



# SHOW BUSINESS

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RAYTHEON EMIRATES TO CO-PRODUCE COYOTE C-UAS INTERCEPTOR IN UAE

## BIG BREAKTHROUGH

**F**ahad Al Mheiri, managing director of Raytheon Emirates, has been enthusing about his company's plans to establish a local final assembly, integration and test line for the Coyote counter-UAS interceptor within the Tawazun Industrial Park.

Al Mheiri was keen to stress that this was not just manufacturing components, but an actual end product,

providing the company with its first "real big product".

Achieving this without first undertaking smaller scale component manufacturing marks a "giant step" for Raytheon Emirates.

### Highly capable

Coyote is an agile, highly capable counter to a range of drone threats and is a relatively new programme of record, not a legacy product.

Al Mheiri hopes that the first assembly line outside the US will allow something that is now available only via the US foreign military sales (FMS) process to become available via direct commercial sales – "selling globally to the world".

He believes that the first Emirati-assembled Coyote will be delivered in a little over two years. But, before that, Emirati-built components for the Coyote interceptor will feed into

Raytheon's US production line.

This follows yesterday's MoU signatures with five UAE defence industry partners – EPI, Halcon, Lahab Defense Systems, Rockford Xellerix, and Miletria.

"Raytheon Emirates is proud to have worked alongside Tawazun to bring co-production of the Coyote interceptor to the UAE," Al Mheiri said.

"We know, from our nearly 40-year relationship with the UAE, that this country has the talent, infrastructure and government support to make an undertaking like this possible. This co-production of Coyote, a critical defence capability for countries that face an evolving drone threat, will simultaneously grow the local defence ecosystem while also enhancing Raytheon Technologies' global supply chain."

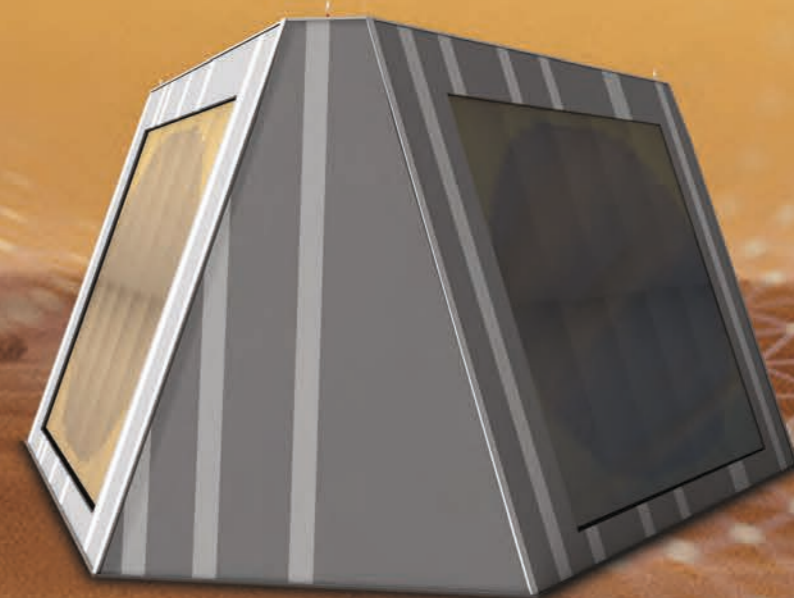
Emirati production of the Coyote interceptor, and its components, is only a first step for Raytheon Emirates, which hopes to help the company's suppliers develop their capabilities and to contribute components for many more Raytheon products.

There is, as yet, no formal local requirement for the Coyote, but Al Mheiri said that he is "not too worried about that, as we are looking at a programme with a global scale". ▲



Raytheon Emirates is proud to have worked alongside Tawazun to bring co-production of the Coyote interceptor to the UAE – Fahad Al Mheiri

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# Hot TIP: Signing up for new centre of excellence

A new centre of excellence for uncrewed systems is to open at Tawazun Industrial Park (TIP) to support the UAE Armed Forces. The facility, confirmed in a deal signed at IDEX yesterday, is a collaboration between Tawazun Council, Boeing and its subsidiary, Insitu.

The centre will employ a skilled Emirati workforce to

develop advanced capabilities to enhance the UAE Armed Forces' operational performance. It will perform aircraft engine overhauls, repairs, and serve as a training facility for operators in the region.

"The Tawazun economic programme is dedicated to supporting the UAE goal of establishing a core of advanced skills in the sector by collaborating with well-known international

military corporations like Boeing," said Abdulla Al Awani, chief economic programme officer at Tawazun Council.

"Lynn Fox, Insitu's president and chief executive officer, added: "Boeing and Insitu are committed to enhancing readiness and reducing costs for the UAE Armed Forces through localised maintenance, training and support."



Abdulla Al Awani (right), Lynn Fox, and Mike Woodward, vice president, international strategic partnerships, Boeing Defense, Space & Security, sign the deal at IDEX yesterday



### NEWS IN BRIEF

## Saab eyes NATO sale

Saab said at the show that it has offered its innovative GlobalEye aircraft in response to a request for information (RFI) from NATO's Support and Procurement Agency for a new generation of surveillance and control capabilities as part of the Alliance Future Surveillance and Control (AFSC) project.

The GlobalEye is a proven multi-domain airborne early warning & control (AEW&C) with three aircraft already in service with the UAE Air Force and Air Defence (and two on order) and two further aircraft ordered by Sweden.

The aircraft is equipped with an array of active and passive sensors providing long-range detection and identification of air, sea, and land targets, and in Emirati service it has already demonstrated an impressive ability to detect very small targets at very long ranges.



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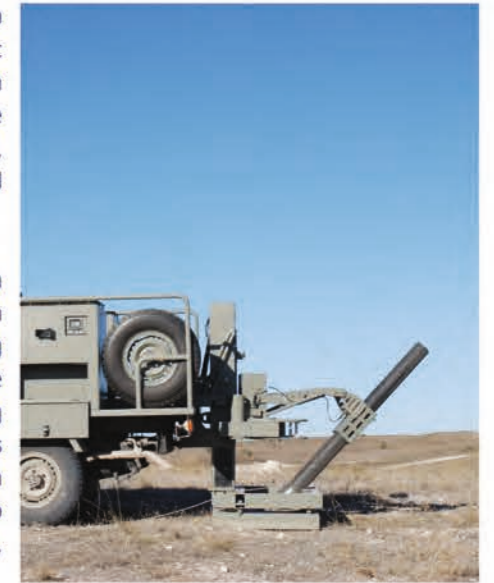


## IDEX 2023 -Streit Group and Milanion NTGS Sign MOU to Market and Supply ALAKRAN to International Markets



Streit Group and Milanion NTGS, through its UK entity, signed a memorandum of understanding (MoU) with to explore strategic opportunities to supply, market and fulfil the growing interest in ALAKRAN, the lightest mobile mortar system in the world. The agreement was signed by both parties at IDEX 2023, Abu Dhabi, where the ALAKRAN, integrated on two vehicles, is being showcased on Streit Groups stands (Outdoor: CP-219; Indoor: 12- A40).

ALAKRAN mobile mortar system is an effective, combat-proven system providing superior mobility, accuracy, speed and high firepower on the battlefield. With automatic aiming and re-aiming functions, ALAKRAN provides 81/120 mm mortar capabilities while transmitting all recoil force to the ground. Its patented barrel cooling system allows for sustained firing, solving operational problems faced by current mortar carriers. The system is user-friendly and can easily be integrated onto almost any 4x4 vehicle with the ability to adapt to all types of terrain including deserts, mud, snow and forests, and is heliborne-capable due to its lightweight design.



