEON

Coyote

The Raytheon Coyote is an expendable UAS deployed from an A-size sonobuoy tube or common launch tube to perform ISR missions while the host aircraft remains in safe airspace. The system is suitable for perimeter security, research missions and targeting assistance. In January 2016, the OEM announced that it will be providing the UAS to the US National Oceanic and Atmospheric Administration for hurricane research missions. Length: 79cm Width: 147cm Height: 30cm Weight: 6.4kg Payload: 1.8kg Max speed: 70kt Cruise speed: 55kt Range: 37km Detection range: 130,000m Ceiling: 20,000ft Endurance: 1.5h

Howler C-UAS

Developed by Raytheon, the Howler is a counter-unmanned aerial system (C-UAS), which includes a Ku-band Radio Frequency Sensor (KuRFS), a command-and-control system, and a Coyote unmanned aircraft system. It is also expected to have a high-energy laser defeat solution and a high-powered microwave capability to neutralise any drone threat.

RHEINMETALL

Oerlikon Radshield

The Oerlikon Radshield is a drone detection system that provides multi-sensor airspace control. It is used to detect low, slow and small objects (eg balls, balloons, model airships, multicopters, radio-controlled aircraft) and to discriminate them from false targets such as birds.

SANMINA-TECHNOLOGY

AeroGuard

AeroGuard is an autonomous sUAS interdiction system developed by SCI Technology. It is designed to capture and overcome any small aerial vehicles which could pose threats to civilians, ground-based security systems and law enforcement. It captures targets with an onboard tethered net system and disposes of them in a predetermined secure location.

SENSOFUSION

Airfence 5.0

Airfence 5.0 is a C-UAS RF technology released by Sensofusion. It is designed to protect airports, personnel, prisons and private companies from rogue UAS in illegal and potentially life-threatening situations. The C-UAS system includes updates over its previous evolution and offers certified ruggedisation, compact set-up and installation and new and improved direction-finding, long-distance jamming capabilities. Detection range: 10,000m

SENTRYX

SX-8000

The SX-8000 is an autonomous C-UAS system developed for protecting the airspace of critical infrastructure and stationary facilities. It is marketed as both a standalone product and as part of the SentryX 3D perimeter protection solution, which integrates the SX-8000 with the SX-500 radar system and MP-4K-936 D/N PTZ cameras to provide comprehensive protection to a fixed installation from ground-based and airborne threats. Detection range: 1,000m

SILENT SENTINEL

Odin

The Odin C-UAS system can detect, track, identify and deny UAVs out to a range of three kilometres. It has a modular architecture that can be reconfigured to accommodate several different detection and tracking systems. Odin can be used for civil and military applications and has been cleared for export to buyers formally approved by the British government.

SPOTTERRF

UAVX

The UAVX detects, tracks and classifies sUAS using a compact surveillance radar, AI and long-range video tracking. Equipped with radar and thermal cameras, the system provides automatic target classification, detecting close-range quadcopters and providing mid-range video tracking alongside real-time mapping. Detection range: 350m

SRC

Silent Archer

The Silent Archer C-UAS product combines TRL-8/9 radar and EW systems, a camera and a 3D user display to defeat hostile UAVs, whether it is a lone target or a swarm. It provides spatial, frequency and optical surveillance capabilities to detect, track, classify and identify the airborne threat. It then applies low-cost, low-risk electronic methods to disrupt the UAS, such as jamming the communication links between the operator and the aircraft.

TCI

Blackbird

The Blackbird UAV detection and geolocation system detects and locates both the UAV and its controller, using signal processing technology. It can be deployed interactively by an operator or automatically for unattended operation. Detection range: 2,000m

THALES

C-UAS Solution

The C-UAS Solution uses goniometry, radar technologies and various sensors to detect and remove UAS from the air. So far, the solution has been proven effective against UAVs under 25kg. Thales tested its C-UAS Solution in April 2017, successfully neutralising small unmanned vehicles using its jammer.

TRD CONSULTANCY PTE LTD

Orion D/7

The Orion Anti-Drone System is produced in detection system (D) and disruption system (7) models for use against commercial sUAS. Orion D is a portable beacon that detects radar signals transmitted from the UAS to the operator's remote control. Orion 7 is able to disrupt the remote control, telemetry, video and GPS transmission of an adversarial UAS, using a jamming system. Detection range: 1,000m

UAVOS

UAVOS

UAVOS has developed a counter-countermeasures system to combat GPS and other GNSS spoofing attacks against UAVs. The UAVOS system allows the user to disable the GPS navigation and switch to autonomous flight with an onboard integrated INS. The system has been flown on the Borey-10 UAS and it is believed all UAVOS UAVs carry the system.

UCONSYSTEM

Drone Killer

The Uconsystem Drone Killer was unveiled in October 2015 and was developed in response to a UAV threat from North Korea, which saw four North Korean UAVs found crashed in South Korea in 2014. It is a flying-wing platform designed to track, hunt and collide with UAVs.

UNIFLY

Unifly Connect

Unifly Connect is a drone traffic management database application that has been designed on an open cloud-based architecture. Drone OEMs and system integrators are able to connect with the Unifly UTM system to validate its functionality by exchanging information and to access services and operations, using a comprehensive application programming interface.

Unifly Sentry

Unifly Sentry is an application that supports air navigation service providers and authorities in the management and regulation of the airspace. Unifly Sentry uses airspace information, including regulatory data, user data, drone data, traffic data (manned and unmanned) and obstacle data input, to perform a pre-flight validation of the flight as well as perform a conflict resolution.

ZALA AERO GROUP

Rex-2

The Rex-2 is a handheld C-UAS system. It features two UAV jamming pods, an aftermarket M4-type side-folding polymer stock and an AGR-47 pistol grip with a podium bipod on its base. Unveiled in 2019, it is an improved version of the similar Rex-1 which had been revealed two years earlier. Length: 70cm Width: 16cm Height: 24cm Weight: 3kg Detection range: 2,000m

SPECIFICATIONS

UGVs

This section includes major military UGVs that are currently in production or in development around the world.

Entries are arranged alphabetically by manufacturer and system name. The specifications are those supplied by the OEMs. Further information can be obtained by contacting these companies directly.

If you think your product should be listed, please contact the team at insight@shephardmedia.com to ensure it appears in the *Shephard Defence Insight* online database (plus.shephardmedia.com) and is included in the next handbook edition.

ABOVE: Due to its open architecture and flat upper deck, the Ripsaw M5 can support several weapon stations or other specialised equipment. (Photo: Textron Systems)

AOS Group ▸ Kelpie

The Kelpie multirole UGV, unveiled for the first time at the Australian International Airshow in February 2019, is expected to reach production standard in 2020 and will be developed for both commercial and military roles. Kelpie was built by Australian company AOS in collaboration with the Special Operations Training and Education Centre and the Australian Centre for Robotic Vision, with funding from the RAAF's Plan Jericho programme. **Length:** 250cm **Width:** 125cm **Height:** 120cm **Weight:** 500kg **Payload:** 100kg **Max speed:** 80km/h

Aselsan ▸ Ertuğrul

Ertuğrul is a UGV that is used for deactivating IEDs under demanding conditions from a safe distance. Ertuğrul is equipped with a six-degrees-of-freedom robotic arm for detailed examination and safe investigation of suspicious objects. **Length:** 60cm **Width:** 90cm **Height:** 80cm **Weight:** 85kg **Max speed:** 5km/h **Range:** 0.5km **Endurance:** 4h

Aselsan ▸ Kaplan

Kaplan is a high-mobility, multipurpose UGV family designed to carry out a range of roles such as counter-IED, EOD and perimeter patrol. **Length:** 115cm **Width:** 65cm **Height:** 90cm **Weight:** 160kg **Payload:** 50kg **Max speed:** 7km/h **Range:** 0.5km **Endurance:** 4h

BAE Systems ▸ Ironclad

The Ironclad UGV is a modular system designed to carry out a range of different military applications, including reconnaissance and combat missions. As a two-unit system, it can also conduct casualty evacuation missions. BAE Systems showcased the Ironclad UGV for the first time at the DSEI arms fair in 2017. **Length:** 100cm **Width:** 50cm **Height:** 60cm **Weight:** 200kg **Payload:** 250kg **Range:** 50km

BAE Systems ▸ Robotics Technology Demonstrator

BAE Systems unveiled its Robotics Technology Demonstrator (RTD) at the AUSA exhibition in 2019. Designed to meet the requirements of the US Army's Robotic Combat Vehicle (RCV) programme for a new family of UGVs, it is a modular, scalable platform that can be equipped with a range of weapon systems, sensors and specialised equipment. Expected to form the basis of BAE Systems' proposal for the RCV-Heavy component of the RCV programme, the RTD has been demonstrated to the US Army and will be used to experiment with the integration of emerging technologies in the fields of autonomy, lethality and sensing.

Bormatec ▸ BigAnt

The BigAnt UGV can be used for various applications, including landmine and EOD inspection in tunnels/tubes, work in contaminated areas and manipulation of hazardous materials. **Length:** 100cm **Width:** 30cm **Height:** 30cm **Weight:** 70kg **Payload:** 30kg **Range:** 10km **Endurance:** 2h

Clearpath Robotics ▸ Grizzly

The Grizzly UGV is designed for various agricultural, military and mining applications in rugged environments. The 4x4 Grizzly has front-axle articulation designed to keep the vehicle grounded and stable on difficult terrain. Various payloads can be fitted on the front and rear mounts and on the 1.07m² top deck. **Length:** 175cm **Width:** 128cm **Height:** 81cm **Weight:** 660kg **Payload:** 600kg **Max speed:** 19km/h **Endurance:** 12h

Clearpath Robotics ▸ Husky

The Husky is a 4x4 rapid prototyping UGV built for all-terrain environments. It can be outfitted with payloads, such as sensors, manipulators and computing, customised to the needs of researchers in the academic, environmental, military and mining environments. **Length:** 99cm **Width:** 67cm **Height:** 39cm **Weight:** 50kg **Payload:** 75kg **Max speed:** 3.7km/h **Endurance:** 8h

Clearpath Robotics ▸ Jackal

Launched in September 2014, Clearpath Robotics' Jackal is a small, portable, integrated and weatherproof UGV. It has been built on a metal chassis and has four wheels and skid-steer drive for traction and durability. It was developed through a contract with the US Army Research Laboratory. **Length:** 50.8cm **Width:** 43cm **Height:** 25cm **Weight:** 17kg **Payload:** 20kg **Max speed:** 7.2km/h **Endurance:** 8h

Compel Industries ▸ UGV-150

The UGV-150 is a multipurpose 4x4 UGV developed and produced in Slovakia by Compel Industries. Designed to be a modular system that can be configured for different roles and adapted to suit customer requirements, proposed variants of the UGV-150 include EOD, ISTAR, logistics, medical evacuation and weapons carrier versions. **Length:** 115cm **Width:** 110cm **Height:** 54cm **Weight:** 30kg **Payload:** 120kg **Max speed:** 16km/h **Range:** 3km **Endurance:** 2h

Copperstone Technologies ▸ AR1

The Amphibious Rover 1 (AR1) is designed for various agricultural, military and mining applications in severe environmental conditions, in particular solving the challenge of operations and health and safety on oil sands tailings. **Length:** 280cm **Width:** 180cm **Height:** 100cm **Weight:** 300kg **Max speed:** 13km/h **Endurance:** 4h

Cyborg Dynamics ▸ Warfighter

The Warfighter UGV is being developed by Cyborg Dynamics and BIA5 under an Australian government-funded initiative to support domestic SMEs manufacturing vital national defence capabilities. Featuring several components designed and produced in Australia, it is based upon BIA5's commercial OzBot All Terrain Robot (ATR) with several modifications to adapt it to military use. Unveiled after a 12-month development cycle in August 2020, the prototype was armed with an EOS R150 remote weapon station but can be configured for other roles such as a mortar or ATGM carrier. **Payload:** 330kg

Digital Concepts Engineering ▸ X-2

Displayed for the first time at DSEI in September 2017, the X-2 is a tracked UGV that has been designed primarily to carry out CBRN missions. However, it features a modular control system that enables the vehicle to be configured for customer-specific requirements. Consequently, the system can also perform agricultural, communications relay, EOD, perimeter patrol and search and rescue tasks, as well as function as a light weapons platform. **Length:** 131cm **Width:** 86cm **Height:** 47cm **Weight:** 300kg **Payload:** 250kg **Max speed:** 5km/h **Range:** 1km **Endurance:** 8h

DOK-ING ▸ MV-4

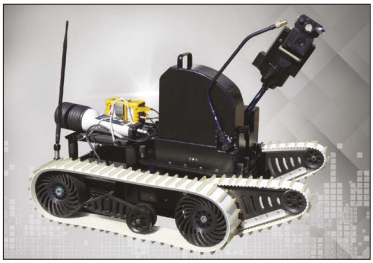
The MV-4 mine clearance system is a tracked UGV designed to clear anti-personnel mines and is survivable against antitank mines. It is a smaller system, which is able to operate in areas inaccessible to larger platforms. More than 170 systems have entered service, including 110 with the US Army. **Length:** 510cm **Width:** 201cm **Height:** 150cm **Weight:** 6.1kg **Max speed:** 5km/h **Range:** 1.5km **Endurance:** 5h

DOK-ING ▸ MV-10

The DOK-ING MV-10 is a large, dedicated mine clearance UGV designed to clear anti-personnel, antitank mines and unexploded ordnance. The platform is usually fitted with a flail or tiller but can also be fitted with a roller or blade gripper unit. The MV-10 system was tested and developed in 2005, with evaluation carried out by international testing authorities such as the Swedish EOD and Demining Centre and Croatian Mine Action Centre. **Length:** 723cm **Width:** 298cm **Height:** 213cm **Weight:** 18,960kg **Max speed:** 10km/h **Range:** 3km **Endurance:** 9h

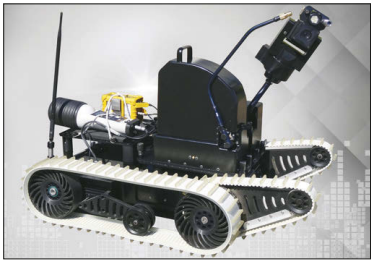
ECA Group ▸ Caméléon C

Caméléon is a tracked platform with forward flippers optimised for use by military, police, fire services and other first responders on various CBRN missions. **Length:** 67cm **Width:** 50cm **Height:** 19cm **Weight:** 27kg **Payload:** 25kg **Max speed:** 6km/h **Range:** 0.4km **Endurance:** 4h



ECA Group ▸ Caméléon E

Caméléon E is designed to support equipment used in EOD/IED disposal operations, including a manipulator arm, water disrupter, X-ray sensor, fibre-optic link, night and day vision. The operator control unit was specially designed to be simple and user-friendly. **Length:** 67cm **Width:** 52cm **Height:** 19cm **Payload:** 25kg **Max speed:** 6km/h **Range:** 0.4km **Endurance:** 4h



ECA Group ▸ Caméléon LG-E

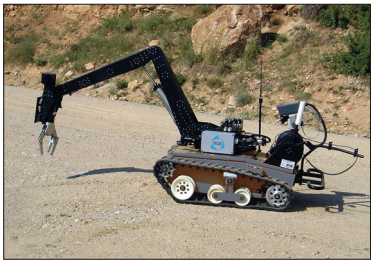
Caméléon LG-E is a mini-UGV dedicated to IED disposal and EOD missions. Its modular architecture and plug-and-play systems enable to mount a wide range of payloads from manipulator arms to detection and neutralisation sensors and water disrupters. The ultra-light operator control unit is designed with a user-friendly interface for intuitive use. **Length:** 47cm **Width:** 42cm **Height:** 18cm **Weight:** 12.2kg

ECA Group ▸ Cobra Mk2

The Cobra Mk2 is a 5kg UGV designed for EOD/IED disposal and CBRN operations. The modular architecture of the Cobra Mk2 E supports different types of payload from detection to neutralisation with various water disrupters. The ultra-light operator control unit facilitates dismounted operations. **Length:** 37cm **Width:** 40cm **Height:** 18cm **Weight:** 6.1kg **Payload:** 5kg **Max speed:** 6km/h **Range:** 0.25km **Endurance:** 2.5h

ECA Group ▸ TSR 202

The TSR 202 is a UGV in service with French forces and other military and police forces around the world for EOD/IED detection and neutralisation, suspicious device inspection, route clearance and other hazardous operations. **Length:** 120cm **Width:** 60cm **Height:** 100cm **Weight:** 270kg **Max speed:** 3.96km/h **Range:** 0.5km **Endurance:** 4h



Elbit Systems ▸ VIPeR

The Versatile, Intelligent, Portable Robot (VIPeR) was developed by Elbit Systems in cooperation with the Israeli MoD's Directorate of Defense Research and Development for the Israel Defense Forces' Portable UGV programme. It was unveiled in March 2007 and forms part of the Dominator Integrated Infantry Combat System. **Length:** 46cm **Width:** 46cm **Height:** 23cm **Weight:** 11.4kg **Max speed:** 8km/h **Range:** 2km **Endurance:** 8h

Elektroland ▸ Gazelle

The Elektroland Gazelle is a single-use, tracked UGV dedicated to defeating explosive threats. It is fitted with a simple robotic arm with which it carries explosive and shaped charges that it can place in trapped areas for remote detonation via the platform. **Length:** 65cm **Width:** 40cm **Height:** 20cm **Weight:** 16kg **Max speed:** 5km/h **Range:** 0.1km **Endurance:** 2h

Elektroland ▸ miniROV

The miniROV is a six-wheeled EOD/IED disposal system supported by an operator control unit, which is fitted with a 30cm thin-film-transistor LCD screen. The vehicle can operate continuously for one hour. **Length:** 83cm **Width:** 55cm **Height:** 72cm **Weight:** 78kg **Max speed:** 6km/h **Range:** 0.5km **Endurance:** 1h

Elektroland ▸ NAT-I

The NAT-I is designed for safety and security applications. The UGV, which can operate for two hours continuously, is designed for use during both day and night and consists of a mobile platform, control panel and robotic arm. It has a hydraulic/electric drive mechanism, optional mountable drive wheels, front and back lighting and flasher and an emergency stop button. **Length:** 70cm **Width:** 50cm **Height:** 40cm **Weight:** 100kg **Max speed:** 6km/h **Range:** 0.5km **Endurance:** 2h

Elektroland ▸ NAT-II

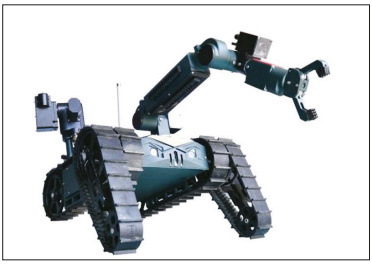
The NAT-II is a medium UGV designed for safety and security applications. The EOD/IED disposal unit, which can operate for two hours continuously, is designed for use during both day and night, featuring day/night back and front cameras (with zooming functions). It has a chassis height of 40cm and can handle a 40° gradient. The vehicle is fitted with two laser pointers and can be fitted with an optional assembly X-ray unit. **Length:** 70cm **Width:** 50cm **Height:** 40cm **Weight:** 100kg **Max speed:** 6km/h **Range:** 0.5km **Endurance:** 2h

Elektroland ▸ Robo Eye

The Elektroland Robo Eye UGV is a small, lightweight, pneumatic, wheeled platform with front and back driving cameras with lighting. **Length:** 39cm **Width:** 35cm **Height:** 17cm **Weight:** 5kg **Payload:** 0kg **Max speed:** 8km/h **Range:** 0.1km **Endurance:** 3h

Elektroland ▸ TMR-I Khan

The Elektroland TMR-I Khan is a small UGV fitted with a light, removable, five-degrees-of-freedom manipulator. Primary roles for the system include IED/EOD missions and reconnaissance. **Length:** 73.6cm **Width:** 49cm **Height:** 24.5cm **Weight:** 11.2kg **Payload:** 8.7kg **Max speed:** 5km/h **Range:** 0.5km **Endurance:** 3h



Elektroland ▸ TMR-I MTF

The Elektroland TMR-I MTF is the larger of the TMR-I platforms offered by the company at twice the weight of the TMR-I Khan (see separate entry). The main roles of the platform are defeating explosives, route clearance and reconnaissance. It is fitted with a five-degrees-of-freedom manipulator. **Length:** 90cm **Width:** 70cm **Height:** 35cm **Weight:** 24kg **Payload:** 12kg **Max speed:** 4km/h **Range:** 0.5km **Endurance:** 3h

Elektroland ▸ TMR-II Tough

The Elektroland TMR-II Tough UGV is the largest of the company's TMR platforms. Equipped with flippers front and rear, it is designed to assist in IED/EOD operations, as well as CBRN defence. It can also be used for reconnaissance. **Length:** 60cm **Width:** 70cm **Height:** 35cm **Weight:** 39.2kg **Max speed:** 5km/h **Range:** 0.5km **Endurance:** 2h

Endeavor Robotics ▸ Scorpion UGV

Endeavor developed the Scorpion UGV for the Pentagon's Common Robotic System – Individual (CRS-I) programme. CRS-I is designed to be a backpackable robot weighing less than 11kg. Competing company QinetiQ North America was announced as the winner in 2019.

Endeavor Robotics ▸ XM1216 SUGV

The XM1216 Small Unmanned Ground Vehicle (SUGV) is a tactical system that can enter and secure areas that are either inaccessible or too dangerous for soldiers or industrial personnel. It is based on the Packbot UGV (see separate entry) and was planned to form part of the cancelled Future Combat Systems, but it is in service with the US Army and USMC. **Length:** 81cm **Width:** 52cm **Height:** 66cm **Weight:** 14.5kg **Payload:** 2kg **Max speed:** 10km/h **Range:** 1km **Endurance:** 6h

Foosung Firstec ▸ SCOBOT 100

The SCOBOT 100 is one of two variants along with the company's larger SCOBOT 200. The system carries out surveillance/reconnaissance and performs missions in both commercial and military environments. **Length:** 55.5cm **Width:** 49.5cm **Height:** 22cm **Weight:** 24.5kg **Max speed:** 10km/h **Range:** 0.5km **Endurance:** 12h

Foosung Firstec ▸ SCOBOT 200

The SCOBOT 200 is a larger, two-tracked version of the SCOBOT 100 (see separate entry). It can be used for EOD tasks. It was tested in the Demilitarised Zone between North and South Korea but has not yet been purchased by the South Korean military. Features include a high payload capacity, long battery life and the ability to accommodate various optional equipment items. **Length:** 102.5cm **Width:** 45cm **Height:** 30.5cm **Weight:** 32.5kg **Max speed:** 10km/h **Range:** 1km **Endurance:** 12h

General Dynamics Land Systems ▸ MUTT

The Multi-Utility Tactical Transport (MUTT) UGV is designed to be a multirole, rugged, small-unit force multiplier. Able to operate in remote-controlled, tethered or tele-operated modes, it provides increased projection of combat power and greater stand-off from threats. Following tests with the USMC between 2014 and 2016, the system was entered into the US Army's Squad (now renamed Small) Multipurpose Equipment Transport (S-MET) requirement, for which it was selected in October 2019. Although the first production contract was rescinded after protests from one of the losing competitors, General Dynamics Land Systems (GDLS) was once again awarded a production contract for the S-MET programme in July 2020. **Length:** 213cm **Width:** 150cm **Height:** 100cm **Weight:** 770kg **Payload:** 272kg **Max speed:** 13km/h **Range:** 100km

General Dynamics Robotic Systems ▸ MDARS

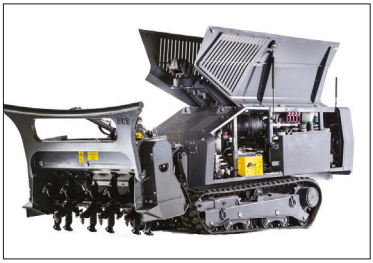
The Mobile Detection, Assessment and Response System (MDARS) provides commanders with a robotic capability for conducting semi-autonomous random patrols and surveillance activities. Development of the platform began in 1993, with demonstrations in October 1996 and September 1997. It began as an effort to develop a platform to patrol within assigned areas of warehouses and storage sites on military establishments. The design of the platform was expanded to create a large wheeled platform that could conduct outdoor perimeter patrols. **Length:** 248cm **Width:** 158cm **Height:** 116cm **Weight:** 1,424kg **Payload:** 136kg **Max speed:** 32km/h **Range:** 1km **Endurance:** 16h

General Robotics ▸ Dogo

The Dogo is a light, small UGV designed to operate in rough outdoor and indoor terrain to carry out search and rescue, underground warfare and suspect remote inspection/identification missions. Unveiled in June 2016, it is available in lethal (integrated 9mm Glock pistol) and non-lethal (pepper spray) variants. **Length:** 49cm **Width:** 38cm **Height:** 27.5cm **Weight:** 11kg **Max speed:** 6km/h **Endurance:** 5h

Global Clearance Solutions (GCS) ▸ GCS-100

In December 2016, Global Clearance Solutions launched the GCS-100 unmanned EOD platform. The smallest of the company's three remote-controlled platforms, the GCS-100 is a dozer-style UGV designed for dangerous multi-scenario operations, including clearing anti-personnel minefields, counter-IED and runway clearance in hard-to-access urban environments. **Length:** 365cm **Width:** 170cm **Height:** 140cm **Weight:** 2,240kg **Max speed:** 6km/h



Global Clearance Solutions (GCS) ▸ GCS-200

The GCS-200 is used for the clearance of various explosive devices and is the second platform to be launched by GCS, after the GCS-100 (see separate entry). The platform can be fitted to a counter-IED, mine clearance and runway clearance configuration and has a line-of-sight remote-control operating distance of up to 1,000m, although this can be extended. **Length:** 419cm **Width:** 192cm **Height:** 202cm **Weight:** 8,260kg **Max speed:** 7km/h **Range:** 1km

GM Advanced Technology ▸ SURUS

General Motors unveiled its Silent Utility Rover Universal Superstructure (SURUS) – a large, multipurpose, hydrogen-electric UGV – at the AUSA exhibition in Washington, DC, in October 2017. Based on commercial technology, the platform would likely be first proven in non-military scenarios within a stable geofenced environment, such as docks, but there are obvious military applications. **Length:** 500cm **Width:** 200cm **Height:** 111cm **Weight:** 2,700kg **Payload:** 3,200kg **Range:** 640km **Endurance:** 168h

Guardbot ▸ Guardbot

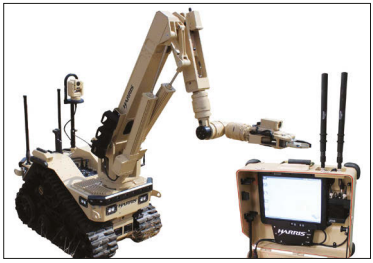
The Guardbot is an amphibious robotic platform that hosts cameras and sensors in a sealed sphere. It can operate on land and in water for a variety of missions. The drive mechanism uses a motorised pendulum to propel the Guardbot by changing the centre of gravity for back-and-forth motion and 360˚ turns. **Length:** 60cm **Width:** 60cm **Height:** 60cm **Weight:** 28.6kg **Max speed:** 10km/h **Endurance:** 8h

Hanwha Defense ▸ MPUGV

Unveiled at ADEX 2019, Hanwha's Multipurpose UGV for Infantry (also known as the Multipurpose UGV, or MPUGV) is aimed at fulfilling a potential Republic of Korea Army (ROKA) requirement for a UGV that can carry out a wide range of infantry support tasks. Building upon the technology developed for Hanwha's earlier Star-M3 and Star-M4 UGVs, the Multipurpose UGV for Infantry is a 4x4 all-electric vehicle that has a rear cargo area and can accommodate a remote weapon station. An enlarged 6x6 version is planned to be developed to increase its payload capacity. **Length:** 290cm **Width:** 150cm **Height:** 160cm **Weight:** 940kg **Payload:** 200kg **Max speed:** 30km/h **Range:** 20km **Endurance:** 14h

Harris ▸ T7

The T7 is a multi-mission robotic system designed for military, police and hazardous missions. At DSEI 2017, the UK MoD awarded the Harris Corporation a contract worth up to £55 million ($70 million) for 56 T7 robotic systems to support UK EOD missions. **Length:** 120cm **Width:** 70cm **Height:** 116cm **Weight:** 322kg **Max speed:** 6.5km/h **Range:** 1km **Endurance:** 8h



HDT Global ▸ Hunter WOLF

The HDT Global Hunter Wheeled Offload Logistics Follower (WOLF) is a large 6x6 UGV designed for logistics and support but also for combat engineer roles, such as route clearance, and as an offensive platform armed with anti-armour weapons, a mortar or remote weapon stations. Unveiled in October 2017, it was entered into the US Army's Squad (later Small) Multipurpose Equipment Transport (SMET) programme and has also been tested by the USMC and US Special Operations Command. **Length:** 230cm **Width:** 140cm **Height:** 117cm **Weight:** 1,600kg **Payload:** 1,000kg **Max speed:** 20km/h **Range:** 300km **Endurance:** 120h

HORIBA MIRA ▸ MACE 2

MACE 2 is a wheeled universal platform for development of MIRA Autonomous Control Equipment (MACE). A mobile, high-speed platform with a low logistical footprint, MACE 2 predominantly features a Land Rover powertrain and transmission as well as a lightweight MIRA tubular chassis. **Length:** 280cm **Width:** 178cm **Height:** 128cm **Weight:** 1,304kg **Payload:** 1,000kg **Max speed:** 80km/h **Range:** 5km **Endurance:** 8h

HORIBA MIRA ▸ MACE 3 Sherpa

Based on the in-service 4x4 off-road Land Rover Defender platform, the MIRA MACE 3 Sherpa provides dismounted close combat infantry with logistical support, allowing soldiers to cover large distances without having to carry heavy equipment. In 2008, the MIRA Autonomous Control Engineering (MACE) won the award for Best Use of Autonomy in the Grand Challenge Award set by the UK MoD. **Length:** 390cm **Width:** 180cm **Height:** 225cm **Weight:** 2,000kg **Payload:** 2,000kg **Max speed:** 50km/h **Range:** 20km

Howe and Howe Technologies ▸ RBS2 SWAT-Bot

The Robotic Ballistic Shield 2 (RBS2) or SWAT-Bot concept was created in coordination with the Massachusetts State Police. It utilises the RS1 UGV, a collapsible ballistics shield and a hardened AR400 steel nose shield to protect those in the line of fire. **Length:** 183cm **Width:** 245cm **Height:** 203cm **Weight:** 1,040kg **Max speed:** 8km/h **Range:** 1.5km **Endurance:** 4h

Howe and Howe Technologies ▸ Ripsaw MS1

The original Ripsaw tracked demonstrator was built in 2000 with private funding. Howe and Howe submitted the vehicle for the first DARPA Challenge in 2005. In 2007, the US Army's Tank Automotive Research, Development and Engineering Center awarded a contract for the Ripsaw Military Specification 1 (MS1) for use as a UGV capability demonstrator. **Length:** 480cm **Width:** 200cm **Height:** 178cm **Weight:** 4,080kg **Payload:** 0.9kg **Max speed:** 97km/h

Howe and Howe Technologies ▸ Ripsaw MS2

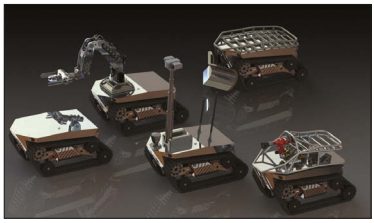
The Ripsaw Military Specification 2 (MS2) incorporates the same features and specifications as MS1 (see separate entry) but includes manual controls for manned operations. The Ripsaw demonstrator was built in 2000 and took part in the first DARPA Challenge in 2005. In 2007, the US Army's Tank Automotive Research, Development and Engineering Center awarded a contract for the Ripsaw Military Specification 1 (MS1) for use as a UGV demonstrator. **Length:** 480cm **Width:** 230cm **Height:** 150cm **Weight:** 4,500kg **Payload:** 800kg **Max speed:** 110km/h

Howe and Howe Technologies ▸ Ripsaw MS3

The Ripsaw Military Specification 3 (MS3) large, tracked UGV incorporates the same features and specifications as the MS1 and MS2 and has been designed for the US Army's Wingman Program to follow tank crews. It is intended to perform various missions, including border patrol, convoy protection, EOD, perimeter defence, rescue and surveillance. **Length:** 487cm **Width:** 218cm **Height:** 144cm **Weight:** 3,175kg **Payload:** 907kg **Max speed:** 112km/h

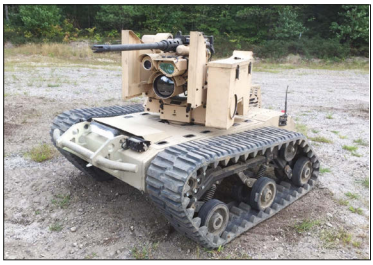
Howe and Howe Technologies ▸ RS-1

The modular Robotic Solution 1 (RS-1) serves as the base platform for a family of UGVs designed to meet the requirements of fire-fighting, law enforcement, military and other users who operate in dangerous environments. **Length:** 177cm **Width:** 105cm **Height:** 81.3cm **Weight:** 725kg **Payload:** 100kg **Range:** 0.4km **Endurance:** 10h



Howe and Howe Technologies ▸ RS2G Punisher

The Howe and Howe Technologies RS2G Punisher is part of a family of large tracked platforms marketed by the company, including the larger Ripsaw series of vehicles. It is designed to function as a multirole platform and can be armed to form an offensive system. In this latter configuration, a single operator controls the 50cal CROWS system with a weapon-mounted controller. **Length:** 214cm **Width:** 158cm **Height:** 81.3cm **Weight:** 657.8kg **Payload:** 453kg **Max speed:** 20km/h **Range:** 0.5km **Endurance:** 20h



Howe and Howe Technologies ▸ RS2H1

The RS2H1 is a large, tracked UGV designed to support the dismounted warfighter and to carry out operations in difficult terrain. In December 2017, the UGV was included on a shortlist of four platforms for the US Army's Squad Multipurpose Equipment Transport programme. **Length:** 196cm **Width:** 168cm **Height:** 83.8cm **Weight:** 869kg **Endurance:** 72h

Hyundai Rotem ▸ HR-Sherpa

The Hyundai Rotem-Sherpa (HR-Sherpa) has been developed to meet a potential requirement for a multipurpose UGV from the Republic of Korea Army (ROKA). Displayed for the first time at the 2018 Robot World exhibition in South Korea, it is designed to accommodate a wide range of mission modules to enable it to perform a variety of tasks, such as reconnaissance, logistics support, surveillance or medical evacuation. **Length:** 270cm **Width:** 170cm **Height:** 90cm **Weight:** 1,500kg **Payload:** 500kg **Max speed:** 30km/h **Endurance:** 12h

IAI Israel Aerospace Industries ▸ RoBattle

The RoBattle is a six-wheeled military UGV developed by Israel Aerospace Industries. Intended to assist troops engaged in mobile operations, it is a modular design capable of mounting a variety of payloads and performing a number of different roles, including convoy escort and ambushing enemy combatants. **Weight:** 7,000kg **Payload:** 3,000kg

IAI Israel Aerospace Industries ▸ Sahar

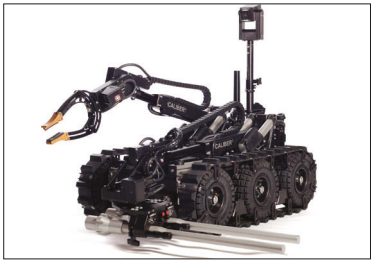
The Sahar is a military UGV designed to detect and dispose of IEDs. As an autonomous system, the Sahar removes the risk to human life associated with such missions, thereby enabling faster and safer operations. First unveiled in 2014, when the system was seen mounted on a modified skid loader chassis, the Sahar has also been demonstrated on the LR-II platform, part of Israel Aerospace Industries' RoBattle family of modular military UGVs.