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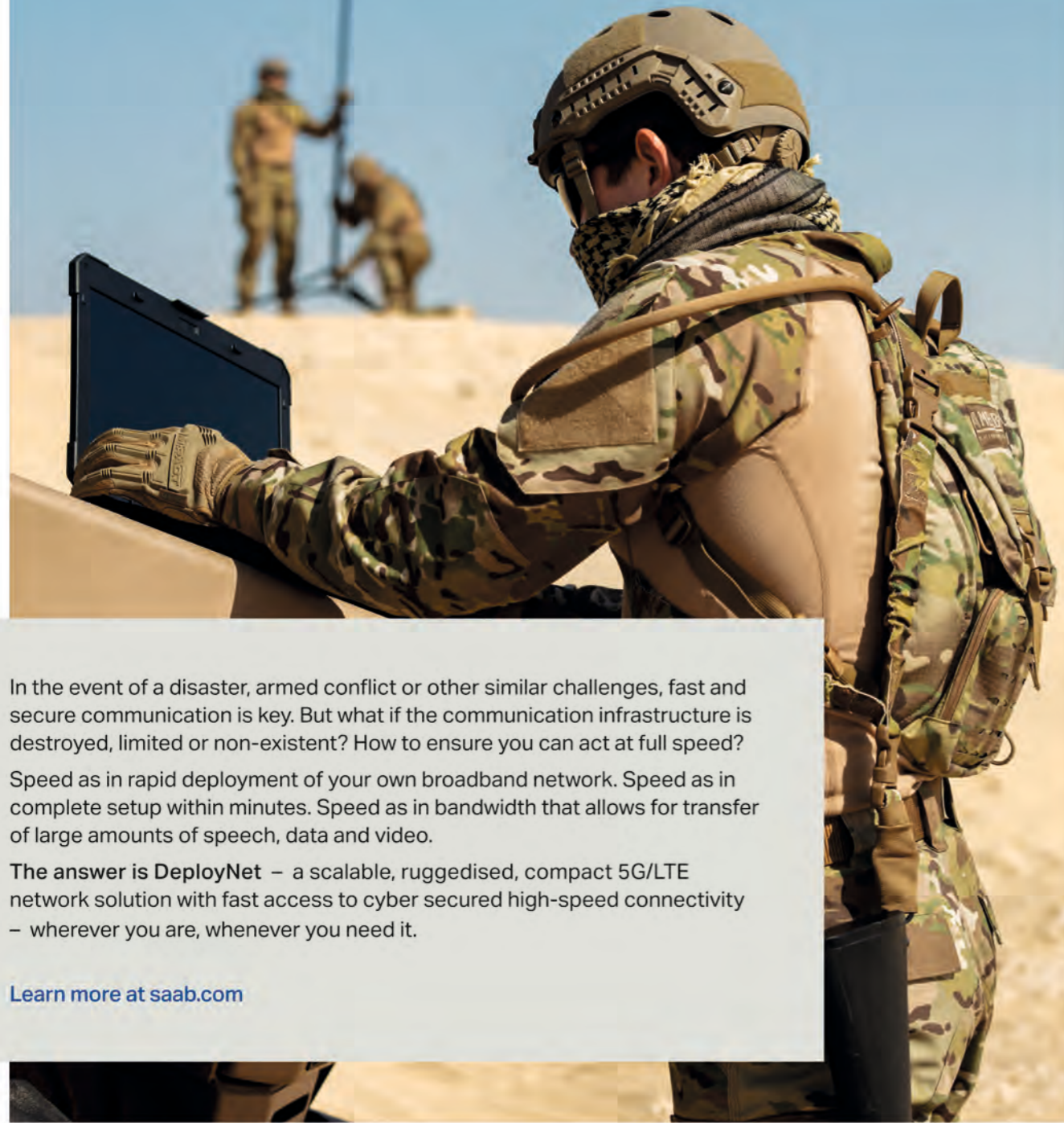
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# Collins connecting with a new audience

Collins Aerospace is showcasing, for the first time, the NavHub50 soldier mounted navigation solution that helps the warfighter keep connected with the global positioning system (GPS) and other navigation solutions.

“NavHub50 is part of a suite of navigation solutions and is currently in service with the US Army. Now, we are looking at how we can bring this capability to the international market,” said Sean Hodges-Jackson, Collins Aerospace’s regional business development director in charge of Middle East and Africa.

“In the military theatre environment, staying connected with your navigation timing is so critical to success. When the warfighter needs to go into the most demanding environment, to be able to keep coordinated with the rest of the community is really important. That is what NavHub50 provides,” he said.

The NavHub50 box not only has a GPS receiver, but also sensor fusion algorithms that connect with other sensors to provide a surety of information.

▶ Collins Aerospace’s Sean Hodges-Jackson with the NavHub50 soldier-mounted navigation solution on display



It can connect with a soldier’s watch or a hand-held device. It can also have a boot-mounted sensor as well.

“What is really neat about the boot-mounted sensor is that when

you start veering into a tunnel or forest, it can still track your movement,” Jackson said.

“The system has evoked keen interest in the region and we are excited about it,” he added.



## Start-ups face-off at IDEX

A first at IDEX yesterday was the Best Innovative Company in Defence Sector competition, which saw 34 out of 83 start-up firms up against each other in the Next Gen event. The award was launched to encourage entrepreneurship and innovation among start-ups in the defence and military industries sector. In the first stage yesterday, the firms showcased their innovations to a judging panel. Later in the show the ultimate winner will be announced.



At the deals of the day signing: (from left) Saeed Al Mansoori, chief executive of Capital Events; and Majed Al Jaber; and Zayed Al Meraikhi spokespersons of Tawazun Council

## Tawazun racks up more billion-dollar deals

Deals announced yesterday by the UAE’s Tawazun Council easily eclipsed the Monday total, with signed contracts worth AED 7.6 billion (\$2.07 billion).

A total of eight contracts were inked with local UAE firms worth AED 7.06 billion, and a further four signed with international organisations valued at AED 543 million, said Zayed Al Meraikhi, Tawazun Council spokesman.

The largest local deal, worth AED 4.7 billion, is with Edge Group subsidiary, Halcon, to supply Desert Sting 5 precision-guided missiles.

Another Edge Group firm, Adasi, has won an AED 1.33 billion contract to supply Shadow jet-powered loitering UAVs.

Halcon is also supplying its Hunter UAV systems in a deal valued at AED 1.1 billion.

Other local deals announced by Tawazun were with Trust International Group for its Minimi and its 7.62mm machine guns, with ADSB for its rescue boats, with International Golden Group for telecom systems, and with Marakeb to develop a multi-mission uncrewed boat.

On the international front, Tawazun agreed deals with Thales Six, Rheinmetall, and Harris International.

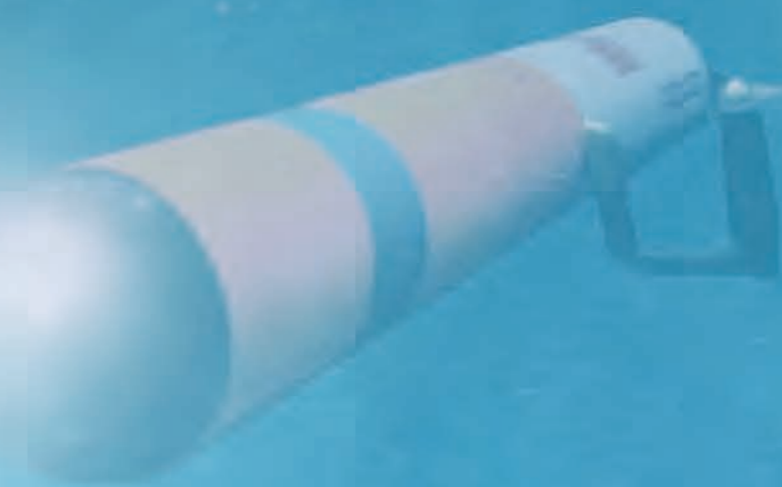
Asked at the press conference why UAE firms were being awarded a rising number of contracts, Al Meraikhi said: “Local companies have proved their competency.”

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# Speeder fast track with UAE support

Abu Dhabi is investing in an innovative dual-use high-performance VTOL aircraft produced by Mayman Aerospace – a JetPack brand. The UAE’s Tawazun Strategic Development Fund (SDF) signed a \$3 million investment deal for Mayman’s Speeder air utility vehicle (AUV).

The SDF’s strategy is to invest in dual-use technologies serving both defence and civilian sectors. It recognises Speeder’s transformative capability as a “unique and entirely new class of high-performance VTOL aircraft”.