IAI Lahav ▸ Rex

The Rex logistics and support UGV, unveiled in October 2009, is a large 4x4 platform that autonomously accompanies infantry units of three to ten soldiers, carrying equipment and supplies. **Length:** 160cm **Width:** 80cm **Height:** 75cm **Weight:** 200kg **Payload:** 250kg **Max speed:** 12km/h **Range:** 80km **Endurance:** 72h

ICOR Technology ▸ Caliber MK4

The Caliber MK4 EOD robot is the largest platform in the Caliber family. The system is equipped with a heavy-duty claw and twin-disruptor turret, allowing for a high degree of dexterity as well as a towing and dragging capability. Based on recommendations from bomb technicians, the robot is completely modular, allowing for platform upgrades, field repair and part replacement and reduction of annual maintenance costs. **Length:** 140cm **Width:** 75cm **Height:** 76cm **Weight:** 333kg **Max speed:** 3.5km/h **Range:** 1km **Endurance:** 5h



ICOR Technology ▸ Caliber T5

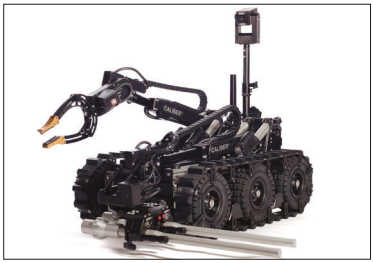
Sharing the same core design principles as the MK3 Caliber robot, the Caliber T5 has a lighter, narrower, smaller robot chassis. The Caliber T5 has an agile robotic arm with five degrees of freedom with a turret, shoulder, elbow, wrist and claw joint. Customers include security forces and EOD teams in Afghanistan, Australia, Bahrain, Canada, Egypt, Iraq, Jordan, Kenya, Lebanon, Nigeria, Saudi Arabia, the UAE, the UK and the US. **Length:** 87cm **Width:** 44cm **Height:** 56cm **Weight:** 68kg **Max speed:** 8km/h **Range:** 1km **Endurance:** 4h

ICOR Technology ▸ Mini-Caliber

The lightweight, tracked Mini-Caliber is a one-man transportable UGV for special weapons and tactics teams and EOD operators. Developed for tactical missions, the robot is simple to operate and quick to deploy, providing fast action for searching rooms, hallways, stairwells and confined spaces. The Mini-Caliber includes a manipulator arm on a rotating turret with a 10x zoom camera on the claw. The arm will lift objects of up to 6.8kg, deliver packages and open doors. **Length:** 60cm **Width:** 40cm **Height:** 38cm **Weight:** 29kg **Max speed:** 4km/h **Range:** 1km **Endurance:** 5h

ICOR Technology ▸ MK3 Caliber

The MK3 Caliber EOD robot satisfies a growing need for a medium-sized platform that offers the towing and dragging capability of a larger robot and the speed, agility and dexterity of smaller, lightweight platforms. It is equipped with a heavy-duty claw and rotating twin-disruptor turret. Based on recommendations from bomb technicians, the robot is modular, which allows for platform upgrades, field repair and part replacement and reduces annual maintenance costs. **Length:** 85cm **Width:** 61cm **Height:** 56cm **Weight:** 90kg **Max speed:** 8km/h **Range:** 1km **Endurance:** 5h



Inspector Bots ▸ Mega Hurtz

The Inspector Bots Mega Hurtz UGV is a 4x4 tactical platform intended for multiple roles, including reconnaissance, security, inspection, surveillance and casualty extraction. It is designed for off-road use and urban conflict. The platform is equipped with a steel-plated shell and a tele-operated pan/tilt turret able to accommodate a 20rps non-lethal weapon system with a 100-round capacity. **Length:** 112cm **Width:** 66cm **Height:** 76cm **Weight:** 127kg **Payload:** 50kg **Max speed:** 12km/h **Range:** 0.15km

Inspector Bots ▸ Minibot

The Minibot is a light, four-wheeled UGV designed for multiple roles, including reconnaissance, surveillance and security. **Length:** 36cm **Width:** 36cm **Height:** 12cm **Weight:** 4kg **Payload:** 3kg **Max speed:** 5.6km/h **Range:** 0.15km **Endurance:** 1h

Inspector Bots ▸ Spider Mite

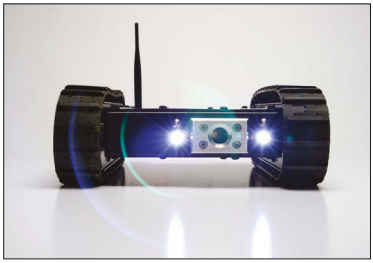
Spider Mite is a small 4x4 dune buggy-style UGV designed for multiple roles, including inspection, reconnaissance, security and surveillance. **Length:** 43cm **Width:** 27cm **Height:** 27cm **Weight:** 3.6kg **Payload:** 0.45kg **Max speed:** 6km/h **Range:** 0.15km

Inspector Bots ▸ Super Mega Bot

The 4x4 Super Mega Bot is designed to carry out multiple applications, including inspection, reconnaissance, security, surveillance and casualty extraction. The UGV has been designed for off-road use and urban conflict. **Length:** 84cm **Width:** 84cm **Height:** 40cm **Weight:** 102kg **Payload:** 109kg **Max speed:** 24km/h **Range:** 0.37km

Inspector Bots ▸ Trackbot

Trackbot is designed for inspection, reconnaissance, security and surveillance missions and is able to operate in environments that contain hazardous materials. The system is tele-operated via a first-person-view camera location. **Length:** 37cm **Width:** 30cm **Height:** 11cm **Weight:** 5.5kg **Payload:** 4kg **Max speed:** 9.36km/h **Range:** 0.25km **Endurance:** 2h



John Deere ▸ R-Gator

The John Deere R-Gator is a multirole COTS system based on the military-standard M-Gator and is designed to augment the warfighter. The R-Gator can be operated in either manned or unmanned mode and be utilised for day or night missions. Sample missions include 8h stationary silent reconnaissance, point man reconnaissance, roving patrol, transportation of ammunition and other supplies, casualty evacuation, remote deployment of smaller UGVs and UAVs and large-scale IED disposal. **Length:** 308cm **Width:** 165cm **Height:** 213cm **Weight:** 861kg **Payload:** 363kg **Max speed:** 56km/h **Range:** 0.3km **Endurance:** 8h

JSC 766 UPTK ▸ Uran-6

The Uran-6 is a tracked UGV specifically designed to carry out mine clearance operations. Capable of carrying five interchangeable tools on its front arms, the Uran-6 can be used to neutralise all types of mines and IEDs from a distance of up to 800m, thereby greatly reducing the risk for sappers. Following successful tests with prototypes in active war zones, the Uran-6 entered production for the Russian Armed Forces in 2019. **Length:** 456.5cm **Width:** 201.5cm **Height:** 147cm **Weight:** 6,000kg **Payload:** 1,000kg **Max speed:** 5km/h **Range:** 0.8km **Endurance:** 5h

JSC 766 UPTK ▸ Uran-9

The Uran-9 is a military unmanned ground combat vehicle designed to support troops operating in urban environments. Equipped with EO/IR sensors and typically armed with a 30mm automatic cannon, 7.62mm machine gun and four antitank guided missiles, the Uran-9 is capable of providing fire support and performing reconnaissance missions. First unveiled in December 2015, the vehicle has been deployed to Syria for trials with the Russian Armed Forces. **Length:** 512cm **Width:** 253cm **Height:** 250cm **Weight:** 10,000kg **Max speed:** 35km/h **Range:** 2.8km **Endurance:** 6h

Katmerciler ▸ UKAP

The UKAP is a tracked, modular UGV developed by Turkish OEM Katmerciler to meet the requirements of the Turkish Armed Forces for an armed UGV able to be deployed on urban operations. Available in three configurations – each of which differs in dimensions, endurance, manoeuvrability and payload – the UKAP has been ordered by the Turkish Armed Forces for operations in Syria. **Length:** 201cm **Width:** 217cm **Height:** 97cm **Weight:** 1,900kg **Payload:** 2,000kg **Max speed:** 17km/h **Range:** 10km **Endurance:** 18h

King Abdullah II Design and Development Bureau ▸ Mini UGV

The Mini UGV is designed to carry out observation and surveillance in urban areas. Weighing approximately 3kg, it is one of the lightest and smallest UGVs developed by the King Abdullah II Design and Development Bureau (KADDB) of Jordan. Equipped with both daylight and IR cameras, it can enhance situational awareness at the tactical level. **Weight:** 3kg **Payload:** 2kg **Range:** 0.03km **Endurance:** 1h

King Abdullah II Design and Development Bureau ▸ Multi-Functional Robot

The Multi-Functional Robot (MFR) is a long-range 6x6 UGV designed by the King Abdullah II Design and Development Bureau of Jordan. It is a modular platform, able to mount several different payloads and capable of being adapted to a diverse range of roles, spanning surveillance, fire-fighting, EOD, logistics and anti-armour or anti-fortification missions. First publicly unveiled at SOFEX in 2014 in an antitank configuration, the platform continues to undergo development. **Payload:** 200kg **Max speed:** 10km/h **Range:** 1.5km **Endurance:** 3h

King Abdullah II Design and Development Bureau ▸ UGV II

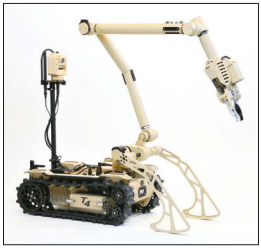
The UGV II is a 6x6 UGV developed by King Abdullah II Design and Development Bureau in Jordan. Armed with a 7.62mm machine gun in a remote weapon station, it can be used to carry out patrols or reconnaissance and surveillance operations. **Length:** 140cm **Width:** 120cm **Height:** 70cm **Weight:** 400kg **Payload:** 70kg **Max speed:** 2km/h

King Abdullah II Design and Development Bureau ▸ Weaponised UGV

At SOFEX 2018, King Abdullah II Design and Development Bureau unveiled a prototype of a weaponised UGV designed for security purposes. Armed with a single machine gun in a remote weapon station, this UGV is also equipped with a sensor pod and daylight cameras for enhanced situational awareness. It is expected to enter service with the Jordanian Armed Forces. **Length:** 100cm **Width:** 78cm **Height:** 34cm **Weight:** 260kg **Max speed:** 10km/h **Range:** 3km **Endurance:** 1.5h

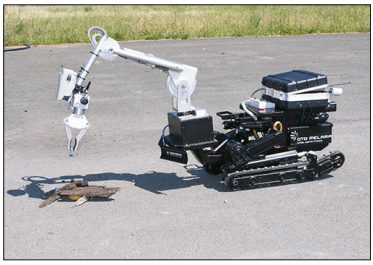
L3Harris Technologies ▸ T4

Unveiled at DSEI 2019, the T4 is a medium-sized UGV designed to offer capabilities similar to larger, much heavier robotic systems. Based on components developed for L3Harris Technologies' heavier T7 UGV, the T4 is intended for use in urban environments, where confined spaces may preclude the use of bigger systems. Like the T7, it typically mounts an extendable arm equipped with a gripper that can be operated via a haptic controller, although this can be dismounted and swapped for other payloads. **Length:** 92cm **Width:** 44.5cm **Height:** 58cm **Weight:** 97kg **Max speed:** 8km/h **Range:** 0.3km **Endurance:** 6h



Leonardo Defence Systems ▸ Oto-TRP1

The Oto-TRP1 is a large, tracked UGV, which can perform a number of roles, including CBRN, combat, communications, EOD, EW and ISTAR operations. **Length:** 120cm **Width:** 60cm **Height:** 47cm **Weight:** 300kg **Payload:** 100kg **Max speed:** 10km/h **Range:** 5km **Endurance:** 3h



Leonardo Defence Systems ▸ Oto-TRP2

The TRP-2 is a small, tracked, uncrewed land platform ideal for tactical missions. It can be disassembled into independent and light parts for easy transport. This light platform (100kg) is ready for use in a few minutes. Electrically powered (lithium-ion batteries), it can reach a maximum speed of 15km/h and operate continuously for a maximum of 4h. **Length:** 110cm **Width:** 60cm **Height:** 120cm **Weight:** 100kg **Max speed:** 15km/h **Endurance:** 4h

Leonardo Defence Systems ▸ Oto-TRP3 Frog

The Oto-TRP3 Frog is a small, lightweight and low-wheeled UGV that can be carried and deployed from larger UGVs. Four variants have been developed: communications, counter-IED, EW and ISTAR. **Length:** 30cm **Width:** 26cm **Height:** 13cm **Weight:** 3kg **Max speed:** 1.8km/h **Endurance:** 12h

Leonardo Defence Systems ▸ Oto-TRP7-HS

The Oto-TRP7-HS (Homeland Security) is a semi-autonomous, electric-powered, tracked UGV. It is designed to undertake a number of homeland security missions.

Lockheed Martin Missiles and Fire Control ▸ AMAS

The Autonomous Mobility Appliqué System (AMAS) is a multi-platform kit designed to integrate low-cost sensors and control systems onto US Army and USMC tactical vehicles to assist drivers or enable autonomous operation in convoys. AMAS is intended to reduce the dangers of driving in a combat zone by giving drivers an automated option to alert, stop and adjust or take full control and react to safety threats.

Lockheed Martin Missiles and Fire Control ▸ SMSS

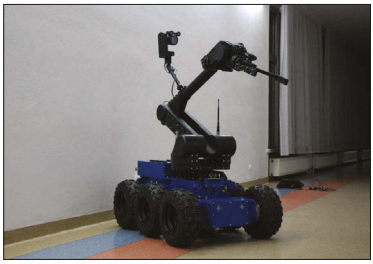
The Squad Mission Support System (SMSS) 6x6 vehicle was unveiled in 2006 and is believed to be the largest UGV so far deployed with US forces. Designed for transport and logistics support for light and early-entry troops, it has been tested in combat with loads that range from 544-1,814kg. **Length:** 360cm **Width:** 180cm **Height:** 210cm **Weight:** 1,724kg **Payload:** 544kg **Max speed:** 45km/h **Range:** 320km

Łukasiewicz – PIAP ▸ Expert

The Expert is an EOD robot designed to be used in confined spaces such as aircraft, buses, trains and ships. It is designed to reconcile two conflicting features: a small mobile base to allow manoeuvring in tight spaces and a 3m-long manipulator that can lift objects from hard-to-reach places. Front caterpillar tracks provide stability when surmounting obstacles and stairs, while stowable lateral stabilisers enable the robot to be fixed securely in places such as between rows of seats. **Length:** 88cm **Width:** 47cm **Height:** 78cm **Weight:** 197kg **Payload:** 15kg **Max speed:** 2km/h **Range:** 0.8km **Endurance:** 4h

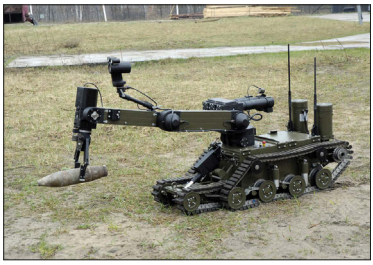
Łukasiewicz – PIAP ▸ Ibis

Unveiled in September 2008, the 6x6 Ibis UGV has been designed for EOD clearance, reconnaissance and rescue operations. It features a manipulator arm possessing a reach of over 3m and a high range of motion in each plane. Various tools can be fitted to the seven-degrees-of-freedom arm, including the CSL/RDS Vulkan and Chemring RE 70 pyrotechnic disrupters, Benelli M1 Super90 tactical shotgun, chemical and radiological sensors, wire cutters, drills and recording devices. **Length:** 135cm **Width:** 88cm **Height:** 125cm **Weight:** 320kg **Payload:** 50kg **Max speed:** 10km/h **Range:** 1km **Endurance:** 4h



Łukasiewicz – PIAP ▸ Inspector

Inspector is a heavy robot designed for EOD clearance work and can also be used for inspection and reconnaissance. It has a narrow width (67cm), which allows it to pass through regular doorways, a heavy-lift range (30-60kg) and the ability to tow heavy loads (1,500kg). **Length:** 171cm **Width:** 67cm **Height:** 114cm **Weight:** 550kg **Payload:** 60kg **Max speed:** 1km/h **Range:** 1km **Endurance:** 4h



Łukasiewicz – PIAP ▸ PIAP Fenix

Unveiled at the International Defence Industry Exhibition MSPO in September 2015, the PIAP Fenix is a lightweight, backpack-deployed UGV designed for reconnaissance as well as EOD/IED detection and neutralisation. It can be configured as either a tracked or wheeled platform. **Length:** 60cm **Width:** 50cm **Height:** 19cm **Weight:** 15kg **Payload:** 5kg **Max speed:** 8km/h **Range:** 0.8km **Endurance:** 6h

Łukasiewicz – PIAP ▸ PIAP Gryf

The PIAP Gryf is a lightweight UGV designed for reconnaissance, EOD/IED detection, neutralisation and bomb disposal in places that are difficult to access. It was first displayed at Eurosatory in June 2012 and is a larger version of the company's Scout platform. Powered by a hybrid drive system, it can move on any surface, in rough terrain and in buildings (including moving up and down the staircases). The robot has been equipped with IR cameras for day/night use, a high-resolution camera with a 33x optical zoom and a gripper camera to facilitate picking up hazardous materials. The robot is remotely controlled via an ergonomic control panel. **Length:** 90cm **Width:** 59cm **Height:** 51cm **Weight:** 38kg **Payload:** 15kg **Max speed:** 8km/h **Range:** 0.8km **Endurance:** 2h

Łukasiewicz – PIAP ▸ PIAP Patrol

The PIAP Patrol is the export version of the Polish Army's Portable Patrol Robot (RPP) tracked UGV. Developed by Łukasiewicz – PIAP, it is designed for the detection and neutralisation of explosive and CBRN threats and comes equipped with a manipulator arm that can lift a maximum of 22kg close to the front of the UGV. **Length:** 98cm **Width:** 57cm **Height:** 65cm **Weight:** 95kg **Max speed:** 10km/h **Range:** 0.8km **Endurance:** 5h

Łukasiewicz – PIAP ▸ PIAP Scout

The PIAP Scout – also called Small Robot for Reconnaissance (SRR) – is a small UGV, which can be carried inside a rucksack, designed for reconnaissance and light EOD work. Various tools can be mounted, including a manipulator arm with a gripper, cameras, chemical sensors, cutters and an X-ray device. **Length:** 67cm **Width:** 54cm **Height:** 57cm **Weight:** 27.5kg **Payload:** 5kg **Max speed:** 7km/h **Range:** 0.8km **Endurance:** 2h

Łukasiewicz – PIAP ▸ TRM

The Tactical Throwable Robot (TRM) is a small, two-wheel UGV designed to deliver support for operations in difficult-to-access and dangerous places. It is designed to withstand the impact from a fall of up to 9m and can be used to carry and initiate a flashbang grenade. Development began in 2007, and it has since been sold to seven customers. **Length:** 21.5cm **Width:** 21.2cm **Height:** 17cm **Weight:** 1.5kg **Payload:** 0.16kg **Max speed:** 3.5km/h **Range:** 0.2km **Endurance:** 1h

M-Tecks Robotics ▸ Arthron Pod 125 A

The Arthron Pod is a compact, wheeled UGV suitable for civil and military applications. Its design enables it to be thrown into operation, over obstacles if necessary, and its reversible configuration means it can function in any orientation it lands. **Length:** 39cm **Width:** 30.7cm **Height:** 17cm **Weight:** 6.7kg **Payload:** 2kg **Max speed:** 10km/h **Range:** 0.3km **Endurance:** 1.5h

M-Tecks Robotics ▸ Arthron R 4075 A

M-Tecks Robotics' Arthron R 4075 A is an all-terrain UGV for first responder missions such as reconnaissance, surveillance and inspection of buildings and disaster zones. It is a four-part, eight-wheeled platform with dynamic hinges, which is capable of raising segments. For example, the forward segment can be raised for improved gap crossing or step climbing. **Length:** 60cm **Width:** 25cm **Height:** 12cm **Weight:** 9kg **Payload:** 1.5kg **Max speed:** 5km/h **Range:** 0.3km **Endurance:** 2h

Mechatroniq Unmanned Systems ▸ MQ25

MQ25 is a man-portable, tracked UGV. It is available as an ROV through an RF link or with a degree of autonomy using the onboard Unified Vehicle Control System. MQ25 has a modular architecture to accommodate various payloads for inspection, mapping, reconnaissance, intelligence and situational awareness. **Length:** 31.75cm **Width:** 29.72cm **Height:** 24.64cm **Weight:** 9kg

Mechatroniq Unmanned Systems ▸ MQ100

MQ100 is a 4x4 electric-powered UGV for commercial and military operations. Its manoeuvrability, control and high payload capability provide a platform for a variety of applications. MQ100 is a one-operator unit and is transportable with a small SUV or station wagon. **Length:** 75cm **Width:** 76cm **Height:** 23cm **Weight:** 27.5kg **Payload:** 22.5kg

Med-Eng ▸ Avenger

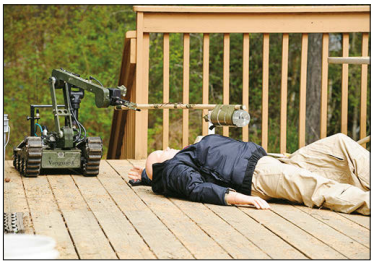
In January 2017, Med-Eng announced the launch of a new bomb disposal and tactical robot, called the Avenger, at the SHOT Show in Las Vegas. The medium-sized UGV is designed to provide support to police and military response teams, where vehicle-borne IEDs and CBRN defence are of concern. **Length:** 100cm **Width:** 45cm **Height:** 75cm **Weight:** 112kg **Max speed:** 8km/h **Range:** 1km

Med-Eng ▸ Defender

The Defender is a large, six-wheeled, counter-CBRN UGV built around a powerful arm with heavy-lifting capability. It has been designed to deal with changing threats while retaining core capabilities to extend operating parameters of current EOD requirements. **Length:** 152cm **Width:** 73cm **Height:** 115cm **Weight:** 275kg **Payload:** 180kg **Max speed:** 3.25km/h **Range:** 1km **Endurance:** 5h

Med-Eng ▸ Vanguard

The Vanguard UGV is designed to provide mission support for EOD technicians in both law enforcement and the military. It can be deployed in EOD/IED incidents where access is restricted, such as the aisles of aircraft and buses and underneath vehicles. The most recent upgrade to the Vanguard, a digital command system, has made it interoperable with the larger Defender (see separate entry). **Length:** 104cm **Width:** 45cm **Height:** 56cm **Weight:** 56kg **Max speed:** 2.25km/h **Range:** 1km **Endurance:** 5h



Milanion Group ▸ Agema

The Agema UGV is manufactured by Milanion Group. Marketed as a cost-effective multirole infantry support platform, it has a large customisable bed that can be fitted with a number of payloads to fit a multitude of missions in accordance with the customer's requirements. The platform is capable of traversing challenging terrain and can be configured as a 6x6, 8x8 or tracked platform.

Military Technical Institute – MTI ▸ Miloš

The Miloš, sometimes referred to as the Small Miloš, is a UGV designed to support infantry and special units, especially those employed in counter-terrorism operations in an urban environment. Its weapon station has the capability to incapacitate and neutralise infantry targets at a distance of up to 800m. Developed by MTI for the Serbian Armed Forces, ten platforms were handed over to the service in January 2021, with more deliveries expected in the near future. The UAE also trialled the UGV in 2018. **Length:** 172.5cm **Width:** 77cm **Height:** 47.5cm **Weight:** 400kg **Max speed:** 7km/h **Range:** 2km **Endurance:** 1.5h

Milrem ▸ THeMIS

Milrem's Tracked Hybrid Modular Infantry System (THeMIS) is a modular, hybrid UGV. The modular design and open architecture of the vehicle allow it to be reconfigured to serve as a transportation, weapons or IED detection platform. The current fifth-generation model incorporates knowledge gained during tests held in the US, Europe, the Middle East and deployment in Mali in the French-led Operation Barkhane. **Length:** 210cm **Width:** 210cm **Height:** 98cm **Weight:** 1,450kg **Payload:** 750kg **Max speed:** 24km/h **Endurance:** 10h

Milrem ▸ Type-X RCV

Milrem Robotics unveiled the Type-X Robotic Combat Vehicle (RCV) in 2020. Designed to support and ultimately replace manned IFVs, this tracked UGV is intended to lower the risk of casualties during combat operations by removing more troops from harm's way. Capable of being air-dropped, the 12t Type-X has a modular design to enable it to accommodate different weapon stations or to be configured for different roles. Since the platform does not need a crew, it can be smaller and lighter than a comparable manned platform, making it easier to deploy, cheaper to maintain and harder to detect. Developed to meet the requirements of several NATO militaries, the first prototype of the Type-X was scheduled to begin testing in the autumn of 2020. **Length:** 600cm **Width:** 290cm **Height:** 220cm **Weight:** 12,000kg **Payload:** 3,000kg **Max speed:** 80km/h **Range:** 600km

Milrem/QinetiQ North America ▸ Titan

The Titan large UGV is a hybrid system that comprises Milrem's Tracked Hybrid Modular Infantry System (THeMIS) combined with QinetiQ North America's Tactical Robot Controller (TRC) and Robotic Appliqué Kit (RAK) technology. Details of the system were announced in 2016, and it was unveiled in May 2017. Two units have been acquired by the UK's Defence Science and Technology Laboratory as part of the development of the Joint Tactical Autonomous Resupply and Replenishment (JTARR) programme. **Length:** 200cm **Width:** 210cm **Height:** 100cm **Weight:** 950kg **Payload:** 720kg **Max speed:** 24km/h **Endurance:** 72h

National Robotics Engineering Center ▸ Crusher

The Crusher vehicle was designed by DARPA and the National Robotics Engineering Center to evaluate technologies, such as mobility and autonomy systems, applicable to the UGVs included within the US Army's Future Combat Systems project that has since been cancelled. A development of the Spinner UGV, it was unveiled in April 2006 after trials at Fort Carson military base in 2006 and 2007 and at Fort Bliss military base in 2007 and 2008. The platform has been integrated with several sensor types to enhance autonomous mobility and is used as a transition platform for other DARPA vehicle autonomy programmes. **Length:** 510cm **Width:** 259cm **Height:** 152cm **Weight:** 5.99kg **Payload:** 3,630kg **Max speed:** 42km/h

National Robotics Engineering Center ▸ Gladiator TUGV

The Gladiator Tactical Unmanned Ground Vehicle (TUGV) was funded through a USMC programme to develop an armed, armoured UGV. The programme began in the mid-1990s, with further funding in 2002-03. Five prototypes were delivered in 2008. It carries a range of sensors and weapons, a light-vehicle obscurant smoke system and an anti-personnel obstacle breaching system. **Length:** 203cm **Width:** 129cm **Height:** 152cm **Weight:** 1,270kg **Payload:** 181kg **Max speed:** 33km/h **Range:** 1.8km **Endurance:** 24h

Nexter Robotics ▸ Nerva LG

Nexter Robotics developed the Nerva LG lightweight UGV for SF and other military users, police and security forces for reconnaissance and counter-IED missions. The platform was unveiled in June 2012. Myanmar became the launch customer for the platform in 2013, and the company reported in 2015 that 50 platforms had been sold to various military and police forces. **Length:** 35cm **Width:** 15cm **Height:** 25cm **Weight:** 4kg **Max speed:** 15km/h **Range:** 1km **Endurance:** 2h

Nexter Robotics ▸ Nerva S

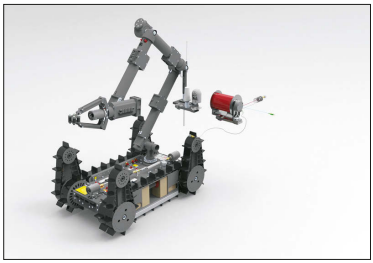
Nexter Robotics unveiled the hand-thrown, two-wheeled Nerva S at DSEI 2013 in London. The system, which is a smaller version of the Nerva LG (see separate entry), is designed for providing small-unit situational awareness, especially in urban areas. **Length:** 24.5cm **Width:** 31.5cm **Height:** 17cm **Weight:** 3kg **Max speed:** 10km/h **Range:** 0.2km **Endurance:** 5h

NIC Instruments ▸ First Responder

First Responder has been designed for the EOD and special weapons and tactics community to deal with a range of scenarios. The modular design allows the platform to be configured from a lightweight simple UGV to a fully capable EOD UGV. The company has further developed this platform into the more advanced Zeus (see separate entry). The ability to be configured in the field is intended to reduce the amount of equipment needed to fulfil its capabilities. **Length:** 77cm **Width:** 47cm **Height:** 40cm **Weight:** 30kg **Max speed:** 3km/h **Range:** 0.5km **Endurance:** 4h

NIC Instruments ▸ Zeus

NIC Instruments' Zeus UGV is a development of its First Responder (see separate entry) platform and was unveiled at Milipol Paris in November 2017. The company is highlighting the platform's modularity, terrain capability, through-life support and the ability to extend its capability. **Length:** 77cm **Width:** 46cm **Height:** 39cm **Weight:** 51kg **Payload:** 30kg **Max speed:** 3km/h **Range:** 0.5km **Endurance:** 4h

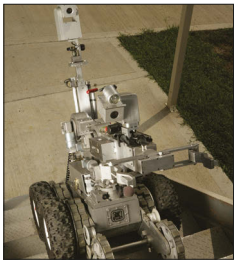


Nikola Motor Company ▸ Reckless

Nikola Motor Company is developing a UGV conversion of its Reckless electric 4x4 vehicle that will be able to be operated via remote control. Due to the modular construction inherited from the base vehicle, it will be able to mount bolt-on accessories, such as a remote weapon station or sensors, allowing it to be configured for many different missions. It will also be designed to carry the Planck Aerosystems Shearwater quadcopter UAS, which will provide enhanced surveillance capabilities for the system's operators. **Length:** 383cm **Width:** 150cm **Height:** 180cm **Weight:** 2,041kg **Payload:** 1,360kg **Range:** 240km

Northrop Grumman Remotec ▸ Andros F6B

The Andros F6B series is the latest version of this model. Software improvements are intended to provide a more intuitive user experience, with the operator control unit displaying real-time vehicle positioning (manipulator, articulators and gripper) via on-screen graphics and preset positions for quick deployment. Additional changes include an improved manipulator, LED lighting and new camera options. **Length:** 132cm **Width:** 74cm **Height:** 148cm **Weight:** 220kg **Payload:** 61kg **Max speed:** 4.8km/h **Endurance:** 4h



Northrop Grumman Remotec ▸ Andros HD Series

The Andros HD series builds on previous Andros UGVs, offering a manipulator in a smaller, lightweight chassis built for mobility and ease of use. Software improvements are intended to provide a more intuitive user experience, with the operator control unit displaying real-time vehicle positioning (manipulator, articulators and gripper) via on-screen graphics and preset positions for quick deployment. **Length:** 100cm **Width:** 66cm **Height:** 76cm **Weight:** 111kg **Max speed:** 8km/h **Range:** 1.6km **Endurance:** 4h

Northrop Grumman Remotec ▸ Andros Mark V-A1

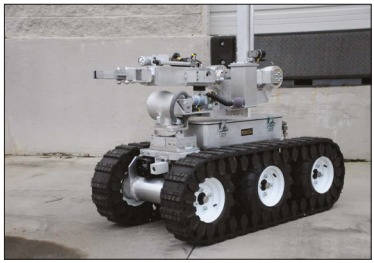
The Andros Mark V-A1 is a tracked/wheeled UGV with forward actuators able to negotiate narrow areas such as stair landings inside buildings. The vehicle is meant for use by special weapons and tactics teams and vehicle-borne IED detection response. The Andros Mark V-A1 was unveiled in 2003. **Length:** 120cm **Width:** 109cm **Height:** 118cm **Weight:** 358kg **Payload:** 66kg **Max speed:** 4.8km/h **Range:** 1.6km **Endurance:** 4h

Northrop Grumman Remotec ▸ Andros Nomad

Unveiled in 2017, the Andros Nomad is the latest UGV designed by Northrop Grumman to carry out civil and military applications. The platform, which is able to withstand different terrains, is made from carbon fibre and can climb gradients of 60°. Its features include four tracked pods, IOP-compliant software messaging and hardware interfaces. It also has the capacity to be easily upgraded, enhancing the system's flexibility and longevity for the end-user. **Length:** 90.17cm **Width:** 58.42cm **Height:** 66.04cm **Weight:** 74kg

Northrop Grumman Remotec ▸ Andros Wolverine

Andros Wolverine is an all-terrain UGV with six-wheel drive, which can also be fitted with tracks. It is mostly designed for EOD operations but can also conduct other operations based on payloads fitted. **Length:** 147cm **Width:** 73cm **Height:** 175cm **Weight:** 367kg **Max speed:** 4.8km/h **Range:** 1.6km **Endurance:** 4h

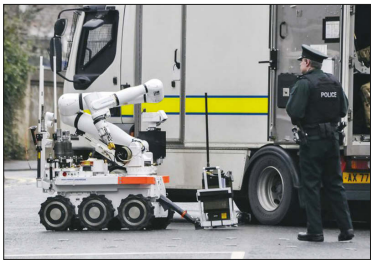


Northrop Grumman Remotec ▸ CaMEL

The Carry-all Mechanized Equipment Landrover (CaMEL) is a flexible, medium-sized UGV designed to accommodate multiple missions in various environments. The platform was unveiled at the AUSA conference in October 2010. It was displayed as an armed vehicle, but its primary role is described as logistics and support. Several modes of operation and robotic characteristics are built into the system, and it can operate as a tracked or wheeled vehicle. **Length:** 152cm **Width:** 81cm **Height:** 119cm **Weight:** 10,800kg **Payload:** 0.34kg **Max speed:** 8km/h **Endurance:** 20h

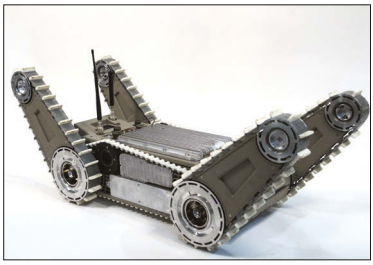
Northrop Grumman Remotec ▸ Cutlass

Cutlass is a wheeled, modular EOD/counter-IED system, which enables the user to deal with a range of incidents and is capable of accommodating a variety of payloads and tools. The platform is fitted with a heavy robotic arm with a three-fingered gripper that allows for door opening and more dexterous tasks. In December 2006, the UK MoD announced that Northrop Grumman was awarded a £65 million ($127 million at the time) contract for 80 of the platforms. **Length:** 124cm **Width:** 72cm **Height:** 127cm **Weight:** 0.42kg **Max speed:** 13km/h **Range:** 1km **Endurance:** 3h



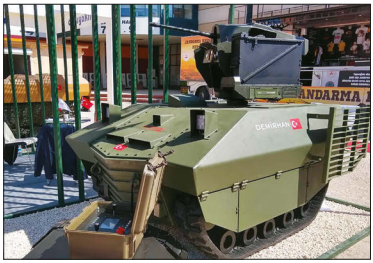
Northrop Grumman Remotec ▸ Titus UGV

The Titus UGV was unveiled in August 2011 and is designed as a modular system with articulated flippers, forward and rear, and a simple robotic arm. Northrop Grumman announced plans for a smaller UGV in April 2011 before unveiling the Titus a few months later, with production launched in May 2013. It is tracked and wheeled, allowing for all-terrain capability and speed. The platform's primary roles are EOD and reconnaissance. **Length:** 40.6cm **Width:** 58.4cm **Height:** 58cm **Weight:** 61.2kg **Max speed:** 12km/h **Range:** 0.5km **Endurance:** 3h



Oguzkagan Savunma ▸ Demirhan

The Demirhan was the largest UGV presented by Turkish company Oguzkagan Savunma at IDEF 2019. Intended for military use, the platform was designed from the ground up with assistance from third-party Turkish suppliers. It can support a SARP remote weapon station and as many as six cameras to provide 360° situational awareness for its operators. **Length:** 266.3cm **Width:** 196.1cm **Height:** 116.2cm **Weight:** 2,000kg **Max speed:** 12km/h **Range:** 3km **Endurance:** 20h



Oshkosh Defense ▸ TerraMax

Oshkosh TerraMax UGV technology is delivered as a scalable kit that can be integrated onto any tactical vehicle – from any manufacturer – without compromising the vehicle's original payload or performance capabilities. TerraMax UGVs are built to operate for extended periods of time, day or night, through dust and adverse weather without the fatigue or loss of awareness that can commonly afflict human operators.

Pearson Engineering ▸ MW50 Micro MineWolf

The Micro MineWolf (MW50), launched in February 2013, is the smallest unmanned platform in MineWolf Systems' counter-IED and mine clearance portfolio. The MW50 is a compact, remote-controlled, armoured platform, purpose-built for clearing explosive items such as IEDs, land mines and other devices remotely in hard-to-access, rugged terrain. The system underwent trials in Germany in May 2013 before deployment to Bosnia and Herzegovina the following month, which continued into July and informed improvements to the platform's design. **Length:** 310cm **Width:** 154cm **Height:** 137cm **Weight:** 1,650kg **Payload:** 650kg **Max speed:** 1.9km/h **Range:** 1km

Pearson Engineering ▸ MW240 Mini MineWolf

The Mini MineWolf (MW240) is a multipurpose platform for the clearance of explosive devices, including land mines, IEDs and cluster munitions. The MW240 can be equipped with a range of interchangeable front-mounted attachments: a tiller or flail for mine clearance, a robotic arm for counter-IED or EOD tasks or a runway clearance attachment for clearing cluster munitions. Other attachments (bucket, dozer, forklift) can be mounted for engineering tasks. **Length:** 581cm **Width:** 254cm **Height:** 222cm **Weight:** 9,004kg **Payload:** 3,500kg **Max speed:** 2.3km/h **Range:** 1km

Pearson Engineering ▸ MW330 Medium MineWolf

The Medium MineWolf (MW330) was unveiled in 2010 and is designed to combine features from the manned MW370 and the remote-controlled MW240. It can be operated as a manned vehicle with the cab fitted or as an unmanned vehicle operated by remote control either with the cab (for certain tasks only) or without the cab, when it can be fitted with an optional camera system. **Length:** 490cm **Width:** 230cm **Height:** 375cm **Weight:** 12,760kg **Payload:** 3,160kg **Max speed:** 2.4km/h **Range:** 1km

Polaris Government and Defense ▸ MRZR X

Team Polaris unveiled the unmanned MRZR X multi-mode, connected vehicle for the first time at the AUVSI trade show in 2018. The MRZR X has been designed to provide an evolving, autonomous, multi-mission platform, which also provides commonality with the MRZRs already in service in the US and more than 30 allied nations. **Length:** 355cm **Width:** 150cm **Height:** 180cm **Weight:** 950kg **Payload:** 680kg

Pratt & Miller Engineering ▸ EMAV

The Expeditionary Modular Autonomous Vehicle (EMAV) was originally developed by Pratt & Miller Engineering in response to a US Army requirement for a UGV that could support infantry platoons at the tactical level. It consists of a tracked 3.84x1.5m² flat platform that can accommodate supplies, stretchers, a remote weapon station, sensors and other military equipment. Capable of operating fully autonomously, it can travel across preprogrammed routes to support infantry in the field or carry out predefined surveillance or patrol missions. **Length:** 384cm **Width:** 150cm **Weight:** 3,080kg **Payload:** 3,175kg **Max speed:** 72km/h

Pratt & Miller Engineering ▸ Flexible Robotic Platform

US vehicle engineering company Pratt & Miller Mobility has used its target UGVs and associated technologies to develop three logistics and cargo UGVs: the Light, Heavy and Extreme Flexible Robotic Platforms (FRP). The Light FRP was on display and demonstrated for the first time at Xponential in Chicago on 30 April 2019. **Length:** 142.24cm **Width:** 121.92cm **Height:** 60.96cm **Weight:** 318kg **Payload:** 272kg **Max speed:** 19km/h **Range:** 48km **Endurance:** 3h

Proytecsa ▸ aunav.NEXT

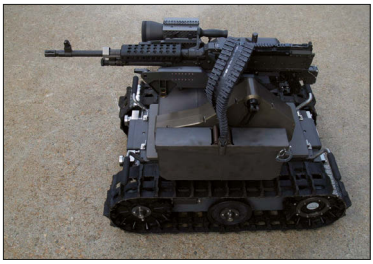
The aunav.NEXT, first presented in November 2013, was developed in collaboration with the Spanish National Police Corps for countering IED and CBRN threats. In March 2014, Mauritius became the first export customer. Since 2003, aunav-series UGVs have been used by EOD teams in Angola, Mexico, Morocco, Saudi Arabia, Spain, the US and Vietnam. **Length:** 155cm **Width:** 69cm **Height:** 115cm **Weight:** 495kg **Max speed:** 10km/h **Range:** 3km **Endurance:** 5h

QinetiQ North America ▸ Dragon Runner

Dragon Runner was originally developed for the USMC by the US Naval Research Laboratory, Carnegie Mellon University's Robotics Institute and Automatika. QinetiQ further developed Dragon Runner to produce a modular, small UGV, which can be reconfigured in the field. There are now two versions: Dragon Runner 10 (DR10) and the slightly larger Dragon Runner 20 (DR20). The DR20 was unveiled under the name Dragon Runner in 2008 but was redesignated when the DR10 was released in 2011. **Length:** 38cm **Width:** 34cm **Height:** 15.24cm **Weight:** 9kg **Payload:** 0kg **Max speed:** 6.4km/h **Range:** 0.65km **Endurance:** 2h

QinetiQ North America ▸ MAARS

Modular Advanced Armed Robotic System (MAARS) incorporates feedback from US Army trials of three Special Weapons Observation Reconnaissance Detection System variants of QinetiQ North America's Talon UGV. QinetiQ delivered the first MAARS to the US DoD in mid-2008 for evaluation. It can use non-lethal force by projecting the operator's voice through mounted loudspeakers or alternatively pulsing a green, eye-safe laser to dazzle people. **Length:** 120cm **Width:** 70cm **Height:** 100cm **Weight:** 167kg **Max speed:** 11km/h **Range:** 2km **Endurance:** 12h

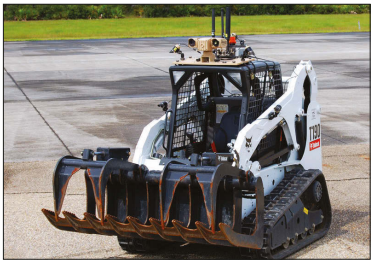


QinetiQ North America ▸ Raider II

Raider II is a semi-autonomous diesel pick-up buggy vehicle with a 1km range. In manned mode, the vehicle reaches up to 56km/h. The system is based on the Polaris Defense 2011 Military Diesel Crew Long Box and features autonomous security, with obstacle detection and avoidance, and a 360° personnel approach sensor. Applications include resupply, medical evacuation, reconnaissance and infantry supply transportation to reduce personal load (rucksack mounts). **Length:** 370cm **Width:** 155cm **Height:** 193cm **Weight:** 765kg **Payload:** 794kg **Max speed:** 56km/h **Range:** 1km

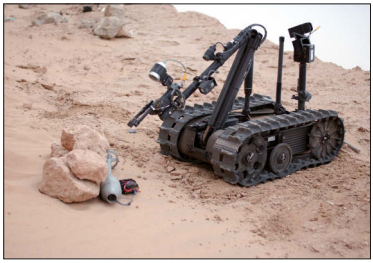
QinetiQ North America ▸ Spartacus

Spartacus is a family of remotely operated UGVs developed in partnership with Bobcat. The system, which has been designed to support a variety of military missions, can operate in unmanned and manned modes and can be adapted to a range of vehicles. **Width:** 120cm **Height:** 240cm **Weight:** 5,675kg **Max speed:** 8.4km/h **Range:** 0.8km **Endurance:** 24h



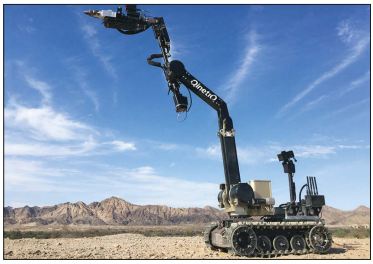
QinetiQ North America ▸ Talon

Originally developed for EOD missions, the medium-sized Talon is a rugged, tracked system, which has undergone numerous improvements and upgrades since it was introduced into service in 2010 when it was deployed to Bosnia and Herzegovina. QinetiQ delivered its 2,000th Talon to the US DoD in May 2008 and more than 4,000 have been sold – the highest number of one UGV type in US service. **Length:** 86cm **Width:** 57cm **Height:** 45cm **Weight:** 70kg **Payload:** 45kg **Max speed:** 8.3km/h **Range:** 0.8km **Endurance:** 4.5h



QinetiQ North America ▸ Tison

The QinetiQ North America Tison heavy EOD UGV is a larger version of the company's Talon UGV (see separate entry) and was unveiled at the AUSA conference in October 2016. It is an IOP-compliant, tracked platform with a large nine-degrees-of-freedom robotic arm capable of lifting 50kg at 2m extension. **Length:** 114.3cm **Width:** 114.3cm **Height:** 66.04cm **Weight:** 454kg **Max speed:** 10km/h **Range:** 0.8km **Endurance:** 4h

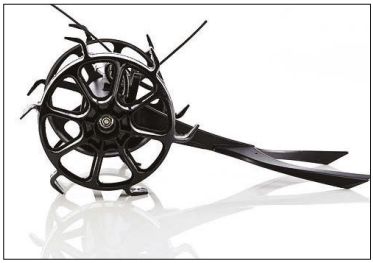


ReconRobotics ▸ Recon Scout IR

Recon Scout IR is a throwable mobile reconnaissance robot. It is used to gain knowledge about hostile environments before entering them. **Length:** 142cm **Width:** 19.4cm **Height:** 7.6cm **Weight:** 0.56kg **Max speed:** 1.08km/h **Range:** 0.3km **Endurance:** 1h

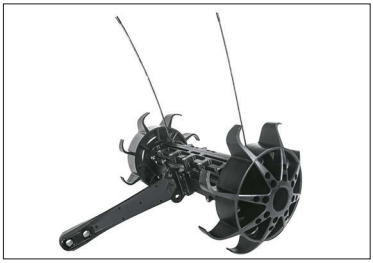
ReconRobotics ▸ Recon Scout XL

The Recon Scout XL is a rugged micro-robot that can traverse varied terrain to provide operators with immediate video and audio reconnaissance in high-risk situations. **Length:** 30cm **Width:** 21.6cm **Height:** 14cm **Weight:** 0.64kg **Max speed:** 2.16km/h **Range:** 0.09km **Endurance:** 1h



ReconRobotics ▸ Throwbot 2

The Throwbot 2 (TB2) is an improved version of the company's Throwbot UGV. It is a throwable micro-UGV that enables operators to obtain instantaneous video and audio reconnaissance within indoor or outdoor environments. Designed to withstand repeated drops of up to 9m onto concrete, the TB2 can be thrown into hazardous situations. The platform was unveiled in May 2018. **Length:** 21cm **Width:** 20cm **Height:** 11.4cm **Weight:** 0.6kg **Payload:** 0kg **Max speed:** 2.16km/h **Range:** 0.14km **Endurance:** 2.67h



ReconRobotics ▸ Throwbot XT

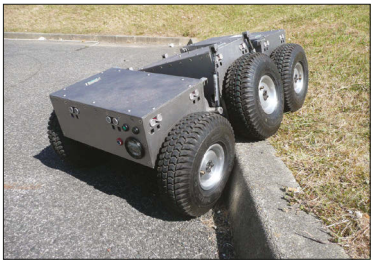
The Throwbot XT is a two-wheeled, very light (1.27kg) UGV, which can move through cluttered indoor environments and level outdoor landscapes. It is equipped with an automatic IR optical system and can be deployed in five seconds. It can be directed to move through the environment and transmit live video and audio to a 0.73kg handheld operator control unit. **Length:** 21cm **Width:** 19cm **Height:** 11.4cm **Weight:** 0.54kg **Max speed:** 1.7km/h **Range:** 0.09km **Endurance:** 1h

Rheinmetall ▸ Mission Master

The Mission Master is an eight-wheeled UGV designed by Rheinmetall to fulfil a range of logistics and battlefield support roles, including battlefield surveillance and CBRN detection, and the platform can be used as a cargo carrier and a medical evacuation vehicle. Rheinmetall is also developing a weaponised version that can be equipped with an assortment of weapon systems such as machine guns, cannons, rockets and antitank guided missiles. Displayed for the first time at Eurosatory 2018, the Mission Master has since been sold to an undisclosed Middle Eastern customer and the UK. **Length:** 155cm **Width:** 295cm **Height:** 500cm **Weight:** 750kg **Payload:** 600kg **Range:** 0.8km **Endurance:** 72h

Robosoft ▸ miniROC6

The Robosoft Technologies miniROC6 is a smaller version of the robuROC6 (see separate entry). **Length:** 80cm **Width:** 50cm **Height:** 30cm **Weight:** 60kg **Max speed:** 3.5km/h



Robosoft ▸ robuCAR TT

The robuCAR TT is a 4x4 all-terrain UGV designed for rough outdoor tasks. It is customisable to fit a wide range of applications, including research. **Length:** 180cm **Width:** 130cm **Height:** 61cm **Weight:** 350kg **Payload:** 300kg **Max speed:** 18km/h **Endurance:** 4h

Robosoft ▸ robuROC4

The robuROC4 is a rugged, all-terrain platform designed to carry loads of up to 100kg. Equipped with a housing and application tray, customised payloads – such as sensors, transmission systems and video cameras – and the robuARM manipulator, it can be configured to suit various missions. **Length:** 105cm **Width:** 80cm **Height:** 70cm **Weight:** 140kg **Payload:** 100kg **Max speed:** 20km/h **Endurance:** 4h

Robosoft ▸ robuROC6

The Robosoft robuROC6 consists of three articulated two-wheeled segments with independent power to each segment, allowing the chassis to twist oppositely on very rough terrain and handle steps as high as the vehicle itself. The vehicle was displayed in 2006. **Length:** 150cm **Width:** 78cm **Height:** 50cm **Weight:** 160kg **Payload:** 100kg **Max speed:** 13km/h **Endurance:** 5h

Roboteam ▸ IRIS

The Individual Robotic Intelligence System (IRIS) is a lightweight, ruggedised, hand-carried UGV, which can be used for intelligence-gathering and reconnaissance by military forces, law enforcement and other public safety organisations. It was unveiled in 2012 and is in Israeli and US service in undisclosed numbers. **Length:** 20cm **Width:** 23cm **Height:** 11cm **Weight:** 1.85kg **Payload:** 1kg **Max speed:** 5km/h **Range:** 0.2km **Endurance:** 2h

Roboteam ▸ MTGR

Roboteam unveiled the new configuration of its Micro Tactical Ground Robot (MTGR) at the AUSA 2013 exhibition after an initial unveiling in August 2012. The vehicle is designed for harsh field conditions and can be fitted with forward flippers to allow it to more easily climb stairs and achieve improved obstacle clearance. **Length:** 47cm **Width:** 47cm **Height:** 16.5cm **Weight:** 9.4kg **Payload:** 10kg **Max speed:** 3.5km/h **Range:** 0.5km **Endurance:** 4h

Roboteam ▸ Probot

The 4x4 Professional Robot (Probot) is suitable for various applications, both indoor and outdoor, and is designed to carry a payload of up to 700kg. Potential roles include: logistics carrier, casualty evacuation, EOD clearance, reconnaissance, surveillance and target acquisition and public safety applications, such as CBRN and hazardous materials. The platform was unveiled at the AUSA conference in Washington, DC, in October 2013. **Length:** 145cm **Width:** 126cm **Height:** 61cm **Weight:** 300kg **Payload:** 700kg **Max speed:** 9.6km/h **Endurance:** 8h

Roboteam ▸ TIGR

Roboteam showcased the TIGR (Transportable Interoperable Ground Robot) for the first time at AUSA 2017. Equipped with a robotic arm, it is a small UGV designed to carry out a range of missions, including EOD, situational awareness and intelligence and surveillance tasks. It can be controlled by an operator using an ROCU-7 all-weather controller from up to 1.3km away. **Length:** 91cm **Width:** 56cm **Height:** 35cm **Weight:** 74kg **Payload:** 150kg **Range:** 1.3km **Endurance:** 8h

Sarcos ▸ MDMR

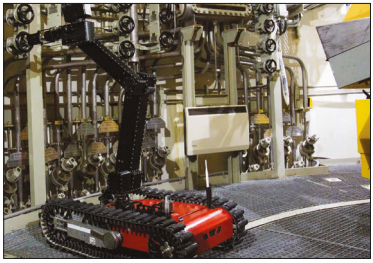
With its small size and the ability to replicate snake-like movement, the Multi-Dimensional Mobility Robot (MDMR) can negotiate difficult terrain and is also known as the Guardian S. The MDMR was developed by Sarcos over a five-year period under contract to DARPA. **Length:** 130cm **Width:** 9cm **Height:** 7cm **Weight:** 11.3kg **Max speed:** 1.2km/h **Range:** 0.5km **Endurance:** 18h

Servosila ▸ Radio Engineer

The Radio Engineer is a backpack-transportable UGV developed with an integrated software-defined radio payload module. Based on the standard variant of the Engineer UGV, it is primarily designed for outdoor use. It is equipped with a 1.3m sensor head that can accommodate several different types of sensors such as wide-angle forward- and rear-view cameras, a laser scanner and a pair of cameras for stereo vision. **Length:** 80cm **Width:** 42cm **Height:** 14cm **Weight:** 25kg **Max speed:** 5km/h **Endurance:** 4h

Taurob ▸ Taurob Tracker

Taurob Tracker is a UGV for hazardous missions and is ATEX directive certified to operate in explosive atmospheres. It is in operational use by fire departments but also intended for military applications. The system is IP67 waterproof and therefore easily decontaminated after use. **Length:** 100cm **Width:** 58cm **Height:** 42cm **Weight:** 60kg **Payload:** 25kg **Max speed:** 7km/h **Range:** 1km **Endurance:** 10h



Tecdron ▸ Quator/Quator XL

Quator is a scout, observation, inspection and detection robot suitable for rapid-response scenarios. Quator XL builds on the transportation capabilities of the smaller version, weighing more and capable of carrying a larger payload. Quator and Quator XL are used within the civil, industrial, military, nuclear and scientific areas. The company also makes an even larger variant called Quator XLT. **Length:** 145cm **Width:** 138cm **Height:** 102cm **Weight:** 260kg **Payload:** 500kg **Max speed:** 15km/h **Range:** 1km **Endurance:** 12h

Tecdron ▸ Scarab Vulcain and LX

Tecdron Scarab UGVs are tracked detection and observation robots. Whereas the Vulcain model has fire-fighting capabilities, the LX can be fitted with more varied payloads such as a manipulator arm. Both variants are all-terrain capable, with hydraulic shock absorbers. They are made from aircraft-grade aluminium. **Length:** 137cm **Width:** 76.5cm **Height:** 100cm **Weight:** 260kg **Payload:** 200kg **Max speed:** 6.5km/h **Range:** 1km **Endurance:** 8h

Tecdron ▸ Scorpio

The Scorpio is a tactical micro-robot that has been waterproofed to IP68 standards and is day/night operational. The three-wheeled unit uses aerospace-grade aluminium, and its tyres and all connections are ruggedised for use on gravel, mud, sand and tarmac. The system is controlled via a 5in (12.7cm) LCD screen with a single joystick and dedicated buttons. **Length:** 43.5cm **Width:** 32.7cm **Height:** 18.5cm **Weight:** 5.9kg **Payload:** 8kg **Max speed:** 6km/h **Range:** 0.3km **Endurance:** 4h

Teledyne FLIR ▸ Centaur

The Centaur is a military UGV developed specifically for the US Army's Man Transportable Robotic System Increment II (MTRS Inc II), a requirement for a medium-sized common UGV platform. Equipped with a manipulator arm and a sensor mast, the Centaur can be configured for various missions, including surveillance, reconnaissance, EOD and CBRN detection. **Length:** 150cm **Width:** 100cm **Height:** 0.3cm **Weight:** 72kg **Payload:** 68kg **Max speed:** 4km/h **Range:** 0.8km **Endurance:** 8h

Teledyne FLIR ▸ FirstLook

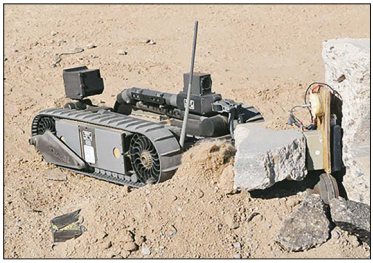
The Endeavor Robotics (now FLIR Systems) FirstLook is a tracked, compact, rugged, expendable and lightweight robot that provides situational awareness, performs persistent observation and investigates and manipulates dangerous and hazardous materials. It was unveiled in October 2009. There are 19 platforms in service in North American nuclear facilities, and 105 platforms were deployed to Afghanistan in 2012 as part of an operational assessment. **Length:** 25.4cm **Width:** 22.9cm **Height:** 10.2cm **Weight:** 2.45kg **Payload:** 2kg **Max speed:** 5.47km/h **Endurance:** 6h

Teledyne FLIR ▸ Kobra

The Kobra (formerly 710 Kobra and 710 Warrior) can carry 68kg, travel over rough terrain and climb stairs while performing missions such as EOD, route clearance, perimeter patrol and surveillance/reconnaissance in support of security forces. It is also used to conduct routine operations in industrial settings, and it can operate in adverse weather conditions. The system has a digital architecture. After being shortlisted for the US Army's Common Robotic System – Heavy (CRS-H) programme in 2018, FLIR Systems was awarded the production contract in December 2019, which could see as many as 350 systems delivered to the US Army. **Length:** 89cm **Width:** 54cm **Height:** 45cm **Weight:** 166kg **Payload:** 68kg **Max speed:** 13km/h **Range:** 0.2km **Endurance:** 10h

Teledyne FLIR ▸ PackBot

PackBot, previously designated 510 PackBot, is a tracked, tactical, mobile UGV with forward-articulated flippers that can perform multiple missions. PackBot is being delivered to customers worldwide for EOD, surveillance/reconnaissance and route clearance missions, as well as for use in industrial settings. Currently, 23 platforms are in service in North American nuclear facilities. **Length:** 89cm **Width:** 52cm **Height:** 40cm **Weight:** 10.89kg **Payload:** 31kg **Max speed:** 9km/h **Range:** 1km **Endurance:** 4h

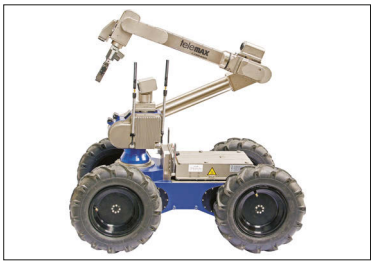


Teledyne FLIR ▸ SUGV

The Small Unmanned Ground Vehicle (SUGV) was previously known as the 310 SUGV and is designed for dismounted EOD missions, but it can also be used for reconnaissance and CBRN missions. Development of the platform began in 2007, and the first orders were placed in 2010. **Length:** 76cm **Width:** 44cm **Height:** 23cm **Weight:** 13.2kg **Payload:** 3kg **Max speed:** 10km/h **Range:** 1km **Endurance:** 6h

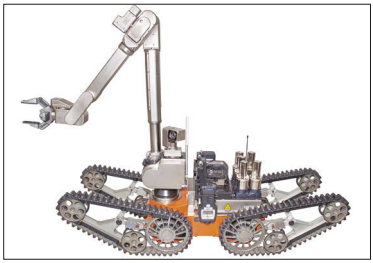
Telerob ▸ Telemax 4x4

The Telemax 4x4 is a wheeled system, which includes a programmable six-axis manipulator with linear axis, automatic tool exchange and manipulator tool centre point control. **Length:** 100cm **Width:** 60cm **Height:** 81cm **Weight:** 66kg **Payload:** 35kg **Max speed:** 11.5km/h **Endurance:** 15h



Telerob ▸ Telemax CBRN

The Telemax CBRN is a four-tracked system, which delivers live sensor data to the operator and allows samples to be taken for later analysis or for preservation of evidence. It features a six-axis manipulator with linear axis, automatic tool exchange and manipulator tool centre point control. It can be set up with more than 30 preprogrammed automatic motion sequences for the manipulator and flippers. **Length:** 81cm **Width:** 40cm **Height:** 75cm **Weight:** 80kg **Payload:** 31kg **Max speed:** 10km/h **Endurance:** 4h

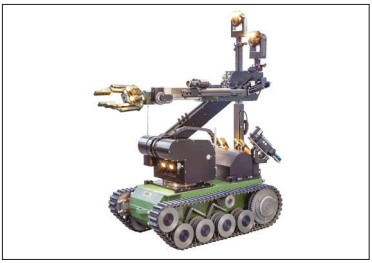


Telerob ▸ Telemax tEODor PRO

The Telemax EOD and observation robot (Telemax tEODor) PRO is designed to complement Cobham's tEODor UGV (see separate entry) by providing a smaller EOD robot for use in confined spaces. The Telemax tEODor PRO is able to open overhead lockers inside planes, buses or trains. Its features include a programmable six-axis manipulator with linear axis, an automatic tool exchange and manipulator tool centre point control. **Length:** 130cm **Width:** 68.5cm **Height:** 124cm **Weight:** 375kg **Payload:** 350kg **Max speed:** 10km/h **Range:** 1km **Endurance:** 4h

Telerob ▸ tEODor

Telerob, a division of Cobham, has supplied tracked Telerob EOD and observation robot (tEODor) heavy-duty UGVs to security forces in more than 44 countries, including 20 NATO member states. Its features include a programmable six-axis manipulator with linear axis, an automatic tool exchange, an integrated diagnostic system and parallel operation of up to five disrupters. More than 400 platforms have been sold, with the first entering service with the Czech Republic in 2005. **Length:** 130cm **Width:** 68cm **Height:** 124cm **Weight:** 375kg **Payload:** 350kg **Max speed:** 3km/h **Range:** 1km **Endurance:** 4h



Textron Systems ▸ Ripsaw M5

The Ripsaw M5 has been developed to meet the requirements of the US Army's Robotic Combat Vehicle (RCV) programme for a family of new UGVs. Based upon the Howe and Howe Ripsaw tracked platform and incorporating several subsystems designed by FLIR, it is a modular design that can mount different turrets, sensors and specialised equipment, as well as act as a mother ship to smaller UGVs or small UAVs. Textron plans to enter the Ripsaw M5 into the RCV-Light and RCV-Medium components of the RCV programme. **Length:** 594.36cm **Width:** 266.7cm **Height:** 151.13cm **Weight:** 10,500kg **Payload:** 3,628.7kg **Max speed:** 64km/h

Ukroboronprom ▸ Phantom-2

Ukroboronprom, together with its affiliate SpetsTechnoExport, first displayed the Phantom-2 UGV at the AUSA 2017 exhibition in Washington, DC. The Phantom-2 UGV has an 8x8 wheeled chassis in its standard form but can also be equipped with tracks. It is operated by a secure radio 20km channel or via a fibre cable of 5km length. **Length:** 420cm **Width:** 220cm **Height:** 120cm **Weight:** 2,100kg **Payload:** 1,200kg **Max speed:** 60km/h **Range:** 1km

SPECIFICATIONS

UMVs

This section includes major UMVs that are currently in production or in development around the world.