Speeder delivers a previously impossible combination of compact size, speed, payload, and range performance by means of vectored thrust from its gimbaled turbine engines. Such high performance is possible thanks to the energy density of jet fuel, including sustainable aviation fuel.

The funds will be used to continue the Speeder flight-test programme and progress the aircraft towards certification.

“We recognise that Mayman Aerospace has demonstrated unique competence in this highly complex engineering and believe Speeder will deliver valuable, practical applications for defence forces in the very near future,” said Mohamed Mussafah Al Mazrouei, SDF’s director investments and portfolio management.

“We are also assessing a partnership to set up a Speeder manufacturing centre in Abu Dhabi, including flight-test, manufacturing, sales, and distribution throughout the MENA region.”

David Mayman, CEO and founder of Mayman Aerospace, said: “Speeder’s potential to support multiple military applications is unparalleled and, with the new



Above: SDF’s CEO Abdulla Naser Al Jaabari, (left) with David Mayman

investment, we can transition our high-speed VTOL aircraft from flight-test to robust commercialisation.”

Speeder builds on engine thrust vectoring and control technology that was pioneered and proven on

the original JetPack concept.

The multi-mission, turbine-powered VTOL platform is expected to serve various missions including demanding military, critical cargo, wildland firefighting, and disaster recovery, with preparations for flight taking just a few minutes, even in conditions that would ground a helicopter.



### SHOOT TO THRILL

Visitors to Ultimate Training Munitions (UTM) can have a go at firing a non-lethal firearm at a target – CEO Marwan Abu Ghazi is pictured with one of the bullets

## UTM targeting a safe training option

Visitors to Ultimate Training Munitions (UTM) at the UK pavilion can have a go at firing a non-lethal firearm at a target.

“We produce training ammunition for your firearm that makes your experience as real as it can get but in a safe way,” said Marwan Abu

Ghazi, chief executive officer in the UAE. “We offer a full line of marking rounds and blanks for pistol, rifle, sub-guns, and machine guns. We also offer silent rounds.”

The bullets are made from aluminium, but the heads are made of wax – there is no powder or lead.”

The company offers safe training to military and law enforcement schools, which is also more cost-effective. “A shooting range can cost millions to train people; this way, we can attend the schools and it is ensured safety but with real experience training,” said Abu Ghazi.

### ▲ NEWS IN BRIEF

#### Caracal unveils UAE’s first machine gun

Firearms maker, Caracal, has launched the CLMG 556 light machine gun, which the company claims is the first such weapon to be developed in the UAE.

The 5.56x45mm belt-fed, fully automatic gun weighs around 7.8kg and features an advance long stroke gas piston system.

“As the first machine gun to be developed in the UAE, the CLMG 556 has the end-user in mind. Modularly, ergonomics, weight, accuracy and durability have been the factors underpinning its development,” said Hamad Alameri, the chief executive officer of Caracal, part of the Edge Group.

The gun comes standard with a five-position telescopic adjustable stock and three-position adjustable cheek-piece. The modern features include a fixed iron sight with range adjustment and built-in bipod that has a three-position adjustable height.

# من يوم بدينا وطموحنا سامي



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## GAL-AMMROC has nose-to-tail solutions on show

Global Aerospace Logistics and the Advance Military Maintenance, Repair and Overhaul Center (GAL-AMMROC) is displaying its defence solutions, including its nose-to-tail aircraft servicing for the C-130.

On show are its capabilities for primary and secondary flight control repairs and replacements, engineering and aircraft services.

The company is also showcasing its expertise in Blackhawk engineering and technical advice, UH-60 aircraft modifications, and full components repair and overhaul solutions.

For the F-16, GAL-AMMROC is demonstrating its capabilities with a range from module replacements and implementing modifications to complete piece part disassembly, repair, replacement, overhaul, testing, and troubleshooting.

## South Africa's CheetahNAV on display

South African electronics company, Etion Create, is displaying the CheetahNAV vehicle navigation system, under its new brand identity.

Tobie van Loggerenberg, executive manager business development, said: "The Middle East remains a key market for us as South Africa's leading original design manufacturer (ODM), hence the display of our innovative CheetahNAV military vehicle navigation system. To date, we have concluded several contracts for the system in this region."

Several major international vehicle manufacturers are already using the system in their mine-resistant armoured protected (MRAP) and other vehicles, he said.

The CheetahNAV has been designed for harsh environments and extreme battlefield conditions. Using an inertial measurement unit comprising several aids, including an advanced algorithm, the CheetahNAV provides vehicle crews with outstanding situational awareness, according to the company.

The system provides dead-reckoning horizontal position accuracy of 0.2% of distance travelled, equivalent to only 200 metres over a distance of 100km – even in a situation where the vehicle crew is denied satellite navigation.

According to Loggerenberg, the system is offered with a multi-language option for the export market.



Brand new: The CheetahNAV vehicle navigation system

"And we are open to technology transfer to enable indigenous manufacturing," he added.

Etion Create is now a division within the South African industrial company's Reunert Applied Electronics Holdings.

Referring to new brand identity, Loggerenberg said: "It was felt that the name Etion Create is well-known and firmly established in the Middle East, an important market for our defence solutions. At the same time, a new identity, coupled with a fresh look and feel, including the addition of the acronym EC, aligns the business perfectly with Reunert to take us to a new level of service to our customers."

## Al Tariq unveils new missile

Edge's Al Tariq is unveiling a newer shorter-range Al Tariq-X missile at its stand.

The company is positioning the precision-guided munition as a low-cost option to its portfolio of larger longer-range Mk 80-series weapons. The X-series PGM will eventually be rebranded.

Theunis Botha chief executive, Al Tariq, said: "We have taken the body from the Mk 81/82s and fitted it with flip-up fins for an increased load out, which means the aircraft could be fitted with four on a rack, while any of the three different seeker heads – semi-active laser (SAL), global navigation satellite system (GNSS) or infra-red – found on the Mk 81/82 can be fitted."

The Al Tariq-X can be dropped at up to 40,000ft and travel at Mach 0.9 with a maximum 40km range. "Our aim was to reduce the size of the missile so that it can be fitted to a Super Tucano, Calidus



Al Tariq is showing off its new more cost-effective Al Tariq-X PGM, suited for use on turboprop aircraft

B-250 or AT 802 Archangel type of aircraft," explained Botha.

Al-Tariq already manufactures the combat-tested and proven Al Tariq range – a flexible family of bomb kit systems used on the Mk 81 and Mk 82 aerial weapons.

Converting unguided aerial weapons into high-precision, longer-range focused munitions, using a range of guidance and propulsion technologies, the system's modular nature and the

flexibility of its programming, enable it to adapt to new priorities as missions evolve.

Three years ago they were upgraded with new block 2 enhancements that host improvements like an improved navigation system.

The Al Tariq PGMs are in operational use by the UAEAF&AD on F-16s and Mirage 2000-9s and the Egyptian Air Force.

### NEWS IN BRIEF

#### A winning idea from Verdandi

SensusQ is launching its mobile app, Verdandi, which allows users to build observation network capabilities.

Verdandi reports information from the field, replacing e-mail and other messaging services with a single tool.

Reported pictures, video, or leads with metadata, are immediately added to the Winning Mind intelligence management system. When linked with existing knowledge, the information becomes available for further analysis.

The app runs on any commercial phone and communication is one-way, ensuring that information can be submitted without revealing anything else to the user, or anyone else with physical access to the reporting device.

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United Kingdom

BAE Systems’ training capabilities go well beyond the supply of hardware but, as Alan Warnes reports, the famous Hawk shouldn’t be written off just yet

## Why the humble Hawk still has plenty to offer

The Hawk production line at BAE Warton in the UK may have delivered its last advanced jet trainer, but the company is still as active as ever in the training business.

Now, instead of developing and building Hawks, the aerospace giant is concentrating its efforts on artificial intelligence (AI) and simulation in tandem with the flying training.

As Tim Colebrook, BAE Systems strategy manager, next generation training said: “We are platform agnostic, but our focus at the moment is with the Hawk. It is still relevant and can easily be upgraded. Now we are focused on technology and trying to bridge the gap between advanced jet training and frontline ops.”