Entries are arranged alphabetically by manufacturer and system name.
The specifications are those supplied by the OEMs. Further information can be obtained by contacting these companies directly.

If you think your product should be listed, please contact the team at insight@shephardmedia.com to ensure it appears in the *Shephard Defence Insight* online database (plus.shephardmedia.com) and is included in the next handbook edition.

ABOVE: Kongsberg provides a number of different training services for its uncrewed vessels, such as the Sounder. (Photo: Kongsberg Maritime)

USVs ▸ Accurate Automation ▸ Sentinel

The Sentinel USV is a family of five variants developed for the USN and funded under the Small Business Innovation Research programme. Sentinel is able to launch a UAV and is intended for harbour and strategic facility protection, coastal patrol, ship protection and oil rig protection. It is also capable of optical and electromagnetic field-of-sight extension, ISR missions, target designation, jamming and decoy missions and force protection.
Length: 1,158cm

Aeronautics ▸ SeaStar

The SeaStar USV can be used for harbour and strategic facility protection, coastal patrol, ship protection, oil rig protection and target designation. Other capabilities include optical and electromagnetic LoS extension, ISR missions, jamming and decoy missions and force protection. **Length:** 110cm **Width:** 350cm **Weight:** 6,000kg **Max speed:** 45kt **Range:** 555km **Endurance:** 0.4 day/s

Al Marakeb ▸ B7

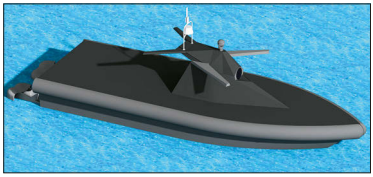
The B-7 is a USV that has been in development since 2009. Designed for coastal defence, the B-7 is able to monitor coastlines, protect ports and can guide ships in hostile waters. The underwater vehicle, which was first displayed at IDEX 2015, can operate in all weather conditions and during both the day and night.

Al Marakeb ▸ B7X

Unveiled in January 2018, the B7X is a dual-use USV that can be used to carry out manned and unmanned operations. It is powered by a Yanmar Marine 6LPA-STP2 engine, with propulsion provided by HamiltonJet HJ213 water jets.
Length: 820cm **Width:** 210cm **Weight:** 2,000kg **Max speed:** 45kt
Range: 833.4km **Endurance:** 2 day/s

Al Seer Marine ▸ Eclipse Class 11

The Eclipse Class 11 is an 11m mono-hull craft that can serve as a surveillance platform or patrol craft. Optional equipment fitted to customer requirements could include a high-resolution radar and a 360˚ PTZ day/night camera. **Length:** 1,100cm **Max speed:** 50kt



Al Seer Marine ▸ Sea Serpent

The three-metre Sea Serpent is the smallest member of the Eclipse USV family that Al Seer Marine and 5G International are jointly developing for surveillance and security missions in near-coastal areas. The prototype was first shown publicly at the IDEX exhibition in February 2013. The Sea Serpent is able to operate up to three kilometres from the control station and can achieve a top speed of 70kt. **Length:** 300cm **Max speed:** 70kt **Range:** 3km

ALSEAMAR Alcen ▸ SeaSurveyor

The SeaSurveyor USV is a high sea-state tolerant, lightweight, multi-mission vehicle with a semi-submersible wet hull. It is designed for a range of oceanographic and defence missions and can gather subsea and surface data, sending it back using global satellite telemetry. **Length:** 150cm **Width:** 50cm **Weight:** 60kg **Max speed:** 2.34kt **Range:** 2km **Endurance:** 0.4 day/s

Aquabotix Technology ▸ SwarmDiver

The SwarmDiver is a micro-USV/UUV intended to operate in a swarm. The system, which requires one operator, is designed to be easily deployable and can be fitted with specialised sensor payloads for roles in defence, oceanography, aquaculture, research and hydrographic survey. **Length:** 75cm **Width:** 13cm **Height:** 45cm **Weight:** 1.7kg **Max speed:** 4.3kt **Range:** 7km **Depth rating:** 50m **Endurance:** 0.1 day/s

Ares Shipyard ▸ ULAQ

The ULAQ is an AUSV manufactured by Ares Shipyard. The platform was developed to address a gap in the market Ares identified, a combat-ready USV. The ULAQ can host CİRİT & UMTAS / L-UMTAS guided missile systems and has swarming capabilities. **Length:** 1,100cm

Aselsan ▸ Albatros-T

The Aselsan Albatros-T is a high-speed, unmanned, surface target boat designed to be used as a moving target in shooting drills. The system can remotely simulate various tactical movements and rapid asymmetric threats. It is capable of sharp manoeuvres at high speeds and can be shot with naval artillery, near defence weapon systems, guided missiles and similar weapons while it is cruising on a specified route. **Length:** 550cm **Width:** 165cm **Weight:** 950kg **Max speed:** 40kt **Range:** 18.52km **Endurance:** 0.25 day/s

Aselsan ▸ Levent

The Levent is a high-speed, multipurpose USV developed for performing various maritime applications remotely. The system is modular and can be used in various missions such as MCM, ISR, target acquisition, maritime security, patrol, target towing and logistics. **Length:** 730cm **Weight:** 3,000kg **Max speed:** 30kt **Range:** 370.4km

Atlas Elektronik UK ▸ ARCIMS

The Atlas Remote Combined Influence Minesweeping System (ARCIMS) is an MCM USV platform. It is capable of being deployed and operated from the shore, a surface ship and/or an MCM vessel and can be operated as a standalone or as part of the Atlas Integrated Mine Countermeasures System. In December 2015, Atlas Elektronik UK, alongside parent company Atlas Elektronik, successfully delivered an ARCIMS USV to WTD-1 in Germany, to evaluate uncrewed technologies for MCM. **Length:** 1,100cm **Weight:** 6,000kg **Max speed:** 40kt

BAE Systems/L3Harris ASV ▸ Pacific 950 Jekyll

The Pacific 950 Jekyll is a joint development between BAE Systems' Maritime Services and ASV Global (now L3 ASV). It was designed as an upgrade to transform the Pacific 950 RIBs from manned to unmanned configuration. It can be deployed by land, sea and air (air transport and air delivery).
Length: 950cm **Width:** 300cm **Max speed:** 47kt **Range:** 334km

Beijing Sifang Automation ▸ SeaFly-01

The SeaFly-01 USV, developed by Beijing Sifang Automation, was showcased at the 11th Zhuhai Airshow in China in November 2016. Phase one tests of the first prototype were completed on Nanhu Lake in Wuhan on 27 October 2016.
Length: 1,025cm **Width:** 370cm **Height:** 400cm **Weight:** 4,500kg
Max speed: 24.3kt **Range:** 50km

BRVANT ▸ BRV-USV-01

The BRV-USV-01 is a lightweight, easily deployed, multipurpose, electrical USV developed for use in water quality sampling, aquatic/environmental mapping and surveying, and security and defence.

ECA Group ▸ Inspector 70

The Inspector Mk 1 is a remote-controlled USV, based on a RIB, which can be used for weapon development and qualification, gunnery and missile training, as well as a target for naval small arms. Additionally, it can perform other missions such as EW, surface survey and pollution control.
Length: 700cm **Width:** 250cm **Weight:** 2,100kg **Max speed:** 35kt
Endurance: 0.62 day/s

ECA Group ▸ Inspector 90

The USV Inspector 90 is a multipurpose drone platform based on hydro-jet propulsion, able to be operated in autonomous mode, remote control or onboard steering. Its performances and its accuracy make it efficient in protection missions, recurrent operations, mine warfare activities and rapid environment assessment. Its open design permits the deployment of a large range of payloads. **Length:** 900cm **Width:** 295cm **Max speed:** 35kt **Range:** 18.2km **Endurance:** 0.5 day/s

ECA Group ▸ Inspector 120

The Inspector 120 USV is a multipurpose naval platform by ECA Group that was unveiled in 2018. It is based on the proven Inspector 90 but features increased performance. The surface vessel's modular concept allows it to be configured to the customer's needs and can be operated in both autonomous mode, remote control or onboard steering. The vessel is intended for use in both homeland security and maritime applications which includes protection missions, recurrent operations, mine warfare activities and rapid environment assessment. The USV can be deployed from MCM warships and is UMIS compatible. **Length:** 1,200cm

ECA Group ▸ Inspector 125

The USV Inspector 125 is a multipurpose naval platform designed for demanding operations in various sea state conditions. It is capable of manned, remote-controlled and fully autonomous coastal and open sea maritime missions, such as infrastructure protection, mine warfare or rapid environmental assessment. The USV Inspector 125 can deploy a large scale of payloads, including autonomous underwater vehicles and remotely operated vehicles. It can tow large side scan sonar or sweep systems. The USV has been chosen by the Belgian and Royal Netherlands navies for their MCM programme, which will see ECA deliver 17 Inspector 125 USVs from 2023. **Length:** 1,230cm **Width:** 420cm **Max speed:** 25kt **Range:** 22.22km **Endurance:** 2 day/s

ECA Group ▸ UMIS

UMIS (Unmanned MCM Information System), unveiled at Euronaval 2016, uses a collaborative system of surface and underwater robots. The UMIS MCM deploys AUVs carrying the sonar and USVs, which bring identification and disposal vehicles into the minefield, leaving the mother ship in a safe zone. It manages a set of drones, which cooperate autonomously in a danger area and is intended to reduce mission time, provide higher efficiency and a higher clearance rate.

Elbit Systems ▸ Seagull

At the Singapore Airshow 2016, Elbit Systems unveiled a prototype of its latest USV. The Seagull USV, with MCM capability, has been designed for facilitating end-to-end minehunting operations, including detection, classification, localisation, identification and neutralisation of bottom, moored and drifting sea mines. The ASW capability provides a significant tactical advantage by effectively deterring and threatening enemy submarines using an available asset with significantly lower risk. **Length:** 1,200cm
Endurance: 4 day/s

Elbit Systems ▸ Silver Marlin

The Silver Marlin USV can be used for ISR, force protection/anti-terror and anti-surface warfare missions. **Length:** 1,067cm **Max speed:** 45kt
Range: 926km **Endurance:** 1.5 day/s

Elbit Systems ▸ Stingray

The Stingray is a high-speed USV designed for missions such as port and sea structure defence and security, on-site event management and damage assessment. It is also suitable for decoy purposes and target practice.
Length: 320cm **Max speed:** 50kt

Global Teknik ▸ Globida

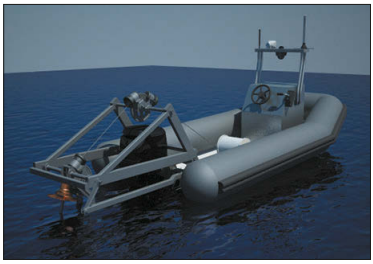
The development of the Globida USV was sponsored by Turkey's Scientific and Technological Research Council. This four-metre vessel is a technology demonstrator capable of carrying a radar, sonar and IR camera. **Length:** 395cm **Width:** 124cm **Height:** 138cm **Weight:** 300kg **Max speed:** 30kt
Endurance: 0.4 day/s

IAI Israel Aerospace Industries ▸ Katana

IAI unveiled the Katana USV in early 2014. The multifunction system is designed for security applications such as harbour security, the protection of exclusive economic zones, patrol of shallow coastal and territorial waters, surface and EW and offshore platform protection.

L3 Calzoni ▸ MiniRanger

The MiniRanger USV can be used for minehunting in shallow water, fleet precursor and hydrographic research operations. **Length:** 500cm
Max speed: 18kt



L3 Calzoni ▸ U-Ranger

The U-Ranger USV can be used for various missions such as ISR, harbour security, minesweeping/minehunting, shallow-water ASW, fleet precursor and UAV/UUV support. Additionally, other missions include communications relay, amphibious warfare support, naval target towing and hydrographic research. **Length:** 1,100cm **Max speed:** 40kt

L3Harris ASV ▸ C-Enduro

C-Enduro is a long-endurance platform used to safely and cost-effectively collect data at sea. Built to operate in all marine environments, C-Enduro uses energy-harvesting technology combined with an efficient self-righting hull. **Length:** 475cm **Width:** 222cm **Height:** 343cm **Weight:** 910kg **Max speed:** 6.5kt **Endurance:** 30 day/s

L3Harris ASV ▸ C-Sweep

The C-Sweep is a rugged, high-performance USV, offering solutions to applications including minesweeping, minehunting, ASW and remote sensing and surveillance. The vehicle is a suitable option in supporting modern minesweeping requirements, due to its high degree of directional stability, substantial towing capacity and robust electrical generating capacity. **Length:** 1,080cm **Width:** 350cm **Height:** 290cm **Weight:** 9,000kg **Max speed:** 25kt **Range:** 425.96km

L3Harris ASV ▸ C-Target 6

The C-Target 6 is a fast target boat that can be used as a direct fire target or as a tow boat for inflatable targets. The system is designed for use in naval gunnery training, weapons testing and ship C2 assessments. It uses ASV's proven control architecture and can be operated individually or as part of a swarm. **Length:** 650cm **Width:** 210cm **Height:** 230cm **Weight:** 1,200kg **Max speed:** 35kt

L3Harris ASV ▸ C-Target 9

The C-Target 9 is a high-speed vehicle capable of acting as a direct fire target or a tow boat for inflatable targets or other small craft. The vehicle can be customised to resemble specific crafts and is configurable between manned and unmanned modes. **Length:** 960cm **Width:** 240cm **Height:** 350cm **Weight:** 2,750kg **Max speed:** 54kt **Range:** 10km

L3Harris ASV ▸ C-Target 13

The C-Target 13 is a high-speed uncrewed surface vessel designed for use in naval gunnery training, weapons testing and ship C2 assessments. It uses ASV's proven control architecture and can be operated individually or as part of a swarm. The C-Target 13 features a rugged aluminium hull that is survivable and repairable. The outboard engines are recessed into a protected area that, along with the electronics enclosure, can be fitted with ballistic protection panels. **Length:** 1,290cm **Width:** 270cm **Height:** 390cm **Weight:** 4,200kg **Max speed:** 45kt

L3Harris ASV ▸ C-Worker 6

The C-Worker 6 is a multirole, work-class ASV suitable for a variety of offshore and coastal tasks. The vehicle can be used to complete tasks such as subsea positioning, surveying and environmental monitoring without the need for a ship on station or seabed anchoring. **Length:** 585cm **Width:** 220cm **Height:** 478cm **Weight:** 4,500kg **Max speed:** 6.5kt **Endurance:** 30 day/s

L3Harris ASV ▸ MAST

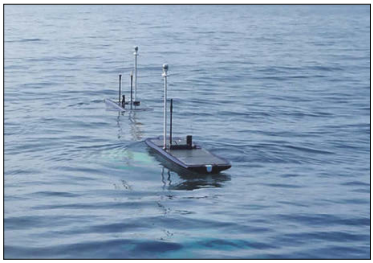
The Maritime Autonomy Surface Testbed (MAST) is being developed by ASV Global and Roke Manor Research under funding from the Defence Science and Technology Laboratory. Support will also be received from Cambridge Pixels, SeeByte and Chess Dynamics. **Length:** 1,040cm **Width:** 290cm **Weight:** 2kg **Max speed:** 60kt

L3Harris ASV/Metal Shark Aluminum Boats ▸ Sharktech

Sharktech is a UMV kit developed to be fitted to Metal Shark boats ranging in size from 16ft (4.9m) (16 Resolute) to 300ft (91m). In order to create the kit, Metal Shark used ASV Global's autonomous capabilities. This includes the ASView control system, which provides an onboard digital control system and dynamic collision avoidance with decision-making capability. **Length:** 1,158.24cm **Width:** 350cm **Height:** 350cm **Weight:** 9,000kg **Max speed:** 40kt

Liquid Robotics ▸ SHARC

The Sensor Hosting Autonomous Remote Craft (SHARC) wave glider platform is a JV developed between Boeing and Liquid Robotics. The SHARC is able to deliver ISR missions for up to one year without refuelling or servicing.



Liquid Robotics ▸ Wave Glider

Wave Gliders are long-duration (up to one year) USVs designed to collect and communicate real-time ocean data. Propelled using wave and solar power, the Wave Gliders are designed to carry large payloads. Using seven modular bays, house plug-and-play payloads and collected data are communicated via satellite, cell network or Wi-Fi. **Length:** 305cm **Weight:** 150kg **Max speed:** 3kt **Range:** 3,000km **Endurance:** 365.25 day/s

Maritime Applied Physics ▸ USSV-HS

The US Office of Naval Research is using the Unmanned Sea Surface Vehicle-High Speed (USSV-HS) to test various technological features which may be incorporated into the specifications of future production USVs. **Length:** 1,097cm **Width:** 305cm **Weight:** 9,750kg

Maritime Applied Physics ▸ USSV-HTF

The US Office of Naval Research is using the Unmanned Sea Surface Vehicle-High Tow Force (USSV-HTF) to test various technological features that may be incorporated into the specifications of future production USVs. **Length:** 189cm **Width:** 290cm **Weight:** 8,150kg

Naval Group ▸ Remorina USV

Remorina is a USV developed by Naval Group subsidiary Sirehna. It is equipped with an advanced control system including obstacle avoidance and target identification features. Remorina has been tested and exhibited on multiple occasions, but the schedule for its deployment in the French Navy is unverified. **Length:** 800cm

Poly Technologies ▸ High-Speed Intercept Boat

Poly Technologies displayed its High-Speed Intercept Boat at DSA in Malaysia in 2016. **Length:** 1,300cm **Max speed:** 75kt

QinetiQ Target Systems ▸ Hammerhead USV-T

Hammerhead USV-T is an expendable uncrewed surface vessel target designed for simulating a multi-vehicle swarm threat. It is controlled by Meggitt's Universal Target Control Station (UTCS) 6.0 using a single data frequency that can communicate and control up to 16 vehicles simultaneously. Hammerhead can use preprogrammed operational scenarios or be controlled in manual mode, allowing the operator to take control of the vehicle. Each UTCS can operate up to four vehicles simultaneously.

Rafael Advanced Defense Systems ▸ Protector

The Protector, having been in use since 2004, was the first USV to enter operational service. It is fitted with several subsystems that include; a radar, an EOD and a 360° panoramic camera. These allow for detection, identification and tracking, enabling both manual and automatic day/night target observation and tracking. Various plug-and-play mission modules are also available for force protection, ISR, MCM, ASW, anti-surface warfare and EW missions. **Length:** 950cm **Width:** 350cm **Height:** 450cm **Weight:** 4,000kg **Max speed:** 30kt **Range:** 740km

Saab Kockums AB ▸ Piraya Demonstrator

The Piraya Demonstrator USV is an experimental and developmental stealthy platform for multi-USV control, environmental investigation and surveillance, patrolling and small item logistic support. Four demonstrators have been built. During trials of the Piraya's autonomous control features, a single operator has been able to control up to three vehicles. **Length:** 460cm **Width:** 130cm **Weight:** 400kg **Max speed:** 60kt **Endurance:** 0.75 day/s

Saab Kockums AB ▸ SAM 3

The SAM 3 is a USV used to influence minesweeping in confined and shallow waters. The SAM 3 can be remote-controlled from both ship and shore and is equipped with a local operator's console for navigation onboard. It has the capability to conduct MCM operations in water ranging from a depth of ten to 200ft. **Length:** 1,440cm **Width:** 670cm **Weight:** 14,000kg **Max speed:** 9.7kt

SeaLandAire Technologies ▸ Adaro

Adaro is a rugged, man-portable, X-class USV. Its series-hybrid energy system allows for quiet operation, including at top speeds, while the heavy fuel-based range extender significantly lengthens mission life.

SeaRobotics ▸ USV-550

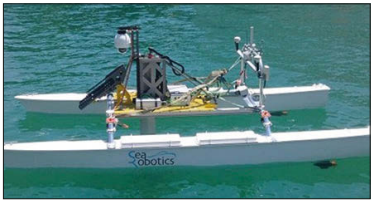
The USV-550 can be used for shallow-water survey/surveillance, hydrographic data-gathering, general-purpose sensor transport and small ROV deployment. **Length:** 250cm **Width:** 130cm **Weight:** 75kg **Max speed:** 9.7kt

SeaRobotics ▸ USV-2600

The SeaRobotics USV-2600 is designed for surveying, hydrographic data-gathering, harbour security/surveillance, ROV deployment, EOD missions and general-purpose sensor transport. It has a catamaran wave-piercing hull. **Length:** 400cm **Width:** 200cm **Weight:** 165kg **Max speed:** 7.8kt **Endurance:** 4.2 day/s

SeaRobotics ▸ USV-5700

The USV-5700, which is also designated USV 5.7, is a catamaran that can be used for military and civil missions. This includes coastal/offshore survey, hydrographic data-gathering, harbour security/surveillance, ROV deployment, EOD missions and general-purpose sensor transport. Additionally, it can be shipped in a 20ft (6.1m) ISO container. **Length:** 570cm **Width:** 260cm **Height:** 260cm **Weight:** 700kg **Max speed:** 8.7kt **Range:** 15km **Endurance:** 0.7 day/s



SeaRobotics ▸ USV-11000

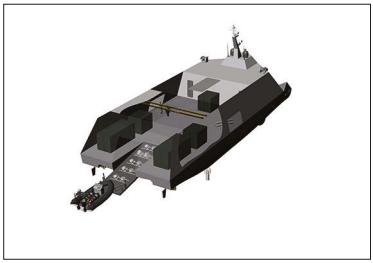
The SeaRobotics USV-11000 is a long-endurance USV that can be used for military and civil missions. This includes coastal/offshore survey, hydrographic data-gathering, harbour security/surveillance, ROV deployment, EOD missions and general-purpose sensor transport. **Length:** 1,100cm **Width:** 550cm **Weight:** 1,950kg **Max speed:** 8.7kt **Endurance:** 60 day/s

SeaRobotics ▸ USV-Collapsible

The USV-Collapsible can be used for surveying, hydrographic data-gathering, harbour security/surveillance and general-purpose sensor transport. It can also be collapsed into a small shipping crate for easy deployments. **Length:** 500cm **Width:** 250cm **Weight:** 120kg **Max speed:** 7.8kt

Singapore Technologies Engineering (ST Engineering) ▸ LEUSV

The Long Endurance Unmanned Surface Vessel (LEUSV) is ST Engineering's new conceptual long-endurance USV. It is equipped with advanced autonomy technologies and includes a power management system that provides it with a 28-day endurance. **Length:** 4,500cm **Endurance:** 28 day/s



ST Engineering Electronics ▸ Mercury

ST Electronics, in conjunction with DSO National Laboratories, has completed R&D; on its Mercury AUV. The vehicle, weighing less than one tonne, can be lifted by a ship crane. It is able to perform MCM missions without endangering personnel, and it can also be configured for a range of other tasks.

ST Engineering Electronics ▸ Venus

The Venus USV is a modular platform designed to meet the demand for the growing interest in reconfigurable USVs for multi-missions. The Venus family includes the 16m Venus 16 and the nine-metre Venus 9. The command is achieved via a containerised module that can be embarked aboard a ship or placed on the land. **Length:** 1,600cm **Weight:** 26,000kg **Max speed:** 30kt

Tecdron ▸ Cyberjet 185 USV

The Cyberjet 185 USV is a civil, military and industrial USV for recognition, observation, inspection, detection and analysis purposes. It is designed for both long-endurance and long-range performance (four hours with a single battery or eight hours with a double-battery pack, and two kilometres or five kilometres respectively). In teleoperation or autonomous modes, it can monitor, patrol, inspect on the surface and also probe the seabed.
Length: 190cm **Width:** 75cm **Height:** 104cm **Weight:** 65kg **Max speed:** 6kt **Range:** 5km **Endurance:** 0.2 day/s

Textron Systems Unmanned Systems ▸ Fleet Class

Developed for the USN, the Fleet Class Common USV System uses a modular architecture that accommodates platform reconfiguration and interchangeable payload applications. **Length:** 1,140cm **Width:** 312cm **Height:** 66cm **Max speed:** 28kt **Range:** 2,200km

Textron Systems Unmanned Systems ▸ Harbor Class

The Harbor Class USV is designed for rapid response and high-speed interdiction. It has a twin-hull design, deep-V and twin 300hp engines for greater manoeuvrability. **Length:** 820cm **Width:** 312cm **Height:** 61cm **Max speed:** 65kt **Range:** 390km **Endurance:** 0.4 day/s

Thales ▸ Halcyon

Halcyon is a small, flexible USV with ISR capabilities. Transportable by air, land and sea, the system has been designed to carry out maritime operations that include MCM, ASW and hydrography. **Length:** 12cm **Max speed:** 20kt **Range:** 277.8km

Top I Vision ▸ Barracuda

The Barracuda is a waterjet-propelled USV designed to provide reliable real-time ISR for naval security requirements. The system consists of the USV, the payload carried by the USV and ground-controlling and data link components. **Length:** 330cm **Height:** 110cm **Max speed:** 20kt

UUVs ▸ Alcore Technologies ▸ Undersea Motor-Glider

The Undersea Motor-Glider is designed for a range of oceanographic and defence missions. This includes the strategy of gliding with wings, flying up and down (changing buoyancy) under the sea, with density variation ensuring very low-level power consumption. **Length:** 210cm **Width:** 108cm **Height:** 30cm **Weight:** 16kg **Max speed:** 10kt **Depth rating:** 1,000m **Endurance:** 2,160h

ALSEAMAR Alcen ▸ SeaExplorer

The SeaExplorer long-endurance UUV is designed for a range of oceanographic and defence missions. The glider is a multi-mission vehicle that gathers subsea data, sending it back using satellite telemetry. It has set a world record for duration and distance, completing a 60-day mission covering 1,183km in a single battery charge. **Length:** 220cm **Width:** 50cm **Height:** 50cm **Weight:** 59kg **Max speed:** 1kt **Range:** 1,300km **Depth rating:** 700m **Endurance:** 1,536h

Aquabotix Technology ▸ Endura

Endura is an ROV that can be easily transported in a carry case and can be deployed by a single person. Configurations include; Endura 100 WI for Water Inspection, Endura 100 AQ for Aquaculture, Endura 100 SLE for Security & Law Enforcement and Endura 300, with a 300m depth rating. **Length:** 70cm **Width:** 37cm **Height:** 30cm **Weight:** 6.8kg **Max speed:** 3kt **Depth rating:** 100m **Endurance:** 72h

Aquabotix Technology ▸ SwarmDiver

The SwarmDiver is a micro-USV/UUV intended to operate in a swarm. The system, which requires one operator, is designed to be easily deployable and can be fitted with specialised sensor payloads for roles in defence, oceanography, aquaculture, research and hydrographic survey. **Length:** 75cm **Width:** 13cm **Height:** 45cm **Weight:** 1.7kg **Max speed:** 4.3kt **Range:** 7km **Depth rating:** 50m **Endurance:** 0.1 day/s

Atlas Elektronik ▸ SeaFox-C/-I

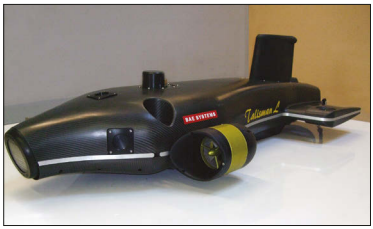
The fibre-optic-guided SeaFox-C (Combat Round) and SeaFox-I (Inspection Round) are one-shot UUVs used for the semi-autonomous disposal of naval mines and ordnance. Both systems are deployable from platforms including MCM vessels, surface combatants, RIBs, crafts of opportunity and helicopters. **Length:** 130cm **Width:** 39cm **Height:** 39cm **Weight:** 43kg **Max speed:** 6kt **Range:** 1.2km **Endurance:** 9.6h