Colebrook continued: “As a company, we feel synthetics play a big part. You don’t just get the assets, the air space, and the ranges to deliver skilled pilots; you also need to grow them into a capable frontline asset. That’s the direction we want to take it, but obviously we have to ensure the airborne

experience is right.”

At the Bahrain International Airshow last November, BAE Systems was spearheading a partnership with two other technology partners – Lincoln UK-based Inzpire, with its military flying training experience, and Irish company, VRAI (Virtual Reality and Artificial Intelligence).

The Royal Bahraini Air Force (RBAF) operates six Hawk Mk129s. However, the first brand new F-16C/D Block 70s are scheduled to arrive in 2024 with the very capable Northrop Grumman APG-85 AESA radar and, consequently, there will be a need to master that aircraft’s new capabilities.

### VR and AI upgrade

Rather than buy a new advanced jet trainer, BAE Systems is proposing that customers augment their existing aircraft with virtual reality and AI.

In Bahrain, the pilot output is being increased to cope with the additional 16 Block 70 F-16C/Ds, which might require the RBAF

**Rather than buy a new advanced jet trainer, BAE Systems is proposing that customers augment their existing aircraft with virtual reality and AI...**

being cleverer with the Hawks. As Colebrook explained: “You can’t keep the training running 24/7; not only would the instructors be exhausted, the number of hours being put on a Hawk’s airframe would rise substantially, leading to a review in support.

“Instead, you could populate some of the training with simulators. While every nation has a preference with the flying/sim balance – we consider the preference, affordability, platform availability and instructor availability before offering a solution. What we are doing is trying to find the right partners, find the right technologies to create a better more efficient training experience – with open architecture plug-in-and-play systems.”

BAE Systems announced on November 22, shortly after the Bahrain show, that a memorandum of understanding (MoU) had been signed with US-based Red 6, an augmented reality technology company at the forefront of synthetic air combat training.

The collaboration will explore ways to combine BAE Systems’ experience in delivering training to military forces alongside its expertise in helmet-mounted displays, with Red 6’s breakthrough advanced tactical augmented reality systems (ATARS) technology.

ATARS enables pilots in real aircraft to train against, and interact with, synthetically generated entities in the sky.

You can understand why BAE is keen to work with Red 6. The company was seen flying two dual-seat home-built Berkut 540 canard aircraft during a January Red Flag exercise at Nellis Air Force Base in Nevada, demonstrating ATARS to the US Air Force, home to the big Red Flag exercise, during January and probably demonstrating ATARS to the USAF.

Daniel Robinson, founder and CEO of Red 6 said: “Readiness and lethality are critical if our war fighters are to prevail against near-peer adversaries. I’m thrilled that BAE Systems recognises the radical innovation that ATARS brings to drive the change in military flight training that is so desperately needed.”

While the UAE Air Force and Air Defence is withdrawing its Hawks from service, the Royal Saudi Air Force (64), Qatar Emiri Air Force (9), and the Royal Air Force of Oman (18) are all still flying theirs, as is the RBAF (6).

The Kuwait Air Force also has eight stored that could be brought back into service. There is still life in the Hawk! ▲



Most air forces in the Middle East are flying Hawk advanced jet trainers, and BAE Systems believes that, with new simulated/virtual technologies, they could get a new lease of life

Alan Warnes

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# PARAMOUNT



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# Historic 'working together' first

In what they describe as an 'historic first', Israel and the UAE participated in a joint uncrewed maritime demonstration at NAV-DEX.

The small vessel, which is intended to operate in the harbour and inshore mine countermeasures (MCM) role, uses autonomous systems, robotics, and advanced algorithms to allow a wide range of capabilities.

Edge, Abu Dhabi Ship Building (ADSB), and Israel Aerospace Industries (IAI) held the demonstration with a jointly produced autonomous vessel fitted with sensors, sonar, and imaging systems integrated into a partially or entirely remotely operated unified command and control system, which does not require human intervention.

The new system is being presented a year after a commercial cooperation agreement was signed between the companies, under which Edge and ADSB would use their capabilities in design, production, maintenance, adaptation, and conversion of commercial and other vessels.

ADSB will design the platform, integrate the sensors and control systems on board the vessel, and develop its operational concept. IAI will develop and supply the autonomous control system and integrate a range of dedicated sensors into the control unit.

Military applications made possible by autonomous vessels include intelligence-related activities, tracking, observation, border and coastal surveillance, mine-detection and anti-submarine warfare.

"The uncrewed maritime vessel we are exhibiting represents an

historic moment; for the first time cooperation between Israel and the UAE has resulted in an advanced technological product, which includes autonomous systems and robotics," said Boaz Levy, IAI's president & CEO.

"Our advanced technology allows us to leverage business opportunities, ensuring the growth of both companies for many customers around the world."

"David Massey, ADSB's CEO, added: "We are very pleased to

have worked with our partners to develop a cost-effective vessel, which minimises risks to personnel and can be put into production according to customer specifications significantly faster than larger vessels."



Heven sent: Bentzion Levinson, with the company's H2D55 – the first in a planned line-up of hydrogen-fuelled aircraft

## Heven helping to deliver drone solutions

Bentzion Levinson, founder and CEO of Heven Drones, is passionate about uncrewed air vehicles and the company's mission to help solve 'everyday problems' with their use.

The Israeli company manufactures multipurpose drones, helping to solve issues ranging from autonomous last-mile delivery, emergency response, and infrastructure repair.

It's latest drone, on display at IDEX, is the H2D55 – the first in a planned line-up of hydrogen-fuelled aircraft.

"Make way for the hydrogenation," said Levinson. "The H2D55 is made to address lithium battery-

powered drones' flight endurance and capacity limitations, in addition to the long-term environmental impact of lithium mining. Without needing to regularly replace batteries, hydrogen fuel cells will also lower long-term ownership costs."

The forthcoming models in the product line will be released over the next nine-months, and Levinson said they will improve upon the H2D55's payload capacity of 7kg, while maintaining a flight endurance of more than two hours.

"We are producing one that will be able to carry 30kg," he said.

"We are constantly pushing the limits of speed, endurance and flight time," said Levinson.

"Our cutting-edge hydrogen drone represents next-generation technology, providing a solution that is light, safe, clean and efficient, and endlessly versatile."

Heven Drones are created in-house at its state-of-the-art 20,000sqft production facility in the north of Israel.

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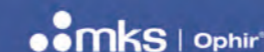


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Counter IED

## The Husky pack that are proven life-savers

As its name suggests, DCD Protected Mobility has a proud reputation for solutions to protect convoys and civilians on routes where high levels of landmine and IED threats remain. Sam Basch reports

**D**CD Protected Mobility is well-known for its Husky range of vehicle-mounted mine detection (VMMD) systems.

With Africa and the Middle East most exposed to improvised explosive device (IED) attacks, many countries in the region are seeking effective counter-IED technologies.

The company is at IDEX with its international partner, Qudra Industrial Company of Saudi Arabia.

"In conjunction with Qudra, we offer proven route clearance technologies, as well as military, police, security and border patrol vehicles," said DCD PM general manager Cornelius Grundling.

According to the partners, the Husky is the best in class, offering protection of the crew, system survivability, and relative ease of repairs in a short time to return the vehicle to service.

More than 1,600 Husky VMMDs are operational on five

continents, in service with 14 users including NATO.

Over more than 30 years, the vehicle has proven itself in high-threat military operations and humanitarian de-mining missions. Husky vehicles have been exposed to more than 7,500 detonations without a single direct operator casualty.

The Husky is available in two-person and single-person variants.

The single-cab Mk III was superseded by the substantially upgraded Husky 2G, which, in turn, was followed by the more cost-effective Husky 3G.

A recent innovation is the route clearance autonomous control kit (RC-PACK), demonstrating crewed, remotely-operated or fully autonomous mode based on the single-cab Mk III variant.

The Husky forms part of a route clearance package (RCP) operation, involving a convoy of vehicles. Route clearance aims to neutralise any impediment to battlefield mobility and save lives.

A pair of Husky 2G VMMDs heading the convoy detects along overlapping lanes, using a pulse induction (PI) sensor and step-frequency ground penetrating radar (GPR) for real-time 3D subsurface visualisation. The front-mounted GPR can penetrate to a depth of 1.4 metres to detect weapons caches or unexploded artillery shells.

Another Husky, equipped for stand-off interrogation, is usually at the rear, as are command-and-control and explosive ordnance disposal (EOD) vehicles, a medical detachment, infantry support sections in armoured personnel carriers, logistic vehicles, and a recovery vehicle.

DCD claims the Husky has the "lowest" human occupant profile of mine-detection vehicles, which offers the best operator survivability in the world.

In a detonation, the V-shaped hull protects the crew from injury, while the vehicle's frangible configuration allows the structural

components to 'break apart' in a predictable manner. This enables rapid in-field repairs, often completed within an hour or two, which increases system availability.

Grundling explained that the route clearance concept and field product support have been developed over many years in the Middle East and elsewhere, and proved very successful in saving lives. "Our philosophy of 'saving lives' extends to numerous 'toolkit' peripherals to deal with the ever-increasing sophistication of asymmetric warfare," he added.

These include an articulating manipulator arm to provide safe stand-off capability in the interrogation process. The arm extends over three metres and can excavate and lift cached items weighing up to 70kg.

Route clearance is undertaken in all types of terrain and all weather conditions. "Depending on road classification, terrain and the threat, the route clearance speed will vary up to 35km/h," Grundling explained. "However, in many cases, Husky vehicles will lead normal logistic convoys to deliver supplies at convoy speeds of 70km/h. It is therefore critical that all convoy vehicles be reliable, with good mobility and payload, while offering mine and ballistic protection."

Besides the Husky VMMD system, DCD and Qudra are showing the proven Springback HD and SD vehicles, as well as their capability to integrate peripherals, such as a roof-mounted remote weapon station for protection against snipers, fire suppression and RPG netting.

Also on show are the proven BASCO defensive barriers for protection of personnel and critical infrastructure, highlighting the philosophy of 'saving lives.' ▲



Husky VMMDs and a Springback SD vehicle. The single-cab variant in front demonstrates a remotely-operated or autonomous variant, followed by a Husky 2G with ground-penetrating radar

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# Stronger together

## UAE Coproduction of Coyote® Interceptor

Local manufacturing of Coyote Counter-UAS Interceptor to support growth in UAE's defense industry and expand Raytheon Technologies' global supply chain.



# Explosive detection 'first' from GCS

Swiss firm Global Clearance Solutions (GCS) is aiming to begin field tests of its newly launched multi-sensor detection system (MDS) 360 with an undisclosed customer based in the Gulf later this year.

The MDS 360, which was officially unveiled at the show yesterday, has a host of sensors to increase the find rate of a variety of explosive threats.

"We have spent years talking to users and talking to forces to understand their requirements," said Philipp von Michaelis, chief executive of GCS. "There has always been the gap between what the users expect and what the industry could offer."

"They want something that gives you a clear idea if there's any kind of threat in the ground, no matter what it is. It could be a landmine, an artillery shell, or an improvised explosive device (IED), and that's what this unit does," said von Michaelis.

"The fact that we're combining three different sensors that give you a unique and high-quality picture of the threat is what makes this product unique," he said. The sensors enable the operator to tell the difference between explosives and objects such as rocks or metal cans.

**Smart product**

With a prototype built, GCS will begin operational trials later this year. "We are going to collect data because we're using artificial intelligence to make the product smart," said von Michaelis. "We're going to deploy it to various regions, certainly here in the Middle East, but also Ukraine and some other markets to collect data."

GCS was established in 2015 and took a few years to develop its range of value-for-money mechanical mine clearance machines, as well as turnkey explosive remnants of war (ERW) clearance solutions.

Earlier this year it began delivering the first of 25 GCS-200 heavy-duty mine clearance units, funded by an international coalition of states, to Ukraine. Ukraine's army and emergency services are taking delivery of three GCS-200s this week, while the country's police force is already training with two of the smaller GCS-100 units.

GCS has also supplied and deployed both GCS-100 and GCS-200 units to the German Army and to forces in Colombia, Ireland, and Azerbaijan. The company is contracted by the UN Mine Action Service to conduct IED and unexploded ordnance clearance in Iraq



▲ Philipp von Michaelis, CEO of GCS, said its new explosive detection system will begin customer testing later this year



▼ Reflecting on new products: Lina Michaeli, sales territory manager Ophir Optics Products, pictured with one of the company's game-changing lenses

## Focusing in on a new lens

Optical technology provider, Ophir Optics Products, is exhibiting its latest lens – the Ophir SupIR 60-1200 MWIR f/4.

The new, high-precision lens is equipped with an automated zoom interface and continuous zoom to provide a sharp and clear image across the entire field-of-view and throughout the full zoom range.

This makes it ideal for the demanding requirements of counter-uncrewed systems (C-UAS) applications and long-range observation and surveillance systems.

"The SupIR 60-1200mm MWIR f/4 lens is a game-changer for homeland security and defence applications," said Dr Kobi Lasri, general manager. "The extended observation range, high-performance continuous zoom capabilities, and rugged design allow for early and accurate identification and tracking of fast-moving targets without losing sight."

The company is also showing its Ophir LightIR 18-225mm MWIR f/4 continuous zoom lens, the newest addition to the LightIR family of low SWaP, high-performance, motorised continuous zoom lenses.

Lasri said: "It combines low-SWaP capabilities, a detection range over 16+km, and cost-effective pricing. This makes it an enabler for advanced drone, UAV, and small gimbal thermal imaging applications."

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CMN Naval's new corvette design, the Seaguard 96

Alan Dron looks at the latest offerings and trends from CMN Naval

Images: CMN Naval

# USVs in the spotlight for CMN Naval

On show in Abu Dhabi is CMN Naval's new corvette design, the Seaguard 96. The vessel, with a displacement of around 2,000 tons, is designed to have a maximum speed of 28kts, endurance of more than 4,000nm and a comprehensive weapons fit. "However, the real focus of our group at the show is presenting sea-proven vessels that are tailored to every operational need of the different navies in the Arabian

Gulf," said Akram Safa, who handles business development activities at the company. "Building off our strong track record of delivering highly sophisticated vessels, such as the Baynunah Class Corvette, of which six were delivered to the UAE Navy in partnership with ADSB, we wish to show the world how far CMN Naval has come and, more importantly, where it is going." Among the areas under the spotlight at CMN Naval are

uncrewed surface vessels (USVs). These sprang to prominence late last year when Ukraine mounted an attack on Russia's Black Sea Fleet in Sevastopol with multiple USVs, coordinated with uncrewed aerial vehicles. "USVs have been a topic of interest for the group for almost a decade," said Safa. "We reached a milestone last March at the World Defence Show in Riyadh, where the commander of the Royal Saudi Naval Forces remotely piloted our own HSI 32 (32-metre high-speed interceptor) from our booth in Riyadh, as it navigated off the coast of Cherbourg, Normandy, where our French shipyard is located. "We are proud to say that this is the largest and fastest USV in its class on the high seas today. We are going one step further and are ready to release a new product line: our HSI USV class. These designs were developed based on the lines of our WP18, Ocean Eagle 45, and DV 15 vessels." Safa said that the naval shipbuilding market is vibrant and constantly evolving – just as threats

similarly evolve. "I would like to highlight two trends this year. Firstly, we are witnessing a shift to, and focus on, USVs. The benefits of USVs to their navies are numerous – no risk to human life, increasing the operational capabilities of the



CMN is delivering 59 32-metre HSIs to Saudi Arabia

vessel, cost savings, increasing autonomy, efficiency, etc. "The second trend relates to the increase in vessel use for non-traditional missions, such as humanitarian aid and disaster relief, as well as protecting the environment and the wealth inherent in it. "These range from coral reefs, to economic exclusive zones (EECs) and the 'blue economy'. The latter is a new framework being implemented by many of the countries we deal with. What falls within this framework varies among countries, but generally the focus is on (sustainably) exploiting, preserving and regenerating the marine environment." One major regional deal with which CMN Naval is involved is the ongoing delivery of 59 32-metre HSIs to Saudi Arabia. "This is a benchmark project as it is the first successful naval transfer of technology and localisation programme in the kingdom," said Safa. "Half of the vessels were built by our partners, Zamil Shipyards. "It is a project we are all very

proud of and speaks to the constant innovation and development that is engrained into the company ethos. At present, we are building for another Middle Eastern navy and have various programmes in the pipeline, some of which concern the region." The tense international situation in several regions of the world has seen many countries announce increases in their defence budgets. Does CMN Naval see some of those increased budgets being spent on navies? "This is definitely welcome news," said Safa. "However, between announcing and delivering, one always witnesses a time lag. I think 2023 will be the year where a lot of these announcements turn into concrete projects. "The geopolitical instability, the war in Ukraine, and the increased threat from uncrewed systems makes it essential that countries must continue to increase their resources to defend their sovereignty and their most important asset, their people." ▲

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Climate change, and the pressure to significantly reduce the defence sector's environmental footprint, is a major challenge. But what progress is being made?