Atlas Elektronik ▸ SeaOtter Mk II

The SeaOtter Mk II is a robust and compact long-range AUV with a payload capacity of over 170kg. It is designed for mine detection and classification, rapid environmental assessment, seabed mapping and hydrographic surveys. Its modular payload bay also enables it to be used for other user-defined applications. **Length:** 365cm **Width:** 110cm **Height:** 50cm **Weight:** 1,000kg **Max speed:** 7kt **Depth rating:** 600m **Endurance:** 20h

BAE Systems ▸ Talisman L

The Talisman Littoral (L) UUV uses the mission system of the larger Talisman M and repackages it into a two-man portable system for port and harbour protection, inshore MCM and oceanographic missions. It can be deployed from the shore, RIBs or any platform with either a low freeboard or a small crane or davit. The Talisman L can also be operated using a ruggedised laptop or similar portable device. **Length:** 140cm **Width:** 250cm **Height:** 110cm **Weight:** 50kg **Max speed:** 5kt **Depth rating:** 100m **Endurance:** 12h

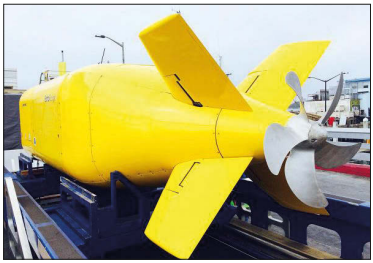


BAE Systems ▸ Talisman M

The Talisman UUV family is designed to provide flexibility for inshore MCM and harbour surveillance. The Talisman M is a demonstrator system used to support the development of integrated combat systems architectures. **Length:** 450cm **Width:** 250cm **Height:** 100cm **Weight:** 1,800kg **Max speed:** 5kt **Depth rating:** 300m **Endurance:** 24h

Boeing Defense, Space & Security ▸ Echo Ranger

Based on the OSIRIS vehicle developed by Boeing in the early 1990s, the Echo Ranger was designed to capture high-resolution sonar images of seabeds for the oil and gas industry. **Length:** 550cm **Width:** 130cm **Height:** 127cm **Weight:** 4,545kg **Max speed:** 8kt **Depth rating:** 3,000m **Endurance:** 28h



Boeing Defense, Space & Security ▸ Echo Voyager

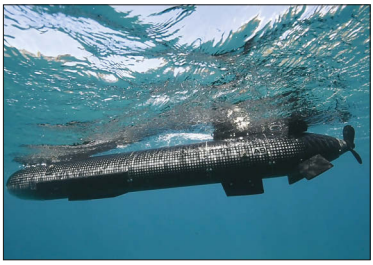
In March 2016, Boeing Defense, Space & Security introduced the Echo Voyager UUV. It is a 51ft (15.5m) long vehicle that can operate autonomously for months with its modular payload bay and hybrid rechargeable power system. **Length:** 1,550cm **Width:** 260cm **Height:** 260cm **Weight:** 453,690kg **Max speed:** 8kt **Range:** 280km **Depth rating:** 3,000m

Deep Ocean Engineering ▸ Phantom T5

The Phantom T5 UUV was introduced in 2016. The ROV incorporates many of the old Phantom characteristics in a smaller system, with vectored thrusters added. **Length:** 92.7cm **Width:** 58.4cm **Height:** 40.6cm **Weight:** 39kg **Max speed:** 4kt **Range:** 0.3km **Depth rating:** 300m

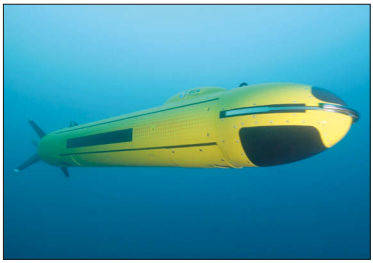
ECA Group ▸ A9-M

The A9 is a light, man-portable AUV, enabling deployment from small craft and in shallow water as a hand-launched vehicle. This AUV embeds the latest technology sonars, allowing to conduct seabed monitoring and survey, mine localisation and classification (STANAG 1364 compliant) missions. **Length:** 200cm **Width:** 23cm **Height:** 23cm **Weight:** 90kg **Max speed:** 5kt **Range:** 0.2km **Depth rating:** 200m **Endurance:** 20h



ECA Group ▸ A18-M

The A18-M AUV is a configuration of ECA Group's A18 AUV family, dedicated to military applications. With magnetic and acoustic signatures compliant to STANAG 1364, it can be used for underwater mine warfare. The A18-M can be delivered with a launch and recovery system, allowing automatic underwater recovery, while data processing can be made with Triton Imaging applications. **Length:** 380cm **Width:** 46.5cm **Height:** 46.5cm **Weight:** 370kg **Max speed:** 4kt **Depth rating:** 300m **Endurance:** 24h

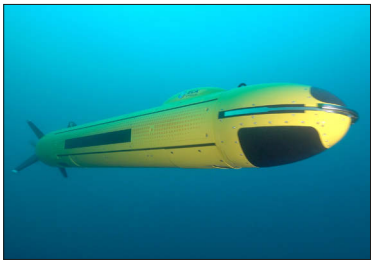


ECA Group ▸ A18-TD

The A18-TD is a twin-hull AUV for deep-water applications. It is a man-portable, Observation Class ROV and light-duty work system for subsea observation, inspection and surveillance in strong currents, up to 1000m depth. Its architecture is suitable for inspections at low speed, hovering or docking. It has a modular design and can be configured with sensors including cameras, sonars, USBL positioning system, electric manipulator arms, tools, optional coral sampling trays and any type of sensors. **Length:** 99.2cm **Width:** 72cm **Height:** 55.1cm **Weight:** 99kg **Max speed:** 4.5kt **Range:** 1.2km **Depth rating:** 1,000m

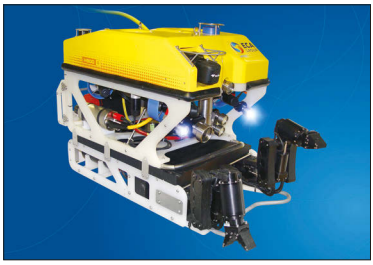
ECA Group ▸ A27-M

The A27 is a multi-mission, long-endurance AUV suitable for military and civil missions. This includes reconnaissance, MCM, homeland security, hydrographic survey, high-resolution seismic survey, rapid environmental assessment and sediment analysis. **Length:** 500cm **Width:** 73cm **Height:** 100cm **Weight:** 950kg **Max speed:** 6kt **Depth rating:** 300m **Endurance:** 30h



ECA Group ▸ H800

The H800 is a man-portable, Observation Class ROV and a light-duty work system for subsea observation, inspection and surveillance in strong currents, up to 1000m depth. It has a modular design and can be configured with a range of cameras, sonars, USBL positioning system, electric manipulator arms, tools, optional coral sampling trays and any type of sensors. The range is 1,200m on a fibre optic umbilical cable attached to a motorised winch. **Length:** 99.2cm **Width:** 72cm **Height:** 55.1cm **Weight:** 99kg **Max speed:** 4.5kt **Range:** 1.2km **Depth rating:** 1,000m

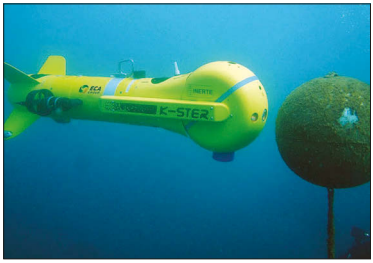


ECA Group ▸ K-Ster C

K-Ster C is a mine disposal system (MDS) equipped with a tiltable warhead. It is also equipped with a dual-frequency sonar for long-range target detection and approach. The MDS can be launched either from a mother ship or remotely deployed from naval platforms, including MCM vessels, RIBs or USVs. **Length:** 150cm **Width:** 50cm **Height:** 43cm **Weight:** 50kg **Max speed:** 6kt **Range:** 2km **Depth rating:** 300m **Endurance:** 1h

ECA Group ▸ K-Ster I

K-Ster I is a lightweight, self-propelled ROV developed for mine warfare applications. K-Ster I is easy to deploy from any type of naval platform, including MCM vessels, RIBs or USVs. **Length:** 150cm **Width:** 50cm **Height:** 430cm **Weight:** 50kg **Max speed:** 6kt **Range:** 2km **Depth rating:** 300m **Endurance:** 2h

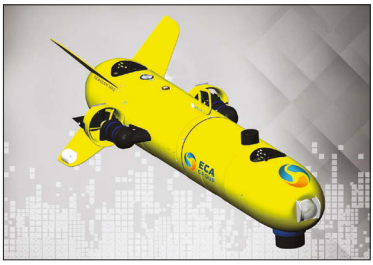


ECA Group ▸ Roving Bat

The Roving Bat is a multipurpose, hybrid ROV and crawler for close inspection and cleaning operations of immersed vertical structures such as a ship's hull. Swimming as an ROV, the Roving Bat 'crawls' along vertical structures even in rough sea conditions, stuck onto surfaces thanks to strong thrust. **Length:** 111cm **Width:** 109cm **Height:** 64.6cm **Weight:** 135kg **Max speed:** 3kt **Depth rating:** 100m

ECA Group ▸ SeaScan MK2

The SeaScan MK2 is a lightweight, self-propelled ROV designed to carry out a range of military and civil missions. These include harbour surveillance/response, coastal surveillance, offshore protection, law enforcement (sea/land) and SAR operations. **Length:** 158cm **Width:** 50cm **Height:** 43cm **Weight:** 50kg **Max speed:** 6kt **Range:** 2km **Depth rating:** 300m **Endurance:** 3h

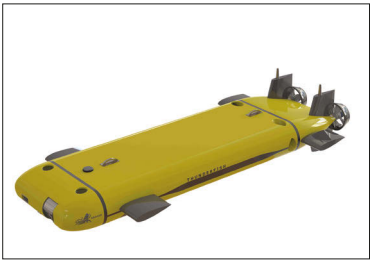


ECA Group ▸ UMIS

UMIS (Unmanned MCM Information System), unveiled at Euronaval 2016, uses a collaborative system of surface and underwater robots. The UMIS MCM deploys AUVs carrying the sonar and USVs, which bring identification and disposal vehicles into the minefield, leaving the mother ship in a safe zone. It manages a set of drones, which cooperate autonomously in a danger area and is intended to reduce mission time, provide higher efficiency and a higher clearance rate.

Fraunhofer Institute ▸ ThunderFish Alpha

The ThunderFish Alpha (formerly DeDAvE) is an AUV designed for deep-sea military, commercial and scientific applications. In March 2017, Kraken announced a licensing agreement for underwater robotics technology with the Fraunhofer Institute. On 26 June 2017, Kraken Sonar Systems announced that it received delivery of the AUV, which will be used to support the ongoing development of Kraken's underwater sensor and robotics programmes. **Length:** 350cm **Width:** 95cm **Height:** 50cm **Weight:** 675kg **Range:** 8km **Depth rating:** 6,000m **Endurance:** 10h



Gate Elektronik ▸ MiLLi AUV

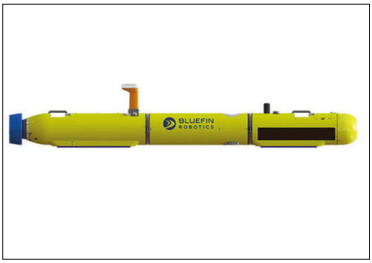
The MiLLi AUV is a lightweight platform designed for mine and torpedo detection in harbour channels. It is also capable of supporting rescue missions and carrying out oceanographic and hydrographic surveys. **Length:** 240cm **Width:** 70cm **Height:** 40cm **Weight:** 270kg **Max speed:** 8kt **Depth rating:** 1,000m

General Dynamics Mission Systems ▸ Bluefin-9

The Bluefin-9 was unveiled in October 2018, it is the first system in General Dynamics Mission Systems' updated Bluefin range of UUVs. This portable platform, which can be launched by two people from piers, RIBs or other suitable vessels, is designed to collect imagery and gather environmental and bathymetric data at depths of up to 200m. **Length:** 248.1cm **Width:** 23.8cm **Height:** 26.4cm **Weight:** 70kg **Max speed:** 6kt **Depth rating:** 200m **Endurance:** 8h

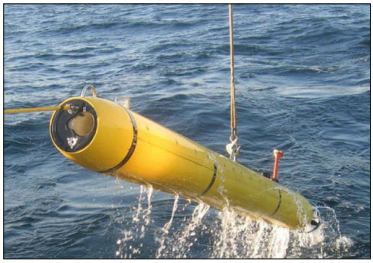
General Dynamics Mission Systems ▸ Bluefin-9M

The Bluefin-9M AUV can be used for shallow-water survey, environmental protection and monitoring, MCM, port and harbour security, EOD, rapid environmental assessment and ISR. The company states that it can be deployed by a two-man team and has a 15min turnaround time. **Length:** 250cm **Width:** 24cm **Height:** 23cm **Weight:** 70kg **Max speed:** 4.8kt **Depth rating:** 300m **Endurance:** 10h



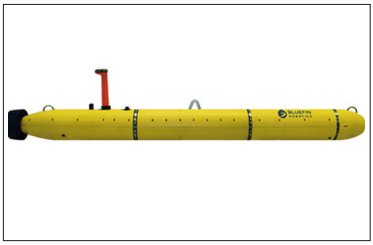
General Dynamics Mission Systems ▸ Bluefin-12D

The Bluefin-12D AUV can be used for offshore survey, search and salvage, exploration, environmental protection and monitoring, MCM and EOD. **Length:** 436cm **Width:** 32cm **Height:** 70cm **Weight:** 272kg **Max speed:** 5kt **Depth rating:** 1,500m **Endurance:** 30h



General Dynamics Mission Systems ▸ Bluefin-12S

The Bluefin-12S AUV has been designed for a range of applications, including shallow-water survey, search and salvage, oceanography and scientific research, as well as MCM and unexploded ordnance. **Length:** 380cm **Width:** 32cm **Height:** 64cm **Weight:** 210kg **Max speed:** 4.9kt **Depth rating:** 200m **Endurance:** 26h

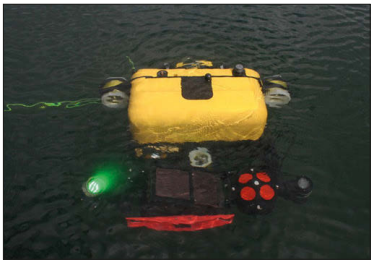


General Dynamics Mission Systems ▸ Bluefin-21

The Bluefin-21 is a modular and autonomous AUV. It can be used for offshore survey, search and salvage, exploration, environmental protection and monitoring, as well as the delivery of multiple payloads or vehicles, MCM, unexploded ordnance and EOD operations. **Length:** 490cm **Width:** 53cm **Height:** 100cm **Weight:** 750kg **Max speed:** 4.3kt **Depth rating:** 4,500m **Endurance:** 25h

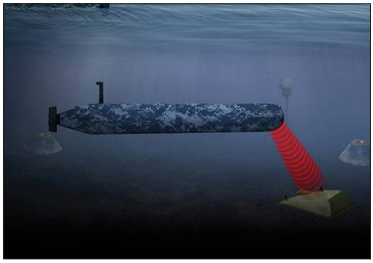
General Dynamics Mission Systems ▸ Bluefin-HAUV

The Bluefin Hovering AUV (HAUV) is a two-man system used for ship hull and infrastructure inspection, port and harbour security and MCM. Operators are able to stream, record and store images in real-time. **Length:** 137cm **Width:** 94cm **Height:** 38cm **Weight:** 75kg **Max speed:** 1.6kt **Depth rating:** 60m **Endurance:** 3.5h



General Dynamics Mission Systems ▸ Bluefin-Knifefish

The Bluefin-21 UUV is being developed for the Surface Mine Countermeasure UUV (SMCM UUV) programme to equip the USN's Littoral Combat Ships. **Length:** 685cm **Width:** 53cm **Weight:** 950kg **Depth rating:** 4,500m **Endurance:** 20h



General Dynamics Mission Systems ▸ Bluefin-Proteus

Proteus is a dual-mode UUV capable of operation in either manned or autonomous modes. Primary missions are MCM, sensor development and vehicle research. **Length:** 780cm **Width:** 165cm **Height:** 162.56cm **Weight:** 3,740kg **Max speed:** 10kt **Range:** 1km **Depth rating:** 45.72m **Endurance:** 50h

General Dynamics Mission Systems ▸ Bluefin-SandShark

The Bluefin SandShark is a one-person deployable and autonomous micro-UMV designed for developers. It can be used for offshore/littoral survey, exploration, environmental protection and monitoring and also acts as a micro-AUV developmental platform. **Length:** 51cm **Width:** 12.4cm **Height:** 12.4cm **Weight:** 5.12kg **Max speed:** 4kt **Range:** 0.2km **Depth rating:** 200m

General Dynamics Mission Systems ▸ HAUV-3

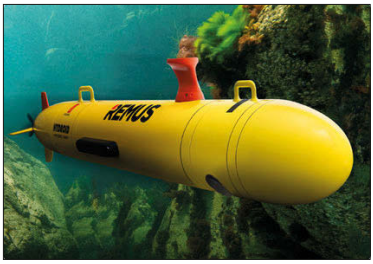
The HAUV-3 is a hovering AUV used for ship hull and infrastructure inspection, port and harbour security and MCM. Powerplant: six thrusters for propulsion and control.

Houston Mechatronics ▸ Aquanaut

The Houston Mechatronics Aquanaut is a dual-mode UMV that can travel at speed to an inspection site as a submarine before opening up to a conventional intervention vehicle, with robotic arms and forward lighting. In May 2018, the company announced it would be undertaking open-water testing in mid-year. **Length:** 350cm **Width:** 152cm **Height:** 97cm **Weight:** 1,050kg **Max speed:** 7kt **Range:** 200km

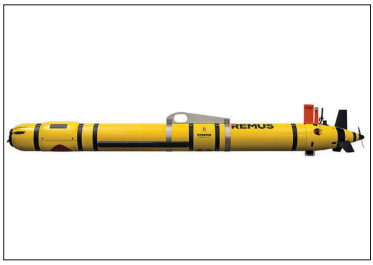
Hydroid ▸ Remus 100

The Remus 100 AUV can be used for hydrographic surveys, MCM operations, harbour security, environmental monitoring and debris field mapping. Additional capabilities include search and salvage, fishery operations, scientific sampling and mapping. With its compact design, the Remus 100 is two-man portable and is easily deployed by hand from docks or small vessels of opportunity. **Length:** 170cm **Width:** 19cm **Weight:** 36kg **Depth rating:** 100m **Endurance:** 12h



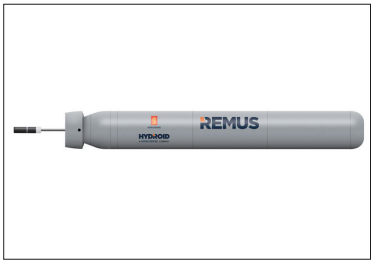
Hydroid ▸ Remus 600

The Remus 600 AUV can be used for hydrographic surveys, MCM operations, environmental monitoring, debris field mapping and fishery operations. Additional uses include search and salvage operations, scientific sampling and mapping. **Length:** 550cm **Width:** 32cm **Height:** 50cm **Weight:** 385kg **Max speed:** 4.5kt **Depth rating:** 600m **Endurance:** 24h



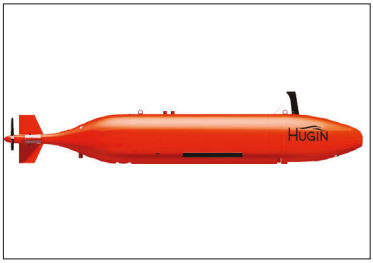
Hydroid ▸ Remus M3V

The Remus M3V (Micro, 300 Meter-Rated Vehicle) was unveiled in March 2018 and can be used for MCM, search and recovery, hydrographic survey and debris field mapping. Additional uses include cross-domain communications and ISR data gathering. **Length:** 91cm **Width:** 12cm **Height:** 12cm **Weight:** 10kg **Max speed:** 10kt **Depth rating:** 300m **Endurance:** 6h



Kongsberg Maritime ▸ Hugin 1000

The Hugin 1000 AUV can be used for offshore surveying, MCM and rapid environmental assessment operations, marine research and hydrography. **Length:** 470cm **Width:** 75cm **Height:** 75cm **Weight:** 850kg **Max speed:** 6kt **Depth rating:** 1,000m **Endurance:** 24h



Kongsberg Maritime ▸ Minesniper

The Minesniper is a mine identification and disposal system. It uses an ROV-type system for mine identification and destruction. **Length:** 165cm **Width:** 21cm **Height:** 21cm **Weight:** 35kg **Depth rating:** 300m **Endurance:** 2h

Kongsberg Maritime ▸ Seaglider

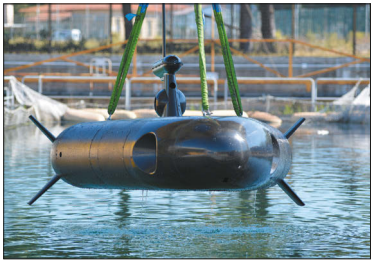
Seaglider is a long-endurance AUV with the capability of carrying a range of sensors for naval and offshore oil, marine research and gas applications. The propulsion method uses the wings and small changes in buoyancy to achieve forward motion. Instead of using external control surfaces to affect the vehicle altitude, the Seaglider uses an adjustable ballast. **Length:** 200cm **Width:** 100cm **Height:** 30cm **Weight:** 52kg **Max speed:** 0.5kt **Range:** 4,600km **Depth rating:** 1,000m **Endurance:** 7,200h

L3 OceanServer ▸ Iver

Iver is a family of commercially developed, low-cost AUVs designed to carry out coastal applications such as sensor development, surveying, research and environmental monitoring. **Length:** 215.9cm **Width:** 14.73cm **Height:** 14.73cm **Weight:** 38.6kg **Max speed:** 4kt **Depth rating:** 100m **Endurance:** 14h

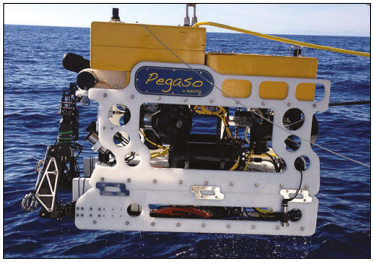
Leonardo ▸ V-Fides

The V-Fides is an underwater vehicle that can be employed both in civilian and surveillance missions. Due to its high level of endurance, it can be operated both by remote control and autonomously.



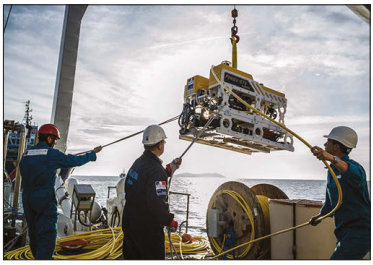
Lighthouse ▸ Pegaso

The Pegaso is a multipurpose platform and includes an optional LARS (Launch and Recovery System) and TMS (Tether Management System). Additionally, it features a modular chassis manufactured in high-impact resistant polyethylene, which is designed to be maintenance-free and non-corroding. **Length:** 180cm **Width:** 110cm **Height:** 130cm **Weight:** 800kg **Range:** 2km **Depth rating:** 2,000m



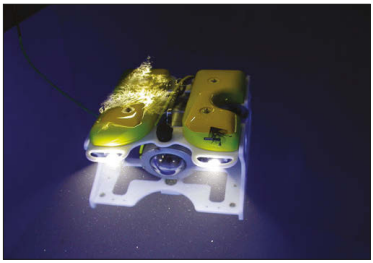
Lighthouse ▸ Perseo GTV

The Perseo GTV is equipped with a range of navigation/tracking devices. This includes a flux-gate compass unit with a solid-state rate gyro sensor, high azimuth stability and an electronic depth sensor. An auto-altitude function is available on request, providing an altimeter sensor is fitted. The UMV features 3x real-time, high-resolution video channels. Optional instrumentation includes a scanning sonar system, pipe and cable tracker, an acoustic positioning system and a waterjet system. **Length:** 130cm **Width:** 2.41cm



Lighthouse ▸ Sirio

The Sirio Observer Class is fitted with a modular chassis manufactured from high-impact resistant polypropylene. Its features include a colour camera, pilot monitor, video recorder and a 12U flight case with surface electronic control and power supply for the vehicle. Standard functions include auto-heading and auto-depth. Optional features include a second external camera, sonar and a transponder installation kit. **Length:** 59cm **Width:** 70cm



Lockheed Martin ▸ Marlin

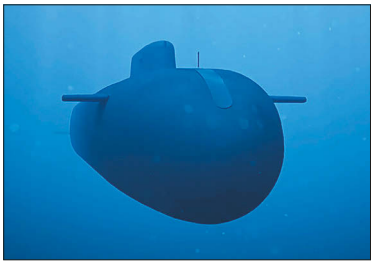
The Marlin AUV system is designed to offer a quick and safe way to conduct subsea surveys and inspections for a range of civilian and military customers. The Marlin is reconfigurable for other mission packages as required. **Length:** 305cm **Width:** 152cm **Height:** 122cm **Weight:** 954kg **Max speed:** 4kt **Depth rating:** 300m **Endurance:** 24h

Lockheed Martin ▸ RMMV

The Remote Multi-Mission Vehicle (RMMV) is a semi-submersible AUV developed as part of the AN/WLD-1(V) Remote Minehunting System (RMS) for the USN's Littoral Combat Ship programme. In June 2013, it successfully completed 850 at-sea mission hours of validation testing, completing the RMS reliability growth programme. **Length:** 700cm **Max speed:** 16kt **Endurance:** 24h

Main Directorate of Deep-Sea Research ▸ Poseidon/Status-6

Poseidon, previously known as 'Kanyon' or 'Status-6', is an unmanned underwater system developed in Russia. It was first unveiled in late 2015. Even though Poseidon is still at a developmental stage, some details about the development programme and its capabilities have been disclosed to the public through Russian state media. Poseidon is expected to be fast, large-diameter, deep-diving, nuclear-powered torpedo/UUV.



Naval Group ▸ D19 UUV

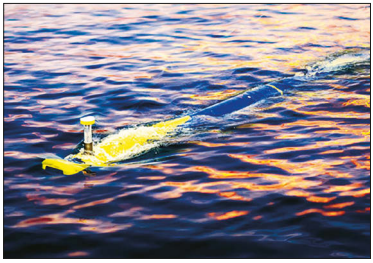
Naval Group's family of D19 drones are AUVs designated to perform varying identification, surveillance, EW, mobile target, mine laying and MCM tasks. The D19 underwater drones have been tested on multiple occasions, but the deployment schedule is yet to be confirmed. **Width:** 53.3cm **Max speed:** 25kt **Range:** 185.2km **Endurance:** 30h

Nortek ▸ Fusion

Nortek and Strategic Robotic Systems announced in 2017 the launch of a new UUV called Fusion, which has been designed to combine AUV, ROV and driver functionality in a single-vehicle. Features include a forward-looking sonar, side-scan sonar and a one megahertz Doppler Velocity Log. **Length:** 68.6cm **Width:** 47.7cm **Height:** 27.5cm **Weight:** 27.5kg **Max speed:** 4kt **Range:** 2km **Depth rating:** 4,000m **Endurance:** 4h

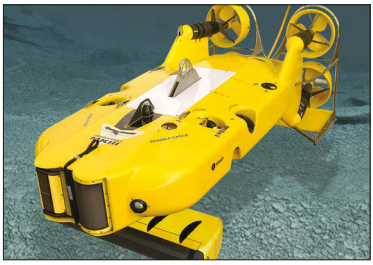
Saab ▸ AUV62-MR

The AUV62-MR is an autonomous UUV designed to perform long-term mine reconnaissance missions. Deliberately designed to resemble the Heavyweight Torpedo (HWT), the system can be launched underwater from submarines fitted with standard HWT tubes without requiring any modifications, or it can be deployed from surface vessels or the shore. Once underwater, the system uses its array of sensors and sonar to detect and identify mine-like objects. In addition to the MCM version, other variants of the AUV-62 family have been developed, including the AUV62-AT underwater target and the AUV62-F UUV, which was adopted by the Swedish Navy in 1999. **Length:** 650cm **Width:** 53cm **Height:** 53cm **Weight:** 1,250kg **Max speed:** 12kt **Depth rating:** 300m **Endurance:** 24h



Saab Seaeye UK ▸ Double Eagle Mk II/III

The Double Eagle Mk II/III is a multifunctional UUV for MCM operations, which can be launched from a ship, shore or any craft of opportunity (COOP). It comes in two main configurations: Mine Reconnaissance, both remotely and autonomously performed, and Mine Disposal. For COOP use, the Double Eagle is housed in a container, which is compatible with the majority of ships. **Length:** 300cm **Width:** 130cm **Height:** 130cm **Weight:** 500kg **Max speed:** 7kt **Range:** 1km **Depth rating:** 500m



Saab Seaeye UK ▸ Double Eagle Sarov

The Double Eagle Sarov is an ROV/AUV hybrid platform designed to assist MCM operations. As a modular system, it can be reconfigured to suit different roles, including mine reconnaissance and mine disposal. In order to prolong the endurance of the platform, it can also be tethered to its host vessel, allowing the battery to be continually recharged while it carries out its mission. By pairing a tethered Double Eagle Sarov with an untethered Double Eagle Sarov, a wide operational area can be covered continuously, with the two platforms swapping roles once the untethered system reaches low battery. **Length:** 290cm **Width:** 130cm **Height:** 100cm **Weight:** 540kg **Max speed:** 8kt **Range:** 15km **Depth rating:** 500m **Endurance:** 10h

Saab Seaeye UK ▸ MuMNS

The Multi-Shot Mine Neutralisation System (MuMNS) is an ROV designed to assist with all aspects of MCM operations, ranging from mine detection to mine neutralisation. Designed to be cost-effective to use, easy to operate and to have a small operational footprint, the MuMNS can be deployed from most types of naval platforms, including USVs. As a modular system, it can be reconfigured to carry several payloads suited for different facets of MCM operations. **Length:** 210cm **Width:** 80cm **Height:** 60cm **Weight:** 300kg **Max speed:** 5.5kt **Range:** 1km **Depth rating:** 300m

Saab Seaeye UK ▸ Seaeye Cougar-XTi

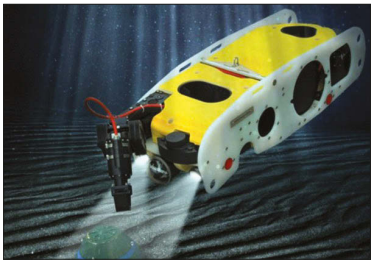
The Seaeye Cougar-XTi is an observation ROV that is capable of performing light work up to a depth of 3,000m. It has a full range of optional quick-change tool skids, a distributed control system (ICON) and a high-frequency power supply system developed for deep-water observation and survey operations. **Length:** 150cm **Width:** 100cm **Height:** 90.5cm **Weight:** 580kg **Max speed:** 3kt **Range:** 3km **Depth rating:** 3,000m

Saab Seaeye UK ▸ Seaeye Falcon

Falcon ROVs were introduced in 2002 as a small platform for use in demanding environments. Tools and sensors can be added to the open-frame vehicle without affecting performance and stability. The Falcon has a distributed intelligence system, with each device on the system having its own individually controlled microprocessor. Power is a single-phase AC input, auto-selecting universal 100-270V at 2.8kW. **Length:** 110cm **Width:** 60cm **Height:** 50cm **Weight:** 60kg **Range:** 1.1km **Depth rating:** 300m

Saab Seaeye UK ▸ Sea Wasp

The Sea Wasp is designed to be land-portable by a two-person team and consists of a vehicle, generator, pilot station, hand winch and power supply unit. The platform was showcased at UDT Asia 2016. **Length:** 170cm **Width:** 50cm **Height:** 40cm **Weight:** 90kg **Max speed:** 2.5kt **Range:** 0.06km **Depth rating:** 60m