# Emission Possible? Defence joins the fight to go green

MARK PILLING REPORTS

There are virtually daily advances in the commercial aviation world when it comes to sustainability, as the industry drives to achieve its target of net zero carbon emissions by 2050. The pace is undoubtedly slower on the defence aviation scene, but air arms and the manufacturing industry are now switching on rapidly to how sustainability influences their world.

For example, in mid-January, the UK's Royal Air Force used sustainable aviation fuel (SAF) blended with regular jet fuel to achieve the first air-to-air refuelling of a Eurofighter Typhoon and Lockheed C-130 Hercules aircraft.

The SAF was delivered by a Voyager tanker, mixed with regular fuel at a blend of 46%, with the RAF working with Air BP to re-certify the fuel.

SAF, which is made from waste-based sustainable feedstocks, such as used cooking oil, reduces lifecycle carbon emissions on average by up to 80% compared to conventional jet fuel.

Separately, a Voyager aircraft has, itself, completed a flight on 100% SAF, indicating its potential as a 'drop-in' fuel replacement for kerosene.

Most of the globe's major commercial airlines have signed offtake agreements for the limited quantities of SAF available today, and for more of the fuel as production ramps up this decade. Military operators are also beginning to trial SAF and consider its use in regular operations.

The RAF is a pioneer among air forces globally and in the testing of SAF. Back in November 2021, Air Chief Marshal, Sir Mike Wigston, chief of the UK's air staff said: "Climate change is a transnational



Several air forces are evaluating the all-electric Pipistrel Velis Electro two-seat trainer with a view to replacing traditionally powered types

challenge which threatens global resilience and our shared security and prosperity. I am determined to tackle this head on and have set the Royal Air Force the ambitious goal to be net zero by 2040. The way we power our aircraft will be a big part of achieving that goal."

The US Air Force is another studying the increased use of SAF, with a late-2022 defence spending plan indicating that the Department of Defense must prepare to increase the production and use of SAF in the Pentagon's aviation operations.

Major General Karsten Stoye, the head of Eurocontrol's civil-military cooperation division, neatly summarised the intersection of the defence world and the desire to reduce carbon emissions in an interview in May last year. "The increased global focus on the environment means that the military needs to play its part, without compromising the primary mission of defence and security," he said.

Global strategic consultancy, Roland Berger, has been specialising in aerospace and aviation sustainability since 2017 and is working on sustainability strategies for armed forces and the defence supplier eco-system.

"The top priority for defence forces is always delivering maximum operational effectiveness as cost-effectively as possible," explained Adam Healy, a principal consultant based at Roland Berger's London office.

"In discussions with senior defence officials, sustainability used to sit low down the priority list, but it has been climbing the ladder over the past two-three years," he explained.

**Under scrutiny**

"Just as in commercial aviation, the most obvious and largest source of emissions for defence operations, be they in the air, at sea, or on land, comes from the tailpipe," noted Healy, "though future CONOPS [concept of operations] may have implications here – for example, reducing emissions without sacrificing performance may be possible with the shift to using fewer large platforms and more small, nimble, ones that can be

propelled in different ways."

However, it is not just emissions that are under scrutiny. "Other aspects of sustainability are increasingly coming to the fore in defence – for example circular, clean, transparent, and traceable supply chains are increasingly important in a resource-constrained and geopolitically uncertain world," said Healy.

Measuring their carbon footprint is one of the main challenges faced by the military. The main contributor is predominantly emissions from burning fuel in operations. However, there are emissions from day-to-day activities like running buildings and transportation, in addition to those associated with the building of the aircraft, ships, and land vehicles operated by the military.

At present, militaries are not required to report their emissions, but the pressure to be more transparent is growing, said Miguel Lopez, senior consultant at Roland Berger. The commercial aviation industry's share of global greenhouse gas emissions is put at around 3%, with various estimates of the military's global share between 1% and 5%.

Roland Berger is undertaking a study to produce, by mid-year, its own estimate of emissions from defence supply chain activities and military operations across domains, along with a white paper covering the consultancy's strategic view on the way ahead for defence and sustainability.

Lopez said: "It is a complex task, as sustainability in defence covers so many areas. However, one thing is certain, if the military and supply chain does nothing, the impact of the sector will rise as a proportion of the global total as other industries decarbonise."

Leading defence manufacturers

have been strong, historically, on addressing some of their environmental, social and governance (ESG) responsibilities, said Healy. "While the E in ESG is difficult to abate in the short-term because that's about emissions from fossil fuel use in operations, the defence industry has been generally good on the S and G front, making strides on board and workforce diversity and improving the quality of reporting on ESG topics.

"Some manufacturers have started working with supply chains to report on and manage their environmental impacts, but finding meaningful, cost-effective and sustainable solutions is anything but trivial," he added.

"The defence industry is in a relatively unique position with fewer manufacturers making dedicated and specific products for a focused marketplace. In this small and highly qualified supply base it is not easy to swap suppliers. This puts the onus on the entire supply chain to work together to decarbonise."

Manufacturers are striving to decarbonise, but must not compromise the combat effectiveness of their products. "In

**"Other aspects of sustainability are increasingly coming to the fore in defence. For example circular, clean, transparent, and traceable supply chains are increasingly important in a resource-constrained and geopolitically uncertain world"**

defence, a suboptimal operational outcome is not acceptable, because our opponents may not be under the same constraints," said Major General Stoye.

"So, until new technologies offer levels of performance as good as, or better than, current technologies, the ability to adopt less environmentally damaging equipment may be limited.

"In simple terms, a quiet, low-emissions fighter aircraft may be great in peacetime, but it needs to survive in combat to be of any value."

Healy added: "The use of SAF

is, in theory, a relatively easy win. As a drop-in fuel it typically would not require a complete redesign of an aircraft or a new engine or propulsion system, though supply is still limited to a relatively small number of production facilities at present".

In addition, with the commercial aviation world investing millions of dollars in developing new low-carbon engine technologies, the defence sector can take advantage of these innovations when they are proven and ready to be transferred to military platforms.

**Synthetic training**

"We must encourage industry to develop technologies that reduce our emissions across the board," said Major General Stoye.

"While SAF is being pushed at the political level, it has limitations and is a stop-gap until we can switch to the next generation of power plants. When these new technologies do arrive, we should aim to reduce not just CO<sub>2</sub> emissions, but also noise."

There are a handful of use cases in defence where environmental solutions come to the fore. For example, the air forces of the UK

and Denmark have been trialling the use of the Pipistrel all-electric Velis Electro two-seat trainer with a view to replacing traditionally powered types.

According to Major General Stoye: "There is a real drive towards increased synthetic – emissions-free – training, with some states aiming for a mix of live flying versus simulator training; this is becoming increasingly viable as technology improves."

The military also owns huge amounts of land, which could be beneficial for decarbonisation strategies. "There is forested land that acts as a natural carbon sink and should be maintained properly, while non-forested land could be used to establish carbon capture operations," explained Healy.