Shark Marine Technologies ▸ Sea-Wolf 2

The Sea-Wolf 2 is a multipurpose, light work-class ROV that can be reconfigured to suit various applications. **Length:** 91cm **Width:** 33cm **Height:** 17cm **Weight:** 113kg **Max speed:** 2kt **Range:** 0.6km **Depth rating:** 600m

Shark Marine Technologies ▸ Sea-Wolf 5

The Sea-Wolf 5 is available in both a standard four-thruster or a newer six-thruster configuration. A modular flotation system allows for a variable payload capacity by making it easier to add extra equipment. **Length:** 97.7cm

Teledyne Benthos ▸ MiniRover

The MiniRover UUV can be used for port and harbour security, hull inspections, dam and tunnel inspections, search and rescue operations, pipe and cable tracking, in-situ biological studies and sampling. The company states that more than 500 systems are in service. **Length:** 69cm **Width:** 41cm **Height:** 30cm **Weight:** 23.5kg **Max speed:** 4kt **Depth rating:** 300m

Teledyne Benthos ▸ SeaRover

The SeaRover UUV is designed to carry user-selected high-value payloads. It can be used for port and harbour security, hull inspections, dam and tunnel inspections and search and rescue operations. Additional uses include survey, salvage operations, in-situ biological studies and sampling, as well as pipe and cable tracking. **Length:** 68cm **Width:** 40cm **Height:** 30cm **Weight:** 32kg **Max speed:** 2.5kt **Range:** 0.5km **Depth rating:** 300m

Teledyne Benthos ▸ Slocum G2 Glider

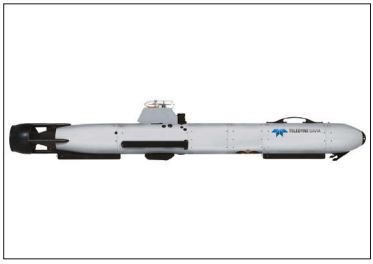
The Slocum G2 Glider UUV is designed to provide low-cost persistent monitoring. It can be configured with a variety of sensor options for missions. These configurations include water column monitoring, virtual mooring, gateway glider acoustic link, storm sampling as part of a coordinated fleet and waypoint transect. **Length:** 150cm **Width:** 20cm **Height:** 22cm **Weight:** 54kg **Max speed:** 0.68kt **Range:** 1,500km **Depth rating:** 1,000m **Endurance:** 8,760h

Teledyne Benthos ▸ Stingray

The Stingray UUV can be used for missions such as; port and harbour security, hull inspections, dam and tunnel inspections, SAR operations, pipe and cable tracking, in-situ biological studies and sampling. **Length:** 122cm **Width:** 46cm **Height:** 46cm **Weight:** 32kg **Max speed:** 3kt **Depth rating:** 350m

Teledyne Gavia ▸ Gavia Defence

The Gavia Defence AUV can be used for MCM, port security, search and salvage, ASW training, rapid environmental assessment and hydrographic survey. **Length:** 260cm **Width:** 20cm **Height:** 31cm **Weight:** 49kg **Max speed:** 5.9kt **Depth rating:** 1,000m **Endurance:** 7h



Teledyne SeaBotix ▸ LBC

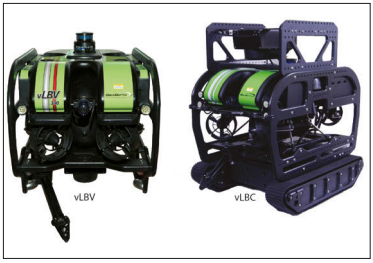
The SeaBotix LBV300-5 can be mounted to the four-wheel Crawler Skid Assembly, to make the Little Benthic Crawler (LBC). A Vortex Generator creates an attraction force of up to 28kg, allowing the operator to approach ship hulls or any other relatively flat surface of any material, roll the LBC and attach to the surface. In this mode, inspections can be done in currents of over 5kt by driving along the surface. **Length:** 53cm **Width:** 50cm **Height:** 40cm **Weight:** 28kg **Max speed:** 1kt **Range:** 0.35km **Depth rating:** 300m

Teledyne SeaBotix ▸ SeaBotix LBV300-5

The SeaBotix LBV300-5 mini-ROV is a compact system with two horizontal thrusters (forward, reverse and turning), one lateral thruster (sideways motion) and two vertical thrusters (up and down). It is suitable for port security applications, investigating suspicious objects on the sea floor, retrieving objects and performing inspection of ship hulls and infrastructure for IEDs and contraband. **Length:** 52cm **Width:** 45cm **Height:** 26cm **Weight:** 13kg **Max speed:** 2.8kt **Range:** 0.25km **Depth rating:** 300m

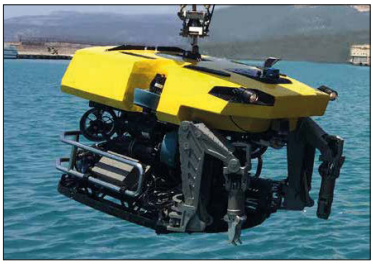
Teledyne SeaBotix ▸ SeaBotix vLBV300

The SeaBotix vLBV300 system has four horizontal thrusters arranged in a vectored format, providing nearly equal thrust in all horizontal directions, allowing for extreme current fighting capability. Two vertical thrusters provide movement and also serve to roll the vLBV300 to attach to surfaces when the optional Tracked Crawler Skid Assembly is mounted for inspections of ship hulls and critical infrastructure. **Length:** 62.5cm **Width:** 39cm **Height:** 39cm **Weight:** 18.1kg **Max speed:** 3kt **Range:** 0.25km **Depth rating:** 300m



TR Research & Development ▸ TR-1000 ROV

The TR-1000 ROV is an electrical, work-class ROV system, which is suitable for SAR operations, survey, drill support and light construction duties. The system configuration can be tailored according to operational purposes and customer requirements. It can be operated at free-swimming mode up to 1,000m or from an optional transportation management system up to 2,000m. **Length:** 250cm **Width:** 150cm **Height:** 150cm **Weight:** 1,600kg **Max speed:** 3.5kt **Depth rating:** 1,000m **Endurance:** 8h



VideoRay ▸ Mission Specialist Defender

The VideoRay Mission Specialist Defender ROV utilises interchangeable, modular components residing on a single network. This allows a thruster, cameras, sensors and tooling to be added, removed or replaced. Its topology provides a flexible and customisable platform that can be adapted to target specific missions. **Length:** 75.16cm **Width:** 39.37cm **Height:** 26.67cm **Weight:** 18.14kg **Max speed:** 4kt **Range:** 1km **Depth rating:** 1,000m w

PRODUCTS

GUIDE TO SUPPLIERS

This section lists key companies supplying goods, services and equipment to the military uncrewed systems sector worldwide.

The section is separated into two listings, by product then by supplier.

Products are listed alphabetically with suppliers and their location under each.

Supplier listings from p384 are shown alphabetically and include:

- Company address
- Email and website addresses
- Telephone numbers

Highlighted listings also include the company's logo and a summary of activity.

To update a listing or submit new information, please contact the team at insight@shephardmedia.com.

ABOVE: GA-ASI's Gray Eagle Extended Range delivers long-endurance UAS surveillance, communications relay and weapons delivery missions in support of the warfighter. (Photo: GA-ASI)

PRODUCTS

UAVs

Associations

ADS Group (UK)
AHS International (USA)
Airborne Law Enforcement Association (USA)
Alberta Economic Development and Trade (CANADA)
American Institute of Aeronautics and Astronautics (USA)
Association for Unmanned Vehicle Systems International (USA)
Association of Diving Contractors International (USA)
Fisher Institute for Air and Space Strategic Studies (ISRAEL)
GICAT - French Land Defence Manufacturers Association (FRANCE)
Global UTM Association (SWITZERLAND)
ITA National Armament Directorate (ITALY)
National Defense Industrial Association (USA)
Portuguese Aerospace Industry Association (PORTUGAL)
Ukroboronprom (UKRAINE)
Unmanned Systems Canada (CANADA)

Weapon systems

Air Force Institute of Technology (ITWL) (POLAND)
Boeing Defense, Space & Security (USA)
IAI MBT Division (ISRAEL)
Leigh Aerospace (USA)
Lockheed Martin Missiles and Fire Control (USA)
MBDA (FRANCE)
NIRON Systems & Projects (ISRAEL)
Northrop Grumman (USA)
Northrop Grumman Innovation Systems (USA)
Pathfinder Systems (USA)
Qods Aviation Industries (QAI) (IRAN)
Raytheon Missile Systems (USA)
Textron Systems Weapon & Sensor Systems (USA)
UVision (ISRAEL)

Communications/data links

5-D Systems (USA)
Advanced Defense Technologies (USA)
Advanced Microwave Products (USA)
Aero Telemetry (USA)
Aérodrones (FRANCE)
Aerodyne (USA)
Aeronautics (ISRAEL)
AeroVironment (USA)
Aeryon Defense USA (USA)
Air Force Institute of Technology (ITWL) (POLAND)
Airborne Innovations (USA)
Airbus Defence & Space (Germany) (GERMANY)
Airbus Defence & Space (UK) (UK)
AirScan (USA)
Alion Science and Technology (USA)
ALSEAMAR Alcen (FRANCE)
Antcom (USA)
Applied Systems Engineering (USA)
Aselsan (TURKEY)
Astron Wireless Technologies (USA)
AValon RF (USA)
BAE Systems (UK)
BAE Systems Electronic Systems (USA)
Barco Fredrikstad (NORWAY)
BES Electronic Systems (ISRAEL)
Bharat Electronics (INDIA)
BlueBird Aero Systems (ISRAEL)
BML Benfield Marketing (NEW ZEALAND)
Britannia 2000 (UK)
Broadcast Microwave Services (USA)
BSC Filters (UK)
CeoTronics (GERMANY)
Chemring Technology Solutions (UK)
Cobham Aerospace Communications - Cape Town (SOUTH AFRICA)
Cobham Antenna Systems - USA (USA)
Cobham Antenna Systems Microwave Antennas (UK)
Codarra Advanced Systems (AUSTRALIA)
Collins Aerospace (USA)
Collins Aerospace UK (UK)
Commtact (ISRAEL)
Controp Precision Technologies (ISRAEL)
Cooper Antennas (UK)
Cornet Switching Systems (UK)
Cornet Technology GmbH (GERMANY)
Cosworth (UK)
CT-Video (GERMANY)
Curtiss-Wright Avionics & Electronics (Ireland) (IRELAND)
Curtiss-Wright Avionics & Electronics (US) (USA)
Curtiss-Wright Defense Solutions (USA)
Data Link Solutions (USA)
dB Control (USA)
Delta Digital Video (USA)
Domo Tactical Communications (DTC) (UK)
Domo Tactical Communications (DTC) (USA)
Ecarys (GERMANY)
Elbit Systems (ISRAEL)
Elbit Systems EW & SIGINT – Elisra (ISRAEL)
Elta Systems (ISRAEL)
Emteq (USA)
Enterprise Control Systems (ECS) (UK)
EuroHawk (GERMANY)
Extant Aerospace (USA)
FreeWave Technologies (USA)
GE Aviation (USA)
General Dynamics UK (UK)
Gilat Satcom (ISRAEL)
Global Teknik (TURKEY)
GPSat Systems Australia (AUSTRALIA)
Green Hills Software (UK)
Harris (USA)
HeliMedia (UK)
Honeywell Aerospace (USA)
HR Smith Group of Companies (UK)
IAI Israel Aerospace Industries (ISRAEL)
IAI Malat Division (ISRAEL)
IAI North America (USA)
ING Robotic Aviation (CANADA)
Instrument Control Sweden AB (SWEDEN)
Integrated Dynamics (PAKISTAN)
Intuicom (USA)
IRIS Technology (USA)
ITS Electronics (CANADA)
Kongsberg Defence & Aerospace (NORWAY)
Kongsberg Maritime (NORWAY)
Kratos Unmanned Systems Division (USA)
KVH Industries (USA)
L3 Communication Systems-West (Salt Lake City) (USA)
L3 Communication Systems-East (USA)
L3 Interstate Electronics (USA)
L3 Telemetry & RF Products (Bristol) (USA)
L3 Telemetry & RF Products (San Diego) (USA)
L3 Unmanned Systems (USA)
Leonardo (ITALY)
Leonardo Airborne & Space Systems (ITALY)
Leonardo DRS (USA)
Lexycom Technologies (USA)
LIG Nex1 (SOUTH KOREA)
Liteye Systems (USA)
Lockheed Martin UK Integrated Systems & Solutions (UK)
Logos Technologies (USA)
Lom Praha (CZECH REPUBLIC)
Lord (USA)
Luch Design Bureau (KB Lutch) (RUSSIA)
MASS (UK)
MDA – MacDonald, Dettwiler and Associates (CANADA)
Meggitt Defense Systems (USA)
Meggitt Polymers & Composites (UK)
Melcom Electronics (UK)
Mercury Systems (USA)
Microdrones UK (UK)
Microhard Systems (CANADA)
MTC America Enterprises (USA)
MTC Industries and Research (ISRAEL)
National Chung-Shan Institute of Science and Technology (TAIWAN)
NovAtel (CANADA)
Orbital Research (USA)
Paramount Advanced Technologies (SOUTH AFRICA)
Patria (FINLAND)
Pharad (USA)
Phoenix International Systems (USA)
QinetiQ (UK)
Radionor Communications AS (NORWAY)
Raytheon (USA)
Raytheon Intelligence and Information Systems (USA)
Raytheon Space & Airborne Systems (USA)
RCAT Systems (USA)
RGB Spectrum (USA)
Rheinmetall Defence Electronics (GERMANY)
Rolta (INDIA)
Rotating Precision Mechanisms (USA)
Sagetech Corporation (USA)
Sandia National Laboratories (USA)

Scorpion Oceanics (UK)
SEA (UK)
Seabird Aviation Australia (AUSTRALIA)
Shield AI (USA)
Sierra Nevada Corporation (USA)
Silvus Technologies (USA)
Stark Aerospace (USA)
Survey Copter (FRANCE)
Swarm Systems (UK)
Swedish Defence Materiel Administration, FMV (SWEDEN)
TATA Advanced Systems (INDIA)
TE Connectivity – Aerospace, Defense & Marine (USA)
Telephonics (USA)
Tellumat (SOUTH AFRICA)
Thales (FRANCE)
Thales Defense & Security (USA)
Thales UK (UK)
Times Microwave Systems (USA)
Times Microwave Systems International (UK)
TNO (NETHERLANDS)
Trimble (USA)
Troll Systems (USA)
TT electronics AB Connectors (UK)
Turkish Aerospace (TURKEY)
UAV Vision (AUSTRALIA)
Ultra Electronics Advanced Tactical Systems (USA)
Ultra Electronics Communication & Integrated Systems (UK)
Ultra Electronics Flightline Systems (USA)
UTC Aerospace Systems - ISR Systems USA (USA)
ViaSat (USA)
Wind River (USA)
Wireless Avionics (ISRAEL)
Zala Aero Group (RUSSIA)

Consultancy

Aero Surveillance (FRANCE)
Aero Telemetry (USA)
Aerodyne (USA)
Airbus DS Airborne Solutions (GERMANY)
Alcore Technologies (FRANCE)
Altran UK (UK)
Battlespace (USA)
Blue Bear Systems Research (UK)
Burdeshaw Associates (USA)
Chemring Technology Solutions (UK)
Codarra Advanced Systems (AUSTRALIA)
Cranfield Aerospace (UK)
Defence Imaging (UK)
DO Systems (UK)
Elimco Aerospace (SPAIN)
ING Robotic Aviation (CANADA)
Integrated Dynamics (PAKISTAN)
Liebherr Aerospace & Transportation (GERMANY)
LikeAbird (SPAIN)
Lockheed Martin UK Integrated Systems & Solutions (UK)
Lockheed Martin Unmanned Integrated Systems (USA)
Marshall Aerospace and Defence Group (UK)
MDA – MacDonald, Dettwiler and Associates (CANADA)
Modern Technology Solutions (USA)
PASSUR Aerospace (USA)
QinetiQ (UK)
R-PAD Technology (UK)
RCAT Systems (USA)
Siemens PLM Software (USA)
Skycam UAV (NEW ZEALAND)
Strat Aero (UK)
Swedish Defence Materiel Administration, FMV (SWEDEN)
Tapestry Solutions (USA)
Teledyne Brown Engineering (USA)
Thales (FRANCE)
TNO (NETHERLANDS)
Viking Air (CANADA)
Zodiac Inflight Innovations (USA)

Control stations

Aertec Solutions (SPAIN)
Aeryon Defense USA (USA)
Aselsan (TURKEY)
Asseco (POLAND)
BRVANT (BRAZIL)
Delta Drone (FRANCE)
ECA Group (FRANCE)
Embention (SPAIN)
ENICS JSC (RUSSIA)
General Atomics Aeronautical Systems (USA)
Global Industrial & Defence Solutions (GIDS) (PAKISTAN)
Globe UAV (GERMANY)
Insitu (USA)
Iran Aviation Industries Organization (IRAN)
Kutta Technologies, Inc. (USA)
Lockheed Martin Canada CDL Systems (CANADA)
Lockheed Martin CDL Systems USA (USA)
Qods Aviation Industries (QAI) (IRAN)
Raytheon Intelligence and Information Systems (USA)
Skycam UAV (NEW ZEALAND)
Special Technological Center (RUSSIA)
Textron Systems Unmanned Systems (USA)
UAV Solutions (USA)
Uavos (USA)
Vislink (US) (USA)
Yuneec (UK)

Counter-UAS systems

Aaronia AG (GERMANY)
Ariel Photonics (ISRAEL)
Aselsan (TURKEY)
Battelle Memorial Institute (USA)
BendixKing (USA)
Blighter Surveillance Systems (UK)
CACI International (USA)
CS (Communications & Systèmes) (FRANCE)
Dedrone (USA)
Delft Dynamics (NETHERLANDS)
Department 13 (USA)
DroneShield (AUSTRALIA)
Elta Systems (ISRAEL)
Flex Force (USA)
General Dynamics Land Systems (USA)
Hensoldt Sensors (GERMANY)
IXI Technology (USA)
Kelvin Hughes (UK)
Kirintec Inc (USA)
Leonardo Land & Naval Defence Electronics (ITALY)
Liteye Systems (USA)
MC-Clic (MONACO)
MGT Europe (UK)
Mitsubishi Electric (JAPAN)
MyDefence Communication (DENMARK)
Northrop Grumman (USA)
OpenWorks Engineering (UK)
Phantom Technologies (ISRAEL)
Radio Hill Technologies (USA)
Rafael Advanced Defense Systems (ISRAEL)
Sensofusion (FINLAND)
SentryX (AUSTRIA)
Silent Sentinel (UK)
SpotterRF (USA)
SRC (USA)
TAR Ideal Concepts (ISRAEL)
TCI (USA)
TRD Consultancy Pte Ltd (SINGAPORE)
UAV Vision (AUSTRALIA)
Wireless Avionics (ISRAEL)

Data storage

ACES Dynamic Instruments (USA)
Aero Surveillance (FRANCE)
AeroVironment (USA)
Airborne Innovations (USA)
Collins Aerospace (USA)
Curtiss-Wright Avionics & Electronics (Ireland) (IRELAND)
Curtiss-Wright Avionics & Electronics (US) (USA)
Curtiss-Wright Avionics & Electronics UK (UK)
Curtiss-Wright Defense Solutions (USA)
Elbit Systems (ISRAEL)
Elta Systems (ISRAEL)
Emteq (USA)
General Dynamics (USA)
Honeywell Aerospace (USA)
IAI North America (USA)
ING Robotic Aviation (CANADA)
Kongsberg Defence & Aerospace (NORWAY)
Kongsberg Maritime (NORWAY)
L3 Communication Systems-East (USA)
L3 Telemetry & RF Products (Bristol) (USA)
MDA – MacDonald, Dettwiler and Associates (CANADA)
Mercury Defense Systems (USA)
Pathfinder Systems (USA)
Phoenix International Systems (USA)
RADA Electronic Industries (ISRAEL)
Rheinmetall Defence Electronics (GERMANY)
Sekai Electronics (USA)
Thales (FRANCE)
TNO (NETHERLANDS)
Uconsystem (SOUTH KOREA)

EW

Advanced Defense Technologies (USA)
Aero Telemetry (USA)
Airbus Defence & Space (Germany) (GERMANY)
Albrecht Telecommunications (SWITZERLAND)
Alion Science and Technology (USA)
Annapolis Micro Systems (USA)

Applied Systems Engineering (USA)
Argon ST (USA)
Ariel Photonics (ISRAEL)
Ascent Vision Technologies (USA)
Aselsan (TURKEY)
Astron Wireless Technologies (USA)
BAE Systems Australia (AUSTRALIA)
BAE Systems Electronic Systems (USA)
BAE Systems Underwater Systems (UK)
Bharat Electronics (INDIA)
Black Diamond Advanced Technology (USA)
Chemring Technology Solutions (UK)
Collins Aerospace (USA)
Cubic Global Defense (USA)
Curtiss-Wright Avionics & Electronics UK (UK)
Curtiss-Wright Defense Solutions (USA)
dB Control (USA)
DTM Global (UK)
e2v (UK)
Elbit Systems (ISRAEL)
Elbit Systems EW & SIGINT – Elisra (ISRAEL)
Elta Systems (ISRAEL)
ENICS JSC (RUSSIA)
Enterprise Control Systems (ECS) (UK)
EuroHawk (GERMANY)
Extant Aerospace (USA)
General Atomics Aeronautical Systems (USA)
General Dynamics (USA)
Hensoldt South Africa (SOUTH AFRICA)
HR Smith Group of Companies (UK)
IAI North America (USA)
ImSAR (USA)
Indra Sistemas (SPAIN)
ING Robotic Aviation (CANADA)
Kongsberg Defence & Aerospace (NORWAY)
Kongsberg Maritime (NORWAY)
L3 Randtron Antenna Systems (USA)
L3 TRL Technology (UK)
Laser Detect System (LDS) (ISRAEL)
Leonardo (ITALY)
Leonardo DRS (USA)
Leonardo UK (UK)
Lockheed Martin UK (UK)
Lockheed Martin UK Integrated Systems & Solutions (UK)
Marshall Aerospace and Defence Group (UK)
MASS (UK)
Melcom Electronics (UK)
Mercury Defense Systems (USA)
Mercury Systems (USA)
Northrop Grumman Mission Systems (USA)
NSWC Crane Division (USA)
Pathfinder Systems (USA)
Phantom Technologies (ISRAEL)
Power Technology (USA)
Rafael Advanced Defense Systems (ISRAEL)
Raytheon Space & Airborne Systems (USA)
Rheinmetall Defence Electronics (GERMANY)
Rotating Precision Mechanisms (USA)
Sierra Nevada Corporation (USA)
TATA Advanced Systems (INDIA)
TE Connectivity – Aerospace, Defense & Marine (USA)
Tecom Industries (USA)
Teledyne Defence & Space (UK)
Tetis Pro (RUSSIA)
Thales UK (UK)
Times Microwave Systems (USA)
TNO (NETHERLANDS)
Wind River (USA)
Xi'an Aisheng Technology Group (CHINA)

Engineering

ACP Composites (USA)
Advanced Technologies Incorporated (USA)
Aero Surveillance (FRANCE)
Airbus DS Airborne Solutions (GERMANY)
Alcore Technologies (FRANCE)
Bye Aerospace (USA)
Cytec Solvay Group (UK)
Defence Research & Development Organisation (INDIA)
Forward Composites (UK)
GF Peters & Partner (Peters Engineering) (GERMANY)
Highland Composites (USA)
ILMOR Engineering (UK)
Innocon (ISRAEL)
Kanfit (ISRAEL)
L3 Communications MAS Canada (CANADA)
Liebherr Aerospace & Transportation (GERMANY)
Lockheed Martin Procerus Technologies (USA)
Lockheed Martin Unmanned Integrated Systems (USA)
Magellan Aerospace (CANADA)
Modern Technology Solutions (USA)
MTSI (USA)
Navmar Applied Sciences Corporation (NASC) (USA)
Northwest UAV (NWUAV) (USA)
NPT MBK - The Scientific and Production Center of Multipurpose Unmanned Systems (BELARUS)
R-PAD Technology (UK)
Safran Aerosystems (Parachute & Protection) (FRANCE)
Sener Ingeniera y Sistemas (SPAIN)
Singapore Technologies Engineering (ST Engineering) (SINGAPORE)
Skycam UAV (NEW ZEALAND)
Sonaca (BELGIUM)
ST Dynamics (SINGAPORE)
Triumph Aerostructures - Vought Aircraft Division (USA)
Zivko Aeronautics (USA)

Ground support equipment

Air Affairs Australia (AUSTRALIA)
Air Covers (UK)
Barum & Dewar (UK)
Controp Precision Technologies (ISRAEL)
Drallim Industries (UK)
Hydromechanical Engineering (ISRAEL)
LIG Nex1 (SOUTH KOREA)
Peli-Hardigg UK (UK)
Red Box International (UK)
RT LTA Systems (ISRAEL)

Imaging systems

AD Aerospace (UK)
Adcom Systems (UAE)
Adimec Advanced Image Systems (NETHERLANDS)
Adsys Controls (USA)
AEC Air Support (NETHERLANDS)
Aerlyper (SPAIN)
Aero Surveillance (FRANCE)
Aeronautics (ISRAEL)
AeroVironment (USA)
Aeryon Defense USA (USA)
Aeryon Labs (CANADA)
Airborne Innovations (USA)
Airbus Defence & Space (UK) (UK)
AirScan (USA)
Akamai Physics (USA)
Allsop Helikites (UK)
Arcturus UAV (USA)
Artemis (USA)
Artemis Optical (UK)
Ascent Vision (USA)
Aselsan (TURKEY)
Atmolab (SLOVENIA)
BAE Systems (UK)
BlueBird Aero Systems (ISRAEL)
Bluesky (UK)
Britannia 2000 (UK)
Controp Precision Technologies (ISRAEL)
Cornet Technology GmbH (GERMANY)
Cornet Technology Inc (USA)
dB Control (USA)
Defence Imaging (UK)
Defence Vision Systems (UK)
Denel Dynamics (SOUTH AFRICA)
Diehl Defence (GERMANY)
DO Systems (UK)
DST Control (SWEDEN)
e2v (UK)
Ecarys (GERMANY)
Elbit Systems (ISRAEL)
Elbit Systems Intelligence and Electro-optics – Elop (ISRAEL)
Elbit Systems of America (USA)
Elta Systems (ISRAEL)
Extant Aerospace (USA)
FT Sistemas (BRAZIL)
GE Aviation (USA)
GE Intelligent Platforms UK (UK)
General Dynamics (USA)
General Dynamics Mediaware (AUSTRALIA)
Georgia Tech Research Institute (USA)
Global Teknik (TURKEY)
Harris (USA)
HeliMedia (UK)
Hensoldt Optronics (Pty) Ltd (SOUTH AFRICA)
Hensoldt Optronics GmbH (GERMANY)
Honeywell Aerospace (USA)
HoodTech Vision (USA)
IAI North America (USA)
IAI Tamam (ISRAEL)
Icaros (USA)
Imint (SWEDEN)
Insitu (USA)
INTA - Instituto Nacional de Técnica Aeroespacial (SPAIN)
Integrated Dynamics (PAKISTAN)
IRIS Technology (USA)
Kongsberg Defence & Aerospace (NORWAY)
Kongsberg Maritime (NORWAY)
L3 Sonoma EO (USA)
L3 Space & Sensors (USA)

L3 Unmanned Systems (USA)
L3 Wescam (CANADA)
Leonardo DRS Electro-Optical Infrared Systems (USA)
Leonardo UK (UK)
LikeAbird (SPAIN)
Lockheed Martin Missiles and Fire Control (USA)
Lockheed Martin Procerus Technologies (USA)
Lockheed Martin UK Integrated Systems & Solutions (UK)
Logos Technologies (USA)
MDA – MacDonald, Dettwiler and Associates (CANADA)
Meeker Aviation (USA)
Merio (FRANCE)
Novadem (FRANCE)
NSWC Crane Division (USA)
Octopus ISR Systems (LATVIA)
Oxley Group (UK)
Oxley Inc (USA)
Peiport (HONG KONG)
Photonis Netherlands (NETHERLANDS)
Power Technology (USA)
QinetiQ (UK)
Rafael Advanced Defense Systems (ISRAEL)
Rheinmetall Defence Electronics (GERMANY)
Rolta (INDIA)
Safran Electronics & Defense (FRANCE)
Satuma (PAKISTAN)
Schiebel (AUSTRIA)
Seabird Aviation Australia (AUSTRALIA)
SecuDrones (FRANCE)
Sekai Electronics (USA)
Sener Ingeniera y Sistemas (SPAIN)
Sentient (AUSTRALIA)
Sierra Nevada Corporation (USA)
Sikorsky, a Lockheed Martin Company (USA)
Silent Sentinel (UK)
Skycam UAV (NEW ZEALAND)
Skysapience (ISRAEL)
Spacemetric (SWEDEN)
ST Dynamics (SINGAPORE)
Stark Aerospace (USA)
Steadicopter (ISRAEL)
Survey Copter (FRANCE)
Swarm Systems (UK)
Sypaq (AUSTRALIA)
Systron Donner Inertial (USA)
TATA Advanced Systems (INDIA)
Technical Consultants International (ISRAEL)
Teledyne FLIR (USA)
Teledyne FLIR (UK) (UK)
Teledyne FLIR Netherlands (NETHERLANDS)
Teledyne Optech (CANADA)
Thales (FRANCE)
Thales Optronique (FRANCE)
Thales UK (UK)
Thermoteknix Systems (UK)
Thorpe Seeop (USA)
Thread Systems (ESTONIA)
TNO (NETHERLANDS)
Top I Vision (ISRAEL)
UAV Pro (USA)
UAV Solutions (USA)
UAV Vision (AUSTRALIA)
Ultra Electronics ProLogic (USA)
UTC Aerospace Systems - ISR Systems USA (USA)
UTC Aerospace Systems – ISR Systems (USA)
UTC Aerospace Systems-TASE imaging Systems (USA)
VTUL a PVO Praha (CZECH REPUBLIC)
Wamco (USA)
Wireless Avionics (ISRAEL)
Zala Aero Group (RUSSIA)

Launchers and recovery systems

Adcom Systems (UAE)
Aero Telemetry (USA)
AeroTargets International (USA)
Alcore Technologies (FRANCE)
Arcturus UAV (USA)
Aries Ingenieria y Sistemas (SPAIN)
Atair Aerospace (USA)
BAE Systems (UK)
BlueBird Aero Systems (ISRAEL)
Butler Parachute Systems Group (USA)
Defence Research & Development Organisation (INDIA)
ECA Group (FRANCE)
Edge Autonomy (LATVIA)
Elbit Systems (ISRAEL)
FXC Corporation/Guardian Parachute (USA)
Honeywell Aerospace (USA)
Hood Technology Mechanical (USA)
Hydromechanical Engineering (ISRAEL)
IAI Malat Division (ISRAEL)
IAI North America (USA)
ILMOR Engineering (UK)
Indela (BELARUS)
Innocon (ISRAEL)
IrvinGQ (UK)
Kadet Defence Systems (INDIA)
L3 Unmanned Systems (USA)
Lockheed Martin (USA)
Lockheed Martin Unmanned Integrated Systems (USA)
Lom Praha (CZECH REPUBLIC)
Meggitt Defense Systems (USA)
Northrop Grumman Innovation Systems (USA)
Paramount Advanced Technologies (SOUTH AFRICA)
Peiport (HONG KONG)
QinetiQ (UK)
QinetiQ Target Systems (CANADA)
Rheinmetall Defence Electronics (GERMANY)
Robonic (FINLAND)
RUAG Aviation (SWITZERLAND)
Safran Aerosystems (Parachute & Protection) (FRANCE)
Safran Aerosystems Parachute & Protection America (USA)
Safran Arresting Systems (USA)
Santos Lab (BRAZIL)
Sierra Nevada Corporation (USA)
Survey Copter (FRANCE)
Tactical Robotics (ISRAEL)
Tasuma (UK)
Textron Systems Unmanned Systems (USA)
Thales (FRANCE)
Turkish Aerospace (TURKEY)
UAV Research Lab (UAVRL) (USA)
Uconsystem (SOUTH KOREA)
VTUL a PVO Praha (CZECH REPUBLIC)
Zivko Aeronautics (USA)

Leasing services

Aero Telemetry (USA)
IAI North America (USA)
Kadet Defence Systems (INDIA)
L3 Unmanned Systems (USA)
Meggitt Defense Systems (USA)
Microdrones UK (UK)
Textron Systems Unmanned Systems (USA)
Thales (FRANCE)
Thales UK (UK)
Thorpe Seeop (USA)
Uconsystem (SOUTH KOREA)
Wankel (GERMANY)

Navigation/guidance

5-D Systems (USA)
ACSS (USA)
Adcom Systems (UAE)
Aero Telemetry (USA)
Aerodyne (USA)
AeroVironment (USA)
Aeryon Defense USA (USA)
Air Force Institute of Technology (ITWL) (POLAND)
Alcore Technologies (FRANCE)
Ascent Vision (USA)
Astronautics Corporation of America (USA)
Atair Aerospace (USA)
ATEQ-Omicron (FRANCE)
Aurora Flight Sciences (USA)
BAE Systems Platform Solutions (USA)
BAE Systems Underwater Systems (UK)
BES Electronic Systems (ISRAEL)
Bharat Electronics (INDIA)
Blue Bear Systems Research (UK)
BlueBird Aero Systems (ISRAEL)
BRVANT (BRAZIL)
Charles Stark Draper Laboratory (USA)
Cobham Antenna Systems - USA (USA)
Collins Aerospace (USA)
Collins Aerospace UK (UK)
Controp Precision Technologies (ISRAEL)
Cooper Antennas (UK)
Curtiss-Wright Avionics & Electronics (Ireland) (IRELAND)
Curtiss-Wright Avionics & Electronics (US) (USA)
Curtiss-Wright Avionics & Electronics UK (UK)
Curtiss-Wright Defense Solutions (USA)
Daco Scientific (UK)
DARcorporation (USA)
Delong Instruments (CZECH REPUBLIC)
Ecarys (GERMANY)
Edge Autonomy (LATVIA)
Elbit Systems (ISRAEL)
Emteq (USA)
ENICS JSC (RUSSIA)
Epson Europe Electronics (GERMANY)
GE Aviation (USA)
GE Intelligent Platforms UK (UK)
General Atomics Aeronautical Systems (USA)
Geodetics (USA)
Georgia Tech Research Institute (USA)

Gladiator Technologies (USA)
GPSat Systems Australia (AUSTRALIA)
Guided Systems Technologies (USA)
Hanwha Systems (SOUTH KOREA)
HeliMedia (UK)
Honeywell Aerospace (USA)
HR Smith Group of Companies (UK)
IAI North America (USA)
IAI Ramta (ISRAEL)
IAI Tamam (ISRAEL)
Indra Sistemas (SPAIN)
Innocon (ISRAEL)
Insitu (USA)
Instrument Control Sweden AB (SWEDEN)
Integrated Dynamics (PAKISTAN)
Interface Displays & Controls (USA)
Kearfott Corporation (USA)
Kongsberg Defence & Aerospace (NORWAY)
Kongsberg Maritime (NORWAY)
Kratos Unmanned Systems Division (USA)
Kutta Technologies, Inc. (USA)
KVH Industries (USA)
L3 Aviation Products (Grand Rapids) (USA)
L3 Interstate Electronics (USA)
L3 Randtron Antenna Systems (USA)
L3 Unmanned Systems (USA)
Larus Technologies (CANADA)
Leonardo (ITALY)
Leonardo UK (UK)
LikeAbird (SPAIN)
Liteye Systems (USA)
Lockheed Martin Canada CDL Systems (CANADA)
Lockheed Martin CDL Systems USA (USA)
Lockheed Martin Procerus Technologies (USA)
Lom Praha (CZECH REPUBLIC)
Lord MicroStrain (USA)
Meggitt Defense Systems (USA)
Micro Systems Inc (USA)
Microbotics (USA)
MicroPilot (CANADA)
Moog Aircraft Group (USA)
Moog Inc (USA)
MTC America Enterprises (USA)
MTC Industries and Research (ISRAEL)
Navionex (USA)
Northrop Grumman Aerospace Systems (USA)
NovAtel (CANADA)
Orbital Research (USA)
Paramount Advanced Technologies (SOUTH AFRICA)
Parker Aerospace - Fluid Systems Division (USA)
Parker-Hannifin Control Systems (USA)
Planck Aerosystems (USA)
Poynting Antennas (SOUTH AFRICA)
QinetiQ (UK)
RADA Electronic Industries (ISRAEL)
Rheinmetall Defence Electronics (GERMANY)
RMRL (TAIWAN)
Rosner & Rosner (GERMANY)
Rotating Precision Mechanisms (USA)
Safran Electronics & Defense (FRANCE)
Sandia Aerospace (USA)
Santos Lab (BRAZIL)
Satuma (PAKISTAN)
SBG Systems (FRANCE)
SecuDrones (FRANCE)
Sener Ingeniera y Sistemas (SPAIN)
Shield AI (USA)
Sierra Nevada Corporation (USA)
Silvertone Electronics (AUSTRALIA)
Skycam UAV (NEW ZEALAND)
SkyCircuits (UK)
SpaceAge Control (USA)
Steadicopter (ISRAEL)
Swarm Systems (UK)
Systron Donner Inertial (USA)
TATA Advanced Systems (INDIA)
TE Connectivity – Aerospace, Defense & Marine (USA)
Tecom Industries (USA)
TeKnol (RUSSIA)
Teledyne FLIR (UK) (UK)
Textron Systems Unmanned Systems (USA)
Thales (FRANCE)
Thales InterSense (USA)
Thales UK (UK)
Trimble (USA)
Turkish Aerospace (TURKEY)
UAV Navigation (SPAIN)
Uconsystem (SOUTH KOREA)
Ultra Electronics Measurement Systems (USA)
Ultra Electronics PMES (UK)
UTC Aerospace Systems-TASE imaging Systems (USA)
VectorNav Technologies (USA)
Watson Industries (USA)
weControl (SWITZERLAND)
Willow Technologies (UK)
Wind River (USA)
Wireless Avionics (ISRAEL)
Xsens (NETHERLANDS)
Zala Aero Group (RUSSIA)

Onboard systems

5-D Systems (USA)
Aero Surveillance (FRANCE)
Aero Telemetry (USA)
Air Force Institute of Technology (ITWL) (POLAND)
Airborne Innovations (USA)
Akzo Nobel Aerospace Coatings (USA)
Alcore Technologies (FRANCE)
Alion Science and Technology (USA)
Artemis (USA)
BAE Systems Electronic Systems (USA)
BAE Systems Underwater Systems (UK)
Bharat Electronics (INDIA)
BML Benfield Marketing (NEW ZEALAND)
Cobham Antenna Systems - USA (USA)
Cornet Technology GmbH (GERMANY)
Cosworth (UK)
Cox & Company (USA)
Crane Aerospace & Electronics (USA)
Cubic Global Defense (USA)
Currawong Engineering (AUSTRALIA)
Curtiss-Wright Avionics & Electronics (Ireland) (IRELAND)
Curtiss-Wright Avionics & Electronics (US) (USA)
Curtiss-Wright Avionics & Electronics UK (UK)
Data Device Corporation (DDC) (USA)
DefendTex (AUSTRALIA)
Diehl Defence (GERMANY)
DST Control (SWEDEN)
Eaton Aerospace (USA)
Eaton Aerospace – Fuel & Motion Control Systems Division (UK)
Ecarys (GERMANY)
Edge Autonomy (LATVIA)
Elbit Systems (ISRAEL)
Elbit Systems Intelligence and Electro-optics – Elop (ISRAEL)
Electronic Concepts & Engineering (USA)
Elta Systems (ISRAEL)
Embention (SPAIN)
Emteq (USA)
ENICS JSC (RUSSIA)
FEI-Elcom Tech (USA)
Ford Aerospace (UK)
Glenair (USA)
Greene Tweed (USA)
HR Smith Group of Companies (UK)
IAI North America (USA)
ICD Software (NORWAY)
Indela (BELARUS)
ING Robotic Aviation (CANADA)
Innocon (ISRAEL)
Kongsberg Defence & Aerospace (NORWAY)
Kongsberg Maritime (NORWAY)
L3 Aviation Products (Grand Rapids) (USA)
Leonardo (ITALY)
Leonardo UK (UK)
LikeAbird (SPAIN)
Lockheed Martin (USA)
Lockheed Martin Unmanned Integrated Systems (USA)
MBDA (FRANCE)
MDL (USA)
Meggitt Defense Systems (USA)
Mercury Systems (USA)
Mercury Systems – Trusted Mission Systems (USA)
Moog Singapore (SINGAPORE)
National Chung-Shan Institute of Science and Technology (TAIWAN)
NIRON Systems & Projects (ISRAEL)
Northern Aerospace (UK)
Northrop Grumman Innovation Systems (USA)
Northrop Grumman Mission Systems (USA)
NSWC Crane Division (USA)
Paramount Advanced Technologies (SOUTH AFRICA)
Parker Aerospace - Fluid Systems Division (USA)
Power Technology (USA)
QinetiQ (UK)
Quality Thermistor (USA)
RADA Electronic Industries (ISRAEL)
Raytheon Space & Airborne Systems (USA)
RCAT Systems (USA)
Rheinmetall Defence Electronics (GERMANY)
RMRL (TAIWAN)
Rosner & Rosner (GERMANY)
SAFT (FRANCE)
Satuma (PAKISTAN)

Sierra Nevada Corporation (USA)
Silent Falcon UAS Technologies (USA)
SpaceAge Control (USA)
Spectrum Associates (USA)
Survey Copter (FRANCE)
Swarm Systems (UK)
Swift Navigation (USA)
Sypaq (AUSTRALIA)
Systron Donner Inertial (USA)
TATA Advanced Systems (INDIA)
Thales (FRANCE)
Thales UK (UK)
Themis EMEA (FRANCE)
Trilithic (USA)
Ultra Electronics Communication & Integrated Systems (UK)
Ultra Electronics Measurement Systems (USA)
Ultra Electronics Precision Air & Land Systems (UK)
UTC Aerospace Systems (USA)
UTC Aerospace Systems-TASE imaging Systems (USA)
Volz Servos (USA)
Wireless Avionics (ISRAEL)

Payloads (non-imaging)

5-D Systems (USA)
Aero Telemetry (USA)
Aeronautics (ISRAEL)
AeroVironment (USA)
Aeryon Defense USA (USA)
Airborne Innovations (USA)
Airbus Defence & Space (Germany) (GERMANY)
Akamai Physics (USA)
Alcore Technologies (FRANCE)
Argon ST (USA)
BAE Systems (UK)
BlueBird Aero Systems (ISRAEL)
Carolina Unmanned Vehicles (USA)
Chemring Technology Solutions (UK)
Codarra Advanced Systems (AUSTRALIA)
Collins Aerospace (USA)
Data Device Corporation (DDC) (USA)
dB Control (USA)
Diehl Defence (GERMANY)
ECA Group (FRANCE)
Echodyne (USA)
Elbit Systems (ISRAEL)
Elbit Systems of America (USA)
Elta Systems (ISRAEL)
Gladiator Technologies (USA)
Honeywell International (USA)
IAI North America (USA)
Insitu (USA)
IRDAM SA (SWITZERLAND)
ISP Optics (USA)
ISP Optics Europe (LATVIA)
iSTAR UAV (ISRAEL)
Leonardo Land & Naval Defence Electronics (ITALY)
Leonardo UK (UK)
Liteye Systems (USA)
Lockheed Martin (USA)
Lun'tech (FRANCE)
MBDA (FRANCE)
MDA – MacDonald, Dettwiler and Associates (CANADA)
Meeker Aviation (USA)
Meggitt Defense Systems (USA)
MicroPilot (CANADA)
Newcon Optik (CANADA)
Nexter Systems (FRANCE)
NSWC Crane Division (USA)
Paramount Advanced Technologies (SOUTH AFRICA)
Perspecta (USA)
QinetiQ (UK)
Rafael Advanced Defense Systems (ISRAEL)
Raytheon Missile Systems (USA)
RCAT Systems (USA)
Rheinmetall Defence Electronics (GERMANY)
Saab (SWEDEN)
Sandia National Laboratories (USA)
SecuDrones (FRANCE)
Sierra Nevada Corporation (USA)
Stratom (USA)
Survey Copter (FRANCE)
TATA Advanced Systems (INDIA)
TNO (NETHERLANDS)
Top I Vision (ISRAEL)
Trakka Systems USA (USA)
UAV Research Lab (UAVRL) (USA)
UAV Vision (AUSTRALIA)

Platforms

Adcom Systems (UAE)
Aeraccess- Airborne Engineering Research (FRANCE)
Aero Surveillance (FRANCE)
Aero-Starloop High-tec (CHINA)
Aeronautics (ISRAEL)
AeroVironment (USA)
Aertec Solutions (SPAIN)
Aeryon Defense USA (USA)
Aeryon Labs (CANADA)
Air Force Institute of Technology (ITWL) (POLAND)
Airbus Defence & Space (France) (FRANCE)
Airbus Defence & Space (Germany) (GERMANY)
Airbus Defence & Space (UK) (UK)
Airbus Helicopters (FRANCE)
AirRotorMedia (GERMANY)
Alcore Technologies (FRANCE)
Alpha Unmanned Systems (SPAIN)
Alpi Aviation (ITALY)
American Aerospace Technologies (AATI) (USA)
Arcturus UAV (USA)
Aria Insights (USA)
Aselsan (TURKEY)
Asisguard (TURKEY)
Asisguard (TURKEY)
Asseco (POLAND)
Athlon Avia (UKRAINE)
Aurea Avionics (SPAIN)
Aurea Avionics (SPAIN)
Aurora Flight Sciences (USA)
Avia Satcom (THAILAND)
Aviation Design (FRANCE)
AVIC – Aviation Industry Corporation of China (CHINA)
AVID Aerospace (USA)
Badan Pengkajian dan Penerapan Teknologi (INDONESIA)
BAE Systems (UK)
Baykar (TURKEY)
BCB International (UK)
Beijing Sagetown Technologies Co. (CHINA)
Bell Helicopter Textron (USA)
BelTechExport (BELARUS)
Best Grup (TURKEY)
Bihrle Applied Research (USA)
BlackBar Engineering (USA)
Blue Bear Systems Research (UK)
BlueBird Aero Systems (ISRAEL)
Boeing Defense, Space & Security (USA)
Bormatec (GERMANY)
BRVANT (BRAZIL)
Bye Aerospace (USA)
C-Astral Aerospace (SLOVENIA)
Chengdu Aircraft Design and Research Institute (CADI) (CHINA)
Chengdu Aircraft Industrial Group (CAIG) (CHINA)
China Aerospace Science and Technology Corporation (CASC) (CHINA)
China Electronics Technology Group Corporation (CETC) (CHINA)
China National Aero-Technology Import & Export Corporation (CATIC) (CHINA)
CM Drones (FRANCE)
CopterPix Pro (ISRAEL)
CPMIEC (CHINA)
CSIR (SOUTH AFRICA)
CybAero (SWEDEN)
Cyient Solutions & Systems (INDIA)
Dassault Aviation (FRANCE)
Defence Research & Development Organisation (INDIA)
Defence Technology Institute (THAILAND)
Delair (FRANCE)
Delta Drone (FRANCE)
Denel Dynamics (SOUTH AFRICA)
Desert Wolf (SOUTH AFRICA)
Diamond Aircraft (AUSTRIA)
Digital Aerolus (USA)
DIODON Drone Technology (FRANCE)
Dragonfly Pictures (USA)
Drone Tech UAV (USA)
ECA Group (FRANCE)
Ecarys (GERMANY)
EdePro (Engine Development and Production) (SERBIA)
Elbit Systems (ISRAEL)
Elimco Aerospace (SPAIN)
Elroy Air (USA)
Embention (SPAIN)
EMT (GERMANY)
EnergyOr (CANADA)
Enhanced Protection Systems (UK)
ENICS JSC (RUSSIA)
ERAP North America (USA)
Eurotech (POLAND)
EXPAL (SPAIN)
Freewing Flight Technologies (USA)
FT Sistemas (BRAZIL)
General Atomics Aeronautical Systems (USA)
Global Industrial & Defence Solutions (GIDS) (PAKISTAN)
GMV (SPAIN)
Griffon Aerospace (USA)
Guided Systems Technologies (USA)
Gyrofly Innovations (BRAZIL)
Havelsan (TURKEY)
Honeywell International (USA)
Hoverfly Technologies (USA)

Human Intelligent System (HUINS) (SOUTH KOREA)
Hydra Technologies (MEXICO)
Hypersonix Launch Systems (AUSTRALIA)
IAI Malat Division (ISRAEL)
ideaForge (INDIA)
IDS - Ingegneria Dei Sistemi (ITALY)
Indra Sistemas (SPAIN)
Innocon (ISRAEL)
Insitu (USA)
InstantEye Robotics (USA)
INTA - Instituto Nacional de Técnica Aeroespacial (SPAIN)
Integrated Dynamics (PAKISTAN)
Intra Defense Technologies (SAUDI ARABIA)
iSTAR UAV (ISRAEL)
ITEC Intelligent Technology (UKRAINE)
Joyton (CHINA)
KAI – Korea Aerospace Industries (SOUTH KOREA)
Kaman Aerospace (USA)
King Abdulaziz City for Science and Technology (SAUDI ARABIA)
Korean Air Tech Center (SOUTH KOREA)
Kratos Unmanned Systems Division (USA)
Kronshtadt (RUSSIA)
L3 Unmanned Systems (USA)
Laser Detect System (LDS) (ISRAEL)
Leigh Aerospace (USA)
Leonardo Aerostructures (ITALY)
Leonardo Airborne & Space Systems (ITALY)
Leonardo Defence Systems (ITALY)
Liaz (CZECH REPUBLIC)
LikeAbird (SPAIN)
Lockheed Martin (USA)
Lockheed Martin UK (UK)
Lumenier (USA)
MAG Aerospace (USA)
Magline (SPAIN)
Matrix UAV (UKRAINE)
Microdrones UK (UK)
Mission Technology Systems (USA)
MMIST - Mist Mobility Integrated Systems Technology (CANADA)
Mundo Compuesto Special Developments (Mcom) (ARGENTINA)
National Aviation University of Ukraine (UKRAINE)
National Chung-Shan Institute of Science and Technology (TAIWAN)
National Engineering and Scientific Commission (NESCOM) (PAKISTAN)
Navmar Applied Sciences Corporation (NASC) (USA)
Neany (USA)
NES&TEC (SOUTH KOREA)
Northrop Grumman (USA)
NPT MBK - The Scientific and Production Center of Multipurpose Unmanned Systems (BELARUS)
PAE ISR (USA)
Paramount Group (SOUTH AFRICA)
Piaggio Aerospace (ITALY)
Planck Aerosystems (USA)
Poly Technologies (CHINA)
Preneu (SOUTH KOREA)
Primoco UAV (CZECH REPUBLIC)
PT Bhinneka Dwi Persada (INDONESIA)
QinetiQ (UK)
Qods Aviation Industries (QAI) (IRAN)
Quadrant Space (Tianjin) Technology (CHINA)
Raytheon (USA)
Raytheon Missile Systems (USA)
Robot Aviation (NORWAY)
Russian Helicopters (VR-Technologies) (RUSSIA)
Saab (SWEDEN)
Safran Electronics & Defense (FRANCE)
Santos Lab (BRAZIL)
Satuma (PAKISTAN)
Scaled Composites (USA)
Scion UAS (USA)
Sensurion Aerospace (USA)
Shield AI (USA)
SI Schweitzer Ingenieurgesellschaft (GERMANY)
Sikorsky, a Lockheed Martin Company (USA)
Silent Falcon UAS Technologies (USA)
Silvertone Electronics (AUSTRALIA)
Sky-Watch (DENMARK)
Skydio (USA)
Skyeton (UKRAINE)
SkyPro UAV (UAE)
Spaitech (UKRAINE)
ST Engineering Aerospace (SINGAPORE)
Star UAV System (CHINA)
Stark Aerospace (USA)
Steadicopter (ISRAEL)
Sukhoi Design Bureau (RUSSIA)
Survey Copter (FRANCE)
Swift Engineering (USA)
Sypaq (AUSTRALIA)
Tactical Robotics (ISRAEL)
Teal Drones (USA)
Tekever (PORTUGAL)
Textron Systems Unmanned Systems (USA)
Thales (FRANCE)
Thales España (SPAIN)
Threod Systems (ESTONIA)
Top Engineering Group (THAILAND)
Top I Vision (ISRAEL)
Turkish Aerospace (TURKEY)
UA Technology (UKRAINE)
UAV Tactical Systems (U-Tacs) (UK)
UAVTEK (UK)
Uconsystem (SOUTH KOREA)
Ukrjet (UKRAINE)
Ukrspecsystems (UKRAINE)
Ultimate Aviation Group (SOUTH AFRICA)
UMS Skeldar (SWITZERLAND)
Unmanned Systems Technology SDN BHD (MALAYSIA)
USTI- Unmanned Systems Technology International (MEXICO)
Vanilla Unmanned (USA)
Vantage Robotics (USA)
Vestel Defence Industry (TURKEY)
VTUL a PVO Praha (CZECH REPUBLIC)
Wake Engineering (SPAIN)
X AeroSystems (PORTUGAL)
Xi'an Aisheng Technology Group (CHINA)
XTEND (ISRAEL)
Yakovlev Design Bureau (RUSSIA)
Z-sistem (TURKEY)
Zala Aero Group (RUSSIA)
Ziyan UAS (CHINA)

Propulsion/powerplants

3W International (GERMANY)
Abbott Technologies (USA)
AC Corporation (JAPAN)
Advanced Component Engineering (USA)
Aero Surveillance (FRANCE)
Aero Tec Laboratories (USA)
Aero Telemetry (USA)
Aeronautics (ISRAEL)
AIE – Advanced Innovative Engineering (UK)
Alcore Technologies (FRANCE)
Aurora Flight Sciences (USA)
Austro Engine (AUSTRIA)
BAE Systems (UK)
Bental Motion Systems (ISRAEL)
Bet Shemesh Engines (ISRAEL)
Bye Aerospace (USA)
Click Bond (USA)
Continental Motors (USA)
Crane Aerospace & Electronics (USA)
Currawong Engineering (AUSTRALIA)
Custom Power (USA)
D-Star Engineering (USA)
Danielson Aircraft Systems (FRANCE)
DeltaHawk Engines (USA)
Denchi Power (UK)
Docking and Co (UK)
Dowty Propellers (UK)
Dynamatic Technologies (INDIA)
EaglePicher Yardney Division (USA)
ECA Group (FRANCE)
EdePro (Engine Development and Production) (SERBIA)
Edge Autonomy (LATVIA)
Elbit Systems (ISRAEL)
Elbit Systems Intelligence and Electro-optics – Elop (ISRAEL)
EnergyOr (CANADA)
Enersys (USA)
Florida Turbine Technologies (USA)
Freewing Flight Technologies (USA)
GE Aviation (USA)
Herbrandson Engines (USA)
HFE International (USA)
Hirth Engines GmbH (GERMANY)
IAI North America (USA)
Insitu (USA)
Insulated Wire Microwave Products Division (USA)
Insulated Wire, Inc (USA)
LikeAbird (SPAIN)
Limbach Flugmotoren (GERMANY)
Lom Praha (CZECH REPUBLIC)
Lycoming Engines (USA)
McCauley Propeller Systems (USA)
MegaPhase (USA)
Meggitt Defense Systems (USA)
Mejzlik Modellbau (CZECH REPUBLIC)
MTC America Enterprises (USA)
MTC Industries and Research (ISRAEL)
MTU Aero Engines (GERMANY)
Naval Research Lab (USA)
Northwest UAV (NWUAV) (USA)
Nova Electric (USA)
Orbital UAV (AUSTRALIA)

Paramount Advanced Technologies (SOUTH AFRICA)
Parker Aerospace - Fluid Systems Division (USA)
PBS Velká Bíteš (CZECH REPUBLIC)
Peiport (HONG KONG)
Powervamp (UK)
Pratt & Whitney (USA)
Pratt & Whitney Canada (CANADA)
Protonex Technology (USA)
Punctilio Propellers (UK)
Quantum Fuel Systems Technologies (USA)
RCV Engines (UK)
Red Box International (UK)
Ricardo UK (UK)
Robota (USA)
Rolls-Royce (UK)
Rolls-Royce Deutschland (GERMANY)
Rotax (AUSTRIA)
Rotron Power (UK)
Roxel (FRANCE)
RUAG Aviation (SWITZERLAND)
Safran Helicopter Engines (FRANCE)
Safran Power Units (USA)
SAFT (FRANCE)
SAFT America (USA)
SecuDrones (FRANCE)
Semip (FRANCE)
Sensenich Propeller (USA)
Sky Power (GERMANY)
Sonex Research (USA)
Tesla Industries (USA)
Thales (FRANCE)
Transupport (USA)
UAV Engines (UK)
UAV Propulsion Tech (USA)
UAV Turbines (USA)
Ultra Electronics Precision Air & Land Systems (UK)
Ultra Electronics USSI Fuel Cell Products (USA)
Wankel (GERMANY)
XRDi (USA)
Zanzottera Technologies (ITALY)

R&D

ACUASI (USA)
Advanced Technologies Incorporated (USA)
Aeromarine Intelligent Equipment Company (CHINA)
Air Force Institute of Technology (ITWL) (POLAND)
Alcore Technologies (FRANCE)
BAE Systems Underwater Systems (UK)
Bharat Electronics (INDIA)
Bordeaux Technowest (FRANCE)
Center for Unmanned Aircraft Systems Research, Education and Training (USA)
Charles Stark Draper Laboratory (USA)
Chemring Technology Solutions (UK)
Cranfield Aerospace (UK)
Defense Advanced Research Projects Agency (USA)
DSO National Laboratories (SINGAPORE)
Ecarys (GERMANY)
ENICS JSC (RUSSIA)
Fisher Institute for Air and Space Strategic Studies (ISRAEL)
Flytronic (POLAND)
Forward Composites (UK)
Georgia Tech Research Institute (USA)
Highland Composites (USA)
Instrument Control Sweden AB (SWEDEN)
INTA - Instituto Nacional de Técnica Aeroespacial (SPAIN)
Kanfit (ISRAEL)
King Abdulaziz City for Science and Technology (SAUDI ARABIA)
King Abdullah II Design and Development Bureau (JORDAN)
Korean Air Tech Center (SOUTH KOREA)
Kutta Technologies, Inc. (USA)
Lone Star UAS Center of Excellence & Innovation (LSUASC) (USA)
Luch Design Bureau (KB Lutch) (RUSSIA)
National Chung-Shan Institute of Science and Technology (TAIWAN)
National Oceanic & Atmospheric Administration (USA)
Naval Research Lab (USA)
Navmar Applied Sciences Corporation (NASC) (USA)
New Mexico State University - Physical Science Laboratory (PSL) (USA)
NPT MBK - The Scientific and Production Center of Multipurpose Unmanned Systems (BELARUS)
Office of Naval Research (USA)
Portuguese Aerospace Industry Association (PORTUGAL)
Prince Sultan Advanced Technology Research Institute (SAUDI ARABIA)
Prince Sultan Defense Studies & Research Center (PSDSARC) (SAUDI ARABIA)
Qods Aviation Industries (QAI) (IRAN)
Research Institute of Special Machinery (RUSSIA)
RMRL (TAIWAN)
Russian Helicopters (RUSSIA)
Russian Helicopters (VR-Technologies) (RUSSIA)
Sandia National Laboratories (USA)
Satuma (PAKISTAN)
Scientific Applications & Research Associates (SARA) (USA)
SEA (UK)
Sensurion Aerospace (USA)
Sichuan Tengden Technology Co. Ltd. (CHINA)
Siemens PLM Software (USA)
Southwest Research Institute (USA)
Stella Tecnologia (BRAZIL)
Uavos (USA)
X AeroSystems (PORTUGAL)
Zhong Tian Guide Control Technology Company (CHINA)
Zivko Aeronautics (USA)

Testing

412th Test Wing (USA)
Aeromarine Intelligent Equipment Company (CHINA)
Air Force Institute of Technology (ITWL) (POLAND)
Alberta Economic Development and Trade (CANADA)
Bofors Test Center (SWEDEN)
Center for Unmanned Aircraft Systems Research, Education and Training (USA)
Foremost UAS Range (CANADA)
Georgia Tech Research Institute (USA)
Lockheed Martin Procerus Technologies (USA)
Lone Star UAS Center of Excellence & Innovation (LSUASC) (USA)
Merlin Global Services (USA)
Modern Technology Solutions (USA)
NASA Management Education Center (USA)
North Dakota Department of Commerce (USA)
Northern Aerospace (UK)
Northwest UAV (NWUAV) (USA)
NPT MBK - The Scientific and Production Center of Multipurpose Unmanned Systems (BELARUS)
RAAF Woomera Range Complex (AUSTRALIA)
Robonic (FINLAND)
Sichuan Tengden Technology Co. Ltd. (CHINA)
Simonov Design Bureau (okb-Sokol Kazan) (RUSSIA)
Skycam UAV (NEW ZEALAND)
Sonex Research (USA)
Swedish Defence Materiel Administration, FMV (SWEDEN)
T.O.P Wing (ISRAEL)
UAV Pro (USA)
Unmanned Aerial System Centre of Excellence (UAS CE) (CANADA)
Wales UAS Environment (UK)
X AeroSystems (PORTUGAL)
Zhong Tian Guide Control Technology Company (CHINA)

Training/simulation

5-D Systems (USA)
Adacel (USA)
Aero Telemetry (USA)
Aeronautics (ISRAEL)
AeroVironment (USA)
Air Force Institute of Technology (ITWL) (POLAND)
Airbus DS Airborne Solutions (GERMANY)
AirScan (USA)
Alcore Technologies (FRANCE)
Alion Science and Technology (USA)
Ansys Netherlands (NETHERLANDS)
Applied Technology Institute (USA)
Aries Ingenieria y Sistemas (SPAIN)
Asseco (POLAND)
BAE Systems (UK)
BAE Systems Australia (AUSTRALIA)
Battlespace (USA)
Bharat Electronics (INDIA)
Bihrle Applied Research (USA)
Boston Dynamics (USA)
BRVANT (BRAZIL)
Bugeye Technologies (USA)