The need for greater attention to sustainability is a clear priority for all in the defence world. "The sector knows it is at a relatively early stage but it is thinking carefully through how to engage all stakeholders and the supply chain and how to engage with the end-user," said Healy. "Everyone is getting on the journey but it is going to be a long, challenging and collaborative road." ▲



In mid-January, the UK's Royal Air Force used sustainable aviation fuel (SAF) blended with regular jet fuel to achieve the first air-to-air refuelling of a Eurofighter Typhoon and Lockheed C-130 Hercules aircraft



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Anti-drone warfare has become a major concern of navies, said Stéphane Frémont

## French group aiming to defeat the drone threat

France's Naval group is developing anti-drone systems to defeat uncrewed platforms, the company's director of combat surface ships said yesterday. The issue has come to the fore following Ukraine's use of uncrewed surface vehicles (USVs) to attack Russian warships in

Sevastopol late last year. Several small, low-visibility craft laden with explosives entered the port and attempted to attack Black Sea Fleet vessels. It is known that most of the drones were destroyed by gunfire, but it is thought that a Russian minehunter was damaged in the attack.

Anti-drone warfare has become a major concern of navies, said Stéphane Frémont, as the small, relatively simple vehicles can be bought or manufactured at minimal cost but pose a significant asymmetric threat to conventional warships.

"We're developing anti-asymmetric products to detect and destroy these threats," said Frémont. "Radars and fire control systems that are designed to defend against attacking aircraft or missiles are not best suited for very close targets like USVs, or very small targets like UAVs. You can have UAVs just a few tens of centimetres in size that can be dangerous to ships."

### Jamming pods

Although very small drones are unlikely to destroy warships, they can carry small explosive charges that can be used to put vessels' radars out of action, or to carry jamming pods to hamper communications. If used in swarms, they can also saturate defence systems.

Naval Group's Belharra frigates, which have been ordered by France and Greece, are outfitted for these types of asymmetric threat and carry the necessary equipment – such as infrared sensors with automatic tracking – to cope with these, said Frémont.

In the regional market, Naval Group sold two Gowind corvettes to the UAE in 2019; these were launched in December 2021 and May 2022, and the first should be delivered to the UAE Navy by the end of this year, he added.

Egypt also bought the design, with the last of four having been delivered a few weeks ago. Three of the four were built in Alexandria.



## Halcon Thunders in

Halcon – part of the Edge Group – signed a two-billion dirham (\$583 million) contract yesterday with the UAE Armed Forces to supply short-range guided munition systems.

Halcon will supply Thunder P3 light precision-guided munitions (PGMs). The P3 Light (pictured left) is designed to integrate on to the MK series of general-purpose aerial munitions and will be fitted with a semi-active laser (SAL) seeker.

Saeed Al Mansoori, senior vice president of advanced concepts, said: "They will provide the UAE Armed Forces with a cost-effective airstrike capability. The addition of a semi-active laser seeker will also provide enhanced accuracy against threats."

## Black Hawk shows of its power

The Sikorsky UH-60M Black Hawk, seen on the static park, has formed the backbone of the UAE's Joint Aviation Command (JAC) for many years, but has been regularly upgraded and modernised to keep it relevant and capable.

Some 26 were ordered in 2007, 14 in 2008 and 20 more in recent years.

Most notably, the aircraft have been fitted with a sensor and weapons package very similar to that supplied to Colombia, where the UH-60 has provided the backbone of the government's campaign against narco terrorists.

This is based on a two-pylon stub wing Armed Black Hawk (ABH) kit with hardpoints for 200-gallon external fuel tanks, air-to-surface missiles, 7-round or 19-round Hydra 70 rocket pods, and/or miniguns. The UAE's Black Hawks have been fitted with Sikorsky-supplied ABH kits by AMMROC in the UAE. They carry an under-nose FLIR Systems AN/AAQ-22 BRITE Star II electro-optical/infrared sensor turret with a laser designator/rangefinder/pointer, a 3-5µm thermal imager, and a high-resolution colour daylight camera.

Pilots use helmet-mounted displays to accurately target their on-board weapons, which can include Raytheon Talon laser-guided rockets (LGRs), Hydra 70 unguided rockets, and AGM-114 Hellfire missiles.

The aircraft can also carry a 12.7mm calibre GAU-19/A heavy machine gun or a 7.62mm calibre M134 minigun in the cabin doors.

The first three conversions underwent a six-year test and development programme in the USA, including live-firing trials, leading to type certification in February 2018. The new standard

made its public debut at IDEX in 2019.

Although the armed UH-60M is known to Sikorsky as the ABH, the JAC refers to it as 'direct action provider' (DAP).



The Sikorsky UH-60M Armed Black Hawk, can be seen on the static park

## Banshees screaming in to target Houbara's UAE forces training

Houbara Defense and Security, a joint venture between QinetiQ and Middle East General Enterprises, is showing off one of its Banshee Jet 80+ aerial targets at its stand.

As Tim Allen, Houbara chief executive officer, said: "The UAE military is very active with live training and live-fire testing. We basically provide support to the needs of air force, air defence, land forces, and coastal protection."

To train the personnel of those commands, targets are provided for acceptance trials for platforms like ships. Other more routine work sees targets provided for testing and tracking. "One of the things that has been helpful is that our target portfolio closely matches the threat in the region. The Iranian-developed drones that have been faced in Yemen, and here in the UAE, are very accurately replicated by our targets," said Allen.

The Banshee 80+ sits at the top



Tim Allen with one of the company's Banshee Jet 80+ aerial targets

of the range in the UAE, while the propeller-driven Whirlwind is another option, as is the smaller Snipe target.

Houbara is also hoping to introduce the Banshee next-generation aerial target within the next year or so.

"Those three or four platforms

give a very broad spectrum of target replication, from relatively slow and small with low radar cross-section (RCS) systems up to quite fast, with very large RCS," said Allen.

The platforms are enhanced with payloads, like a Luneberg lens, which is used in the front

section of the Banshee 80+ to increase the RCS. Alternatively, the nose cone can be replaced with a gas-powered IR source, so it literally glows red hot.

"It flies over the target, so it looks much closer," explained Allen. "We also have many other enhancements."



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Personal protection equipment

# A BREATH OF FRESH AIR FROM AVON

Increasingly complex defence and security operations challenge the makers of personal protection equipment (PPE) to find fit-for-purpose solutions. Chuck Grieve reports on a venerable UK company setting standards of performance



Avon's FM50 full-face mask is specified for NATO and the US DoD and used worldwide

Avon Protection

Companies prosper by adapting and innovating – which is exactly how IDEX exhibitor, Avon Protection, has navigated a 140-year path through First World War gas masks to advanced respiratory systems and ballistic helmets for defence and security services, picking up underwater rebreathers, thermal imaging, and hostile environment boots and gloves along the way.

The reputation of the Wiltshire-based company for high-spec respiratory apparatus for hostile environments has evolved over decades of listening to the feedback from in-theatre users.

“At heart, what we’re all about is the user,” said Steve Elwell, Avon Protection vice-president UK and international.

The company’s FM50 CBRN personal respirator system is specified for use by NATO forces; its US equivalent, the M50, has the US Department of Defense (DoD) approval. To date, more than 3.5 million 50-series units have been delivered to in excess of 60 countries worldwide.

“The 50 series is designed for the user and people like it,” said Elwell. It features dual filtration, a lower profile for better weapons sighting, and a bigger surface area, which lowers breathing resistance. Changing filters is easier and safer, he added. Visors are wider, completely transparent and distortion-free.

In an important breakthrough, Avon Protection has developed protective gloves that allow users to operate a touchscreen without ripping a fingertip off their glove – particularly important in the chemical, biological, radiological and nuclear (CBRN) environment, where the company has built its expertise.

**“It eases the user’s burden in terms of breathing and adds a bit of air flow across their face to reduce the claustrophobic feel of the respiratory system”**

STEVE ELWELL  
AVON PROTECTION

Avon Protection added a full range of advanced ballistic helmets through the 2020 acquisitions of 3M’s ballistic protection business and Team Wendy, both based in the US.

“Above-neck PPE is complex,” said Elwell. “One question users ask is why they have to take their helmets off to put their respirators on, or to interface with their communications system. These are the kinds of problems our R&D is focused on.

#### Advanced hydration

Elwell said respirators can be uncomfortable, especially in very hot or cold climates, when the wearer is doing difficult tasks over an extended period without being able to remove the respirator for a drink of water. “This led us into research on advanced hydration and powered airflow.