CAE (CANADA)
Center for Unmanned Aircraft Systems Research, Education and Training (USA)
CHI Systems (USA)
Collins Aerospace (USA)
Cubic Global Defense (USA)
Cursive Simulation (UK)
DARcorporation (USA)
Defence Imaging (UK)
Diehl Defence (GERMANY)
DO Systems (UK)
Dragonfly Pictures (USA)
DTM Global (UK)
Dynamic Animation Systems (USA)
Elbit Systems Intelligence and Electro-optics – Elop (ISRAEL)
Emteq (USA)
Forth Dimension Displays (UK)
General Dynamics (USA)
Guided Systems Technologies (USA)
HII Technical Solutions (HII-TSD) (USA)
Honeywell Aerospace (USA)
IAI North America (USA)
Indra Sistemas (SPAIN)
Kongsberg Maritime (NORWAY)
L3 Link Simulation & Training (USA)
L3 Unmanned Systems (USA)
Leonardo UK (UK)
LikeAbird (SPAIN)
Lockheed Martin UK (UK)
Lockheed Martin UK Integrated Systems & Solutions (UK)
MASS (UK)
MDA – MacDonald, Dettwiler and Associates (CANADA)
Meggitt Defense Systems (USA)
Merlin Global Services (USA)
MicroPilot (CANADA)
Modern Technology Solutions (USA)
MVRsimulation (USA)
National Test Pilot School (USA)
New Mexico State University - Physical Science Laboratory (PSL) (USA)
Polysim Swiss Simulation (SWITZERLAND)
Poynting Antennas (SOUTH AFRICA)
QinetiQ (UK)
QinetiQ Target Systems (CANADA)
Quantum 3D (USA)
RGB Spectrum (USA)
Rheinmetall Defence Electronics (GERMANY)
Sandia National Laboratories (USA)
Satuma (PAKISTAN)
Scientific Management Associates (AUSTRALIA)
Simlat (ISRAEL)
Skycam UAV (NEW ZEALAND)
Strat Aero (UK)
Survey Copter (FRANCE)
Swedish Defence Materiel Administration, FMV (SWEDEN)
Tasuma (UK)
Teledyne Brown Engineering (USA)
Textron Systems Unmanned Systems (USA)
Thales (FRANCE)
Thales InterSense (USA)
Thales UK (UK)
Thorpe Seeop (USA)
Threod Systems (ESTONIA)
TNO (NETHERLANDS)
UAV Pro (USA)
Uconsystem (SOUTH KOREA)
Vigilance ISR Academy (NETHERLANDS)
Wankel (GERMANY)
Wind River (USA)
Xtek (AUSTRALIA)

UGVs

Associations

Alberta Economic Development and Trade (CANADA)
Australian Robotics (AUSTRALIA)
GICAT - French Land Defence Manufacturers Association (FRANCE)

Cables/connectors

Cooper Antennas (UK)
Emteq (USA)
GE Intelligent Platforms UK (UK)
ICOR Technology (CANADA)
Kongsberg Defence & Aerospace (NORWAY)
Kongsberg Maritime (NORWAY)
Phoenix Dynamics (UK)
TE Connectivity – Aerospace, Defense & Marine (USA)
Times Microwave Systems (USA)
TT electronics AB Connectors (UK)

Communications/ data links

Advanced Microwave Products (USA)
Aselsan (TURKEY)
AValon RF (USA)
Controp Precision Technologies (ISRAEL)
Cooper Antennas (UK)
CT-Video (GERMANY)
Emteq (USA)
King Abdullah II Design and Development Bureau (JORDAN)
Kratos Unmanned Systems Division (USA)
Mercury Defense Systems (USA)
Mercury Systems (USA)
Microhard Systems (CANADA)
Moog Inc (USA)
MTC America Enterprises (USA)
MTC Industries and Research (ISRAEL)
Persistent Systems (USA)
Pleora Technologies (CANADA)
Robosoft (FRANCE)
Roboteam (ISRAEL)
Roboteam (US) (USA)
RUAG Defence (SWITZERLAND)
Tecom Industries (USA)
Vislink (UK)
Vislink (US) (USA)

Computers/software/ hardware

AOS Group (AUSTRALIA)
Electronic Concepts & Engineering (USA)
Mercury Systems (USA)
Oshkosh Defense (USA)
Persistent Systems (USA)
Pleora Technologies (CANADA)
Real-Time Innovations (USA)
SRI International (USA)

Consultancy

Australian Robotics (AUSTRALIA)
Cooper Antennas (UK)
Timoney Technology (IRELAND)

Control stations

Collins Aerospace UK (UK)
Controp Precision Technologies (ISRAEL)
ECA Group (FRANCE)
HORIBA MIRA (UK)
King Abdullah II Design and Development Bureau (JORDAN)
Omnitech Robotics (USA)
Oshkosh Defense (USA)
QinetiQ North America (USA)
ReconRobotics (USA)
Southwest Research Institute (USA)

Displays

Controp Precision Technologies (ISRAEL)
Oshkosh Defense (USA)
Sekai Electronics (USA)

Navigation/guidance

Australian Robotics (AUSTRALIA)
Collins Aerospace UK (UK)
Controp Precision Technologies (ISRAEL)
Cooper Antennas (UK)
ECA Group (FRANCE)
Epson Europe Electronics (GERMANY)
GE Intelligent Platforms UK (UK)
General Dynamics Robotic Systems (USA)
HORIBA MIRA (UK)
IAI Tamam (ISRAEL)
King Abdullah II Design and Development Bureau (JORDAN)
KVH Industries (USA)
Lord MicroStrain (USA)
Micro Systems Inc (USA)
MTC America Enterprises (USA)
MTC Industries and Research (ISRAEL)
Omnitech Robotics (USA)
Oshkosh Defense (USA)
Pearson Engineering (UK)
Persistent Systems (USA)
QinetiQ North America (USA)
ReconRobotics (USA)
Roboteam (ISRAEL)
Roboteam (US) (USA)
Sekai Electronics (USA)
Southwest Research Institute (USA)
SRI International (USA)
Stratom (USA)
Systron Donner Inertial (USA)
Tecom Industries (USA)
Thales InterSense (USA)
Trimble (USA)
Xsens (NETHERLANDS)

Payloads

Controp Precision Technologies (ISRAEL)
Defence Vision Systems (UK)
ECA Group (FRANCE)
Elbit Systems Intelligence and Electro-optics – Elop (ISRAEL)
General Dynamics Robotic Systems (USA)
IAI Tamam (ISRAEL)
Inuktun Services (CANADA)
Mercury Defense Systems (USA)
Motec (GERMANY)
Omnitech Robotics (USA)

Photonis France (FRANCE)
RE2 Robotics (USA)
Sekai Electronics (USA)
Stratom (USA)

Platforms

Alcore Technologies (FRANCE)
Allen-Vanguard Canada (CANADA)
AOS Group (AUSTRALIA)
Aselsan (TURKEY)
Best Grup (TURKEY)
Black-I Robotics (USA)
BlackBar Engineering (USA)
Bormatec (GERMANY)
BRVANT (BRAZIL)
Clearpath Robotics (CANADA)
Compel Industries (SLOVAKIA)
Copperstone Technologies (CANADA)
Cyborg Dynamics (AUSTRALIA)
Desert Wolf (SOUTH AFRICA)
Digital Concepts Engineering (UK)
DOK-ING (CROATIA)
ECA Group (FRANCE)
Elbit Systems (ISRAEL)
Elektroland (TURKEY)
Endeavor Robotics (USA)
Foosung Firstec (SOUTH KOREA)
General Dynamics Robotic Systems (USA)
General Robotics (ISRAEL)
Global Clearance Solutions (GCS) (SWITZERLAND)
GM Advanced Technology (USA)
Guardbot (USA)
HDT Global (USA)
HORIBA MIRA (UK)
Howe and Howe Technologies (USA)
Hyundai Rotem (SOUTH KOREA)
IAI Lahav (ISRAEL)
ICOR Technology (CANADA)
ICP NewTech (IRELAND)
Inspector Bots (USA)
Inuktun Services (CANADA)
John Deere (USA)
JSC 766 UPTK (RUSSIA)
Katmerciler (TURKEY)
Leonardo (ITALY)
Leonardo Defence Systems (ITALY)
Lockheed Martin Missiles and Fire Control (USA)
M-Tecks Robotics (FRANCE)
Mechatronig Unmanned Systems (CANADA)
Med-Eng (CANADA)
Milrem (ESTONIA)
National Robotics Engineering Center (USA)
Nexter Robotics (FRANCE)
NIC Instruments (UK)
Nikola Motor Company (USA)
Northrop Grumman Remotec (USA)
Oguzkagan Savunma (TURKEY)
Omnitech Robotics (USA)
Oshkosh Defense (USA)
Pearson Engineering (UK)
Proytecsa (SPAIN)
QinetiQ North America (USA)
Raytheon (USA)
RE2 Robotics (USA)
ReconRobotics (USA)
Robosoft (FRANCE)
Roboteam (ISRAEL)
Roboteam (US) (USA)
Robotics Inventions (POLAND)
Sarcos (USA)
Science & Technology Research Institute for Defence (STRIDE) (MALAYSIA)
Taurob (AUSTRIA)
Tecdron (FRANCE)
Tekever (PORTUGAL)
Telerob (GERMANY)
TORC Robotics (USA)
Ukroboronprom (UKRAINE)
Łukasiewicz - PIAP (POLAND)

Propulsion/power systems

Denchi Power (UK)
DOK-ING (CROATIA)
EaglePicher Yardney Division (USA)
Enersys (USA)
Mettle Ops (USA)
Protonex Technology (USA)
SAFT (FRANCE)
Timoney Technology (IRELAND)
Ultra Electronics USSI Fuel Cell Products (USA)

Research/testing

Anthony Best Dynamics (UK)
BAE Systems Underwater Systems (UK)
Boston Dynamics (USA)
HORIBA MIRA (UK)
King Abdullah II Design and Development Bureau (JORDAN)
Kratos Unmanned Systems Division (USA)
Mercury Defense Systems (USA)
Mercury Systems (USA)
Robotics Inventions (POLAND)
Scientific Applications & Research Associates (SARA) (USA)
Sierra Lobo (USA)
Southwest Research Institute (USA)
SRI International (USA)
TORC Robotics (USA)
Łukasiewicz - PIAP (POLAND)

Training/simulation

Boston Dynamics (USA)
Carnegie Robotics (USA)
Global Clearance Solutions (GCS) (SWITZERLAND)
Mercury Defense Systems (USA)
MVRsimulation (USA)
SDS International-Advanced Technologies Division (USA)
Thales InterSense (USA)

UMVs

Associations

American Society of Naval Engineers (USA)

Cables/connectors

ABTEL Universal Technology (USA)
All Oceans (UK)
AML Oceanographic (CANADA)
BlueZone Group (AUSTRALIA)
Caley Ocean Systems (UK)
Forum Energy Technologies (USA)
Glenair (USA)
Hydracon Subsea (USA)
Hydro Cable Systems (UK)
International Submarine Engineering (CANADA)
Kongsberg Defence & Aerospace (NORWAY)
Kongsberg Maritime (NORWAY)
Marine Solutions (SOUTH AFRICA)
Mariner (GREECE)
Oceaneering International Services (UK)
OceanTools (UK)
Phoenix Dynamics (UK)
Princetel (USA)
Rolls-Royce (UK)
Rolls-Royce North America (USA)
Saab Seaeye UK (UK)
Scorpion Oceanics (UK)
SEA CON (UK)
SEA CON Brantner & Associates (USA)
Seatronics (UK)
Shark Marine Technologies (CANADA)
TE Connectivity – Aerospace, Defense & Marine (USA)
Teledyne Impulse-PDM (UK)
Teledyne TSS (UK)
TT electronics AB Connectors (UK)
Umbilicals International (USA)
Unique System (SEA) (SINGAPORE)
VideoRay (USA)

Communications/data links

ALSEAMAR Alcen (FRANCE)
Aquatec Group (UK)
Aselsan (TURKEY)
Atlas Elektronik (GERMANY)
BlueZone Group (AUSTRALIA)
BMTI ALSEAMAR (FRANCE)
Clemaco Contracting (BELGIUM)
DSPComm (AUSTRALIA)
Forum Energy Technologies (USA)
Kongsberg Defence & Aerospace (NORWAY)
Kongsberg Maritime (NORWAY)
L3 OceanServer (USA)
Mariner (GREECE)
Microspace (ITALY)
Moog Singapore (SINGAPORE)
Planet Ocean (UK)
Proserv (UK)
Radionor Communications AS (NORWAY)
Scanmatic (NORWAY)
TE Connectivity – Aerospace, Defense & Marine (USA)
Thales Australia (AUSTRALIA)
Thales Underwater Systems (FRANCE)
Ultra Electronics Ocean Systems (USA)
Ultra Electronics ProLogic (USA)
VestDavit (NORWAY)
WFS Technologies (UK)

Computer software/hardware

Forum Energy Technologies (USA)
Kongsberg Defence & Aerospace (NORWAY)
Kongsberg GeoAcoustics (UK)
Kongsberg Maritime (NORWAY)
L3 Chesapeake Sciences Corporation (USA)

L3 OceanServer (USA)
LEAD Technologies (USA)
Maritime Applied Physics (USA)
Oceanic Imaging Consultants (USA)
Ruco (UK)
Scientific Applications & Research Associates (SARA) (USA)
SeaRobotics (USA)
SeeByte UK (UK)
Shark Marine Technologies (CANADA)
TATA Advanced Systems (INDIA)
Teledyne RESON (DENMARK)
Teledyne RESON Inc (USA)
Teledyne TSS (UK)
Triton Imaging (USA)

Consultancy

Advanced Subsea Services (CANADA)
All Oceans (UK)
BlueLaguna (USA)
BMT Defence Services (UK)
Bourbon Offshore DNT (ITALY)
Clemaco Contracting (BELGIUM)
DOF Subsea (NORWAY)
DOF Subsea UK (UK)
JFD - Bibra Lake (AUSTRALIA)
Kongsberg Defence & Aerospace (NORWAY)
Kongsberg Maritime (NORWAY)
Molchan Marine Sciences (USA)
Naval Group (FRANCE)
NSWC Crane Division (USA)

Control stations

Georgia Tech Research Institute (USA)
Idrobotica (SWITZERLAND)
Kongsberg Defence & Aerospace (NORWAY)
Kongsberg Maritime (NORWAY)
Naval Research Lab (USA)

Data storage

Forum Energy Technologies (USA)
Kongsberg Defence & Aerospace (NORWAY)
Kongsberg Maritime (NORWAY)
L3 Chesapeake Sciences Corporation (USA)

Displays

Kongsberg Defence & Aerospace (NORWAY)
Kongsberg Maritime (NORWAY)

EO/IR/UV systems

Kongsberg Defence & Aerospace (NORWAY)
Kongsberg Maritime (NORWAY)

Mechanical systems

Kongsberg Defence & Aerospace (NORWAY)
Kongsberg Maritime (NORWAY)
NSWC Crane Division (USA)

Military/EW systems

Aselsan (TURKEY)
BlueZone Group (AUSTRALIA)
Deep Ocean Engineering (USA)
ECA Group (FRANCE)
Forum Energy Technologies (USA)
International Submarine Engineering (CANADA)
Kongsberg Defence & Aerospace (NORWAY)
Kongsberg Maritime (NORWAY)
L3Harris ASV (UK)
Leonardo Defence Systems (ITALY)
Lockheed Martin Sippican (USA)
Naval Group (FRANCE)
Naval Research Lab (USA)
Saab Kockums AB (SWEDEN)
Subsalve (USA)
Thales Australia (AUSTRALIA)
Thales Underwater Systems (FRANCE)
Ultra Electronics Ocean Systems (USA)

Navigation/guidance

Advanced Navigation (AUSTRALIA)
ALSEAMAR Alcen (FRANCE)
Applied Acoustic Engineering (UK)
Atlas Elektronik (GERMANY)
Comex (FRANCE)
ECA Group (FRANCE)
Forum Energy Technologies (USA)
Georgia Tech Research Institute (USA)
International Submarine Engineering (CANADA)
iXBlue (UK)
iXBlue SAS (FRANCE)
Klein Marine Systems (USA)
Kongsberg Defence & Aerospace (NORWAY)
Kongsberg Maritime (NORWAY)
L3 OceanServer (USA)
Microspace (ITALY)
Mitsui Engineering & Shipbuilding (JAPAN)
MTC America Enterprises (USA)
MTC Industries and Research (ISRAEL)
Naval Research Lab (USA)
NSWC Crane Division (USA)
NTGS (SPAIN)
Oceaneering International (USA)
Planck Aerosystems (USA)
Planet Ocean (UK)
Proserv (UK)
Sea and Land Technologies (SINGAPORE)
Seatronics (UK)
Shark Marine Technologies (CANADA)
Sonardyne (UK)
Teledyne TSS (UK)
Tetis Pro (RUSSIA)
Watson Industries (USA)
Xsens (NETHERLANDS)

Platforms – sub-sea AUV

Atlas Elektronik (GERMANY)
Atlas Elektronik UK (UK)
BAE Systems (UK)
BGN Technologies (ISRAEL)
ECA Group (FRANCE)
Fraunhofer Institute (GERMANY)
General Dynamics Mission Systems (USA)
Houston Mechatronics (USA)
Kongsberg Maritime (NORWAY)
Lockheed Martin (USA)
Phoenix International Holdings (USA)
Poly Technologies (CHINA)
SeaLandAire Technologies (USA)
TE Connectivity – Aerospace, Defense & Marine (USA)
Teledyne Gavia (ICELAND)
Teledyne Webb Research (USA)

Platforms – sub-sea ROV

Aquabotix Technology (USA)
Atlas Elektronik (GERMANY)
Atlas Elektronik UK (UK)
Deep Ocean Engineering (USA)
ECA Group (FRANCE)
Gate Elektronik (TURKEY)
General Dynamics Mission Systems (USA)
Houston Mechatronics (USA)
Idrobotica (SWITZERLAND)
Kongsberg Maritime (NORWAY)
Lighthouse (ITALY)
OceanScan (PORTUGAL)
Planet Ocean (UK)
Saab Seaeye UK (UK)
Saab Seaeye USA (USA)
Strategic Robotic Systems (USA)
TE Connectivity – Aerospace, Defense & Marine (USA)
Teledyne Benthos (USA)
Teledyne SeaBotix (USA)
TR Research & Development (TURKEY)

Platforms – USV

Aeronautics (ISRAEL)
Al Marakeb (UAE)
Al Seer Marine (UAE)
Alcore Technologies (FRANCE)
ALSEAMAR Alcen (FRANCE)
Aselsan (TURKEY)
Atlas Elektronik (GERMANY)
Atlas Elektronik UK (UK)
BAE Systems (UK)
Beijing Sifang Automation (CHINA)
Boeing Defense, Space & Security (USA)
Clearpath Robotics (CANADA)
Deep Ocean Engineering (USA)
ECA Group (FRANCE)
Elbit Systems (ISRAEL)
Gate Elektronik (TURKEY)
General Dynamics Mission Systems (USA)
Houston Mechatronics (USA)
IAI Israel Aerospace Industries (ISRAEL)
Kongsberg Maritime (NORWAY)
Kratos Unmanned Systems Division (USA)
L3 Calzoni (ITALY)
L3Harris ASV (UK)
LIG Nex1 (SOUTH KOREA)
Lockheed Martin (USA)
Maritime Applied Physics (USA)
Ocean Aero (USA)
OceanScan (PORTUGAL)
Quantum-Systems (GERMANY)
Rafael Advanced Defense Systems (ISRAEL)
Saab Seaeye UK (UK)
SeaLandAire Technologies (USA)
SeaRobotics (USA)
Shark Marine Technologies (CANADA)

ST Engineering Electronics (SINGAPORE)
Tecdron (FRANCE)
Teledyne Benthos (USA)
Teledyne Gavia (ICELAND)
Teledyne SeaBotix (USA)
Teledyne Webb Research (USA)
Textron Systems Unmanned Systems (USA)
ThyssenKrupp Marine Systems (GERMANY)
Top I Vision (ISRAEL)

Research/testing

All Oceans (UK)
ALSEAMAR Alcen (FRANCE)
Atlas Maridan (DENMARK)
BMT Defence Services (UK)
Fraunhofer Institute (GERMANY)
General Dynamics Mission Systems (USA)
Georgia Tech Research Institute (USA)
Korean Institute of Ocean Science and Technology (SOUTH KOREA)
National Defense Industrial Association (USA)
National Oceanography Centre Southampton (UK)
Naval Research Lab (USA)
Naval Undersea Warfare Center (USA)
NTGS (SPAIN)
Oceaneering International (USA)
Office of Naval Research (USA)
QinetiQ Maritime Autonomy Centre (UK)
SeaRobotics (USA)
Sierra Lobo (USA)
TechnipFMC (FRANCE)
VideoRay (USA)
Wales UAS Environment (UK)

Robotics

ALSEAMAR Alcen (FRANCE)
ECA Group (FRANCE)
International Submarine Engineering (CANADA)
LIG Nex1 (SOUTH KOREA)
Liquid Robotics (USA)

Sonar/acoustics

ABTEL Universal Technology (USA)
ALSEAMAR Alcen (FRANCE)
AML Oceanographic (CANADA)
Applied Acoustic Engineering (UK)
Aquatec Group (UK)
Atlantas Marine (UK)
BlueZone Group (AUSTRALIA)
Chelsea Technologies Group (UK)
CodaOctopus Products (UK)
Desert Star Systems (USA)
ECA Group (FRANCE)
EdgeTech (USA)
Electronic Design Systems (UK)
Harris Communication Systems (USA)
Hydroacoustics (USA)
iXBlue (UK)
iXBlue SAS (FRANCE)
J W Fishers Mfg (USA)
Klein Marine Systems (USA)
Kongsberg Defence & Aerospace (NORWAY)
Kongsberg GeoAcoustics (UK)
Kongsberg Maritime (NORWAY)
Kongsberg Underwater Technology (USA)
Kraken Sonar Systems (CANADA)
L3 OceanServer (USA)
L3Harris ASV (UK)
Leonardo Defence Systems (ITALY)
Lord MicroStrain (USA)
Marine Electronics (UK)
Marine Solutions (SOUTH AFRICA)
Marine Sonic (USA)
Mariner (GREECE)
Naval Research Lab (USA)
Oceanic Imaging Consultants (USA)
Phoenix International Holdings (USA)
Scanmatic (NORWAY)
Sea and Land Technologies (SINGAPORE)
Seatronics (UK)
Shark Marine Technologies (CANADA)
Signal Systems Corporation (USA)
Sonardyne (UK)
Sonavision (UK)
Symphotic TII (USA)
Teledyne Benthos (USA)
Teledyne RESON (DENMARK)
Teledyne RESON Inc (USA)
Teledyne TSS (UK)
Tetis Pro (RUSSIA)
Thales Australia (AUSTRALIA)
Thales Underwater Systems (FRANCE)
Ultra Electronics Ocean Systems (USA)
Unique System (SEA) (SINGAPORE)
VideoRay (USA)
Wärtsilä ELAC Nautik (FINLAND)

Sub-sea ROV/AUV services

Advanced Diving Services (USA)
Advanced Marine Innovation Technology Subsea (UK)
Advanced Subsea (FRANCE)
Atlas Maridan (DENMARK)
Bibby Offshore (UK)
Bourbon Offshore DNT (ITALY)
DOF Subsea (NORWAY)
DOF Subsea UK (UK)
Dominion Diving (CANADA)
ECS Special Projects (UK)
Forum Subsea Rentals UK (UK)
Fugro Subsea Services (UK)
General Dynamics Mission Systems (USA)
Helix Energy Solutions (USA)
Helix Energy Solutions (SINGAPORE)
International Submarine Engineering (CANADA)
James Fisher Rumic (UK)
Korean Institute of Ocean Science and Technology (SOUTH KOREA)
Lord MicroStrain (USA)
Mermaid Offshore Services (THAILAND)
Molchan Marine Sciences (USA)
Phoenix International Holdings (USA)
QinetiQ Maritime Autonomy Centre (UK)
Saab Seaeye USA (USA)
SeaView Systems (USA)
Strategic Robotic Systems (USA)
TE Connectivity – Aerospace, Defense & Marine (USA)
TechnipFMC (USA)
Tetis Pro (RUSSIA)
TR Research & Development (TURKEY)

Training/simulation

Atlantas Marine (UK)
ECA Group (FRANCE)
Forum Energy Technologies (USA)
James Fisher Defence (UK)
JFD - Bibra Lake (AUSTRALIA)
Lockheed Martin Sippican (USA)
Marine Solutions (SOUTH AFRICA)
Oceaneering International Services (UK)
Oceanic Imaging Consultants (USA)
QinetiQ Maritime Autonomy Centre (UK)
Saab Seaeye USA (USA)
Shark Marine Technologies (CANADA)
Teledyne SeaBotix (USA)
Thales Australia (AUSTRALIA)
Thales Underwater Systems (FRANCE)

Video/imaging/cameras

ABTEL Universal Technology (USA)
AC-CESS (UK)
Advanced Subsea Services (CANADA)
Aselsan (TURKEY)
Atlantas Marine (UK)
BlueZone Group (AUSTRALIA)
CodaOctopus Products (UK)
Comex (FRANCE)
Controp Precision Technologies (ISRAEL)
ECA Group (FRANCE)
Electronic Design Systems (UK)
Forum Energy Technologies (USA)
Forum Subsea Rentals UK (UK)
Hydroacoustics (USA)
J W Fishers Mfg (USA)
James Fisher Defence (UK)
JFD - Bibra Lake (AUSTRALIA)
Kongsberg Defence & Aerospace (NORWAY)
L3 OceanServer (USA)
Marine Solutions (SOUTH AFRICA)
Mariner (GREECE)
OceanScan (PORTUGAL)
OceanTools (UK)
Remote Ocean Systems (USA)
Seatronics (UK)
Shark Marine Technologies (CANADA)
Silvercrest Submarines (UK)
Symphotic TII (USA)
Teledyne Bowtech (UK)
Teledyne TSS (UK)
Unique System (SEA) (SINGAPORE)
VideoRay (USA)

SUPPLIERS

3W International
Hollerstraße 12, Bad Homburg,
61350, GERMANY
info@3w-international.com
www.3w-international.com
Tel: +49 6172 8089 340

412th Test Wing
305 East Popson Avenue, Edwards
Air Force Base, CA 93524, USA
www.edwards.af.mil
Tel: +1 661 277 1110

5-D Systems
1 Chisholm Trail, Suite 3200,
Round Rock, TX 78681, USA
erin.garner@5dsystems.com
www.5dsystems.com
Tel: +1 512 238 9840

558 ARP JSC
7 let VLKSM, Baranovichi,
225320, BELARUS
box@558arp.by
www.558arp.by
Tel: (+375 163) 42-99-54

Aaronia AG
Dorfstrasse 10a,
54597 Euscheid, GERMANY
mail@aaronia.de
https://aaronia.de
Tel: +49 6556 9019 355

Abbott Technologies
8203 Vineland Avenue,
Sun Valley, CA 91352, USA
http://abbott-tech.com
Tel: +1 800 367 8200

ABTEL Universal Technology
4403 Sanctuary Halls,
Spring, TX 77388, USA
sales@abteluniversaltechnology.com
www.abteluniversaltechnology.com
Tel: +1 713 389 5208

AC Corporation
Otemachi First Square East Tower
4Fl, Chiyoda-Ku, Otemachi 1-5-1,
Tokyo, 100-0004, JAPAN
adrew@eishi-kk.com
www.ace-performance.com
Tel: +81 3 5219 1446

AC-CESS
Tyrebagger Works, Clinterty,
Kinellar, Aberdeen, AB21 0TT, UK
info@ac-cess.com
www.ac-cess.com
Tel: +44 1224 790 100

ACES Dynamic Instruments
4393 Viewridge Avenue, Suite C,
San Diego, CA 92123, USA
pwhitten@dynamicinst.com
www.acessystems.com/military-aviation
Tel: +1 858 810 7900

ACP Composites
78 Lindbergh Avenue,
Livermore, CA 94551, USA
info@acpsales.com
www.acpsales.com
Tel: +1 925 443 5900

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19810 North 7th Avenue,
Phoenix, AZ 85027-4741, USA
crc.acss@L-3com.com
www.acss.com
Tel: +1 623 445 7000

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Geophysical Institute, UAF, 2160
Koyukuk Drive, PO Box 757320,
Fairbanks, AK 99775, USA
http://acuasi.alaska.edu
Tel: +1 907 455 2016

AD Aerospace
Abbots Park, Preston Brook,
Cheshire, WA7 3GH, UK
enquiry@ad-aero.com
www.ad-aero.com
Tel: +44 1928 280300

Adacel
9677 Tradeport Drive,
Orlando, FL 32827-5318, USA
info@adacel.com
www.adacel.com
Tel: +1 407 581 1560

Adcole Maryland Aerospace
2145 Priest Bridge Dr,
Suite 15, Crofton, MD 21114, USA
discover@adcolemai.com
www.adcolemai.com
Tel: +1 410 451 2505

Adcom Systems
Industrial City of Abu Dhabi-ICAD,
Mussafah, Abu Dhabi, UAE
Tel: +971 2 5500 630

Adimec Advanced Image Systems
P.O. Box 7909, 5605 SH Eindhoven,
NETHERLANDS
Strategy@adimec.com
www.adimec.com
Tel: +31 40 2353 900

ADS Group
Salamanca Square,
9 Albert Embankment,
London, SE1 7SP, UK
www.adsgroup.org.uk
Tel: +44 20 7091 4500

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16 Technology Dr,
Suite 148, Irvine, CA 92618, USA
contact@adsyscontrols.com
www.adsyscontrols.com
Tel: +1 949 682 5430

Advanced Component Engineering
1900 NE 3rd St., Suite 106232,
Bend, OR 97701, USA
kevin@myairport.com
www.heavy-fuel-engines.com
Tel: +1 805 996 0800

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Rheinmetall's Mission Master SP in its cargo configuration. (Photo: Rheinmetall)

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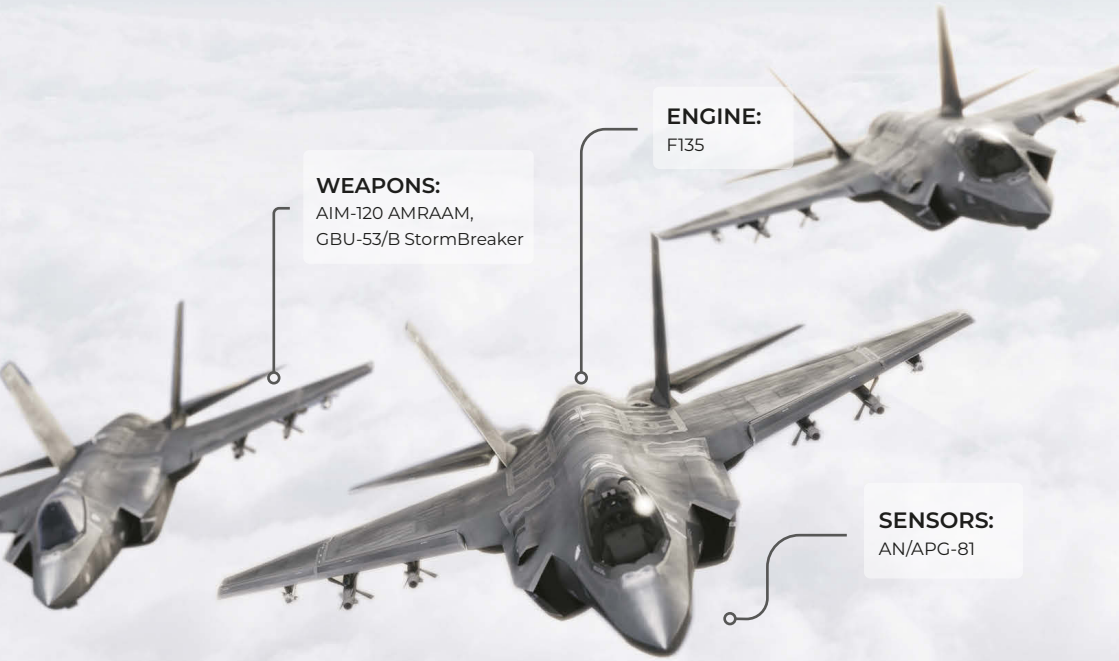

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