“This concept for specialist users switches from negative to positive pressure in your respirator,” he said. “It eases the user’s burden in terms of breathing and adds a bit of air flow across their face to reduce the claustrophobic feel of

the respiratory system.”

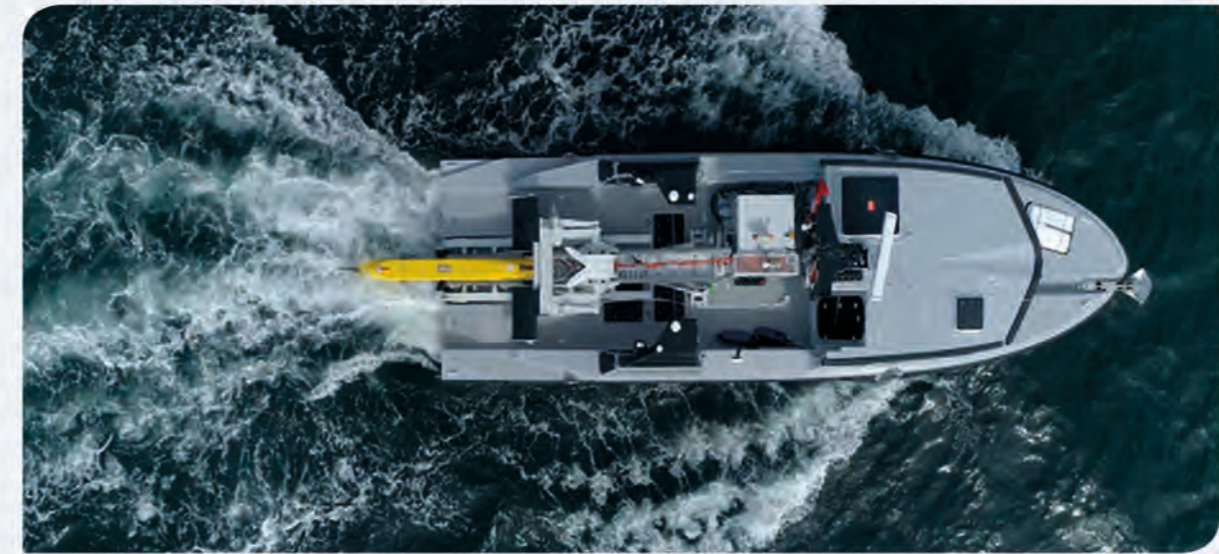
The war in Ukraine graphically demonstrated there’s no substitute for quality in life-support products.

“This is one thing close to my heart,” said Elwell. “Our products have to work well the first time and every time. Some of the lower-cost copycat alternatives don’t always give that level of confidence.

“We’re focused on modularly, scalability and our systems’ interaction. It’s a headache for users when they need to change mission quickly. Lots of above-neck equipment doesn’t allow them to do that – ours is designed for that.”

An important new area for Avon Protection is CBRN boots and gloves for use in very hostile environments.

“Users told us their current gloves made it hard to do their work. Our expertise in materials design and research led us to a different compound that gives the same protection as today’s offerings, with incredible dexterity,” said Elwell. “You can operate a phone or touchscreen technology wearing them.” ▲



PATHMASTER: Thales’ uncrewed mine countermeasures solution

## PATHMASTER THALES’ UNMANNED MINE COUNTERMEASURES SOLUTION

Navies around the world need to perform a variety of missions from Maritime Security Operations in territorial waters to Power Projection including interventions on external theaters of operations, and from coastal environments to the deep sea.

Sea mines remain a very efficient and cost-effective means to disrupt commercial shipping as well as to deny naval operations. They are cheap, easy to deploy, and deadly.

Numbers of low-tech mines are rising, and are increasingly matched by higher-tech variants, harder to find, and often programmed to detect specific signatures or use torpedoes.

Organic and uncrewed Mine Counter Measure (MCM) systems are required for assured safe access to meet these new challenges such as stealthy mines equipped with very sensitive sensors, sometimes Improvised Explosive Devices (IED) manufactured by terrorist entities.

Mine warfare operations are clearly evolving towards unmanned, remote or autonomous modes. The next generation of drones, systems and collaborative intelligence software is expected to substantially decrease operators’ workload, allowing a lean crew to operate a fleet of unmanned assets at distance and to deliver the expected mission with an improved level of performance and confidence.

This level of autonomy is requested in modern combat systems to face a variety of operational scenarios in complex environments where sophisticated mines, difficult bottom types and adverse

operating situations (enemy fire, GPS jamming, etc.) could badly affect situation assessment and lead to an improper reaction.

Thanks to its experience and leadership, Thales has developed PATHMASTER, a MCM system of systems based on uncrewed assets that addresses the full range of configurations and needs of Navies, meeting the requirements of flexibility and evolution.

#### WORLD LEADER

Being a world leader in MCM systems with more than 300 Mine Hunting sonar systems ordered or in service today, and currently delivering the first operational uncrewed MCM system of systems under the framework of the UK/FR MMCM programme, Thales is the right partner to tailor PATHMASTER to meet your exact needs.

To deliver the PATHMASTER solution, Thales’s strength is ‘system of systems’ integration. It is not tied to any supplier of uncrewed platforms, sensors or effectors. Whether the need is a proven Thales solution (like the Franco-British MMCM), integrating chosen tools into a wider standoff system, or a Thales sub-system to complete the existing unmanned assets. Thales will work to deliver a full ‘plug and play’ integration.

In a world where Navies are facing growing and sometimes unexpected threats and challenges, Mine Warfare remains a key discipline and, with PATHMASTER uncrewed MCM solutions, Thales offers the best answers to ensure Navies’ effectiveness and safety at sea. ●

*Thales has developed PATHMASTER, a MCM system of systems based on uncrewed assets that addresses the full range of configurations and needs of Navies, meeting the requirements of flexibility and evolution*

## Edge launches Skyshield C-UAS

The UAE's Edge Group has launched Skyshield, a multi-layered, integrated counter-unmanned aerial system (C-UAS).

Highly modular in design, Skyshield can be configured for fixed installation in key areas to safeguard critical infrastructure. It can also be packaged as a rapidly deployable solution for a broad range of civilian and military vehicles, trucks, and ships.

Featuring automated 360 degrees detect-and-defeat capabilities for anti-drone protection, the comprehensive system is aimed at military, law enforcement, security, and VIP protection markets.

Omar Al Zaabi, senior vice president – trading & mission support at Edge, said: "As the demand for counter-drone protection is rapidly rising, we are proud to launch Skyshield to the UAE and international markets. Responding to drones and the threat they pose require a comprehensive approach, which is why this C-UAS solution employs an impressive variety of detection and interception techniques and can be configured for permanent implementation or as a rapidly deployable system."

To ensure system performance and reliability in hot, humid, and dusty weather, the C-UAS solution has been extensively tested in the region's natural environment and climate, and has proven to perform optimally in the most challenging conditions.



We are typically 40% better than the next best in terms of accuracy over long ranges – EOS CEO, Andreas Schwer

## Countering UAS the EOS way

Electro Optic Systems (EOS) has reached the final stages of competition for delivering counter uncrewed aerial systems (C-UAS) for the US, Canada and Australia.

The Australian company has been down-selected by all three countries and is expecting to know the result by mid 2023.

CEO, Andreas Schwer, is confident of winning the upcoming contracts.

"Wherever we are competing against other systems – on battlefield or at test ranges – we have succeeded," he said. "We are typically 40% better than the next best in terms of accuracy over long ranges."

EOS is hard-selling its Titanis C-UAS system. Based on the in-service R400 remote weapon station (RWS), Titanis is a fully integrated, scalable C-UAS

suite that combines the specific detection, command-and-control (C2), and layered hard and soft kill defeat capabilities necessary to acquire, track, and defeat swarming UAS threats.

"Besides the US, Canada and Australia, several countries have declared interest in our C-UAS. I would say the entire Middle East region, mainly the UAE and Saudi Arabia," said Schwer.

"We are having advanced negotiations with four European countries, including France and Germany, with whom we have collaborations.

"Also, we have multiple opportunities in Ukraine that are being negotiated at the moment.

"Most recently, we secured an order for our new ultra-light R150 RWS product. An order of 14 gimbals was received in January

2023, as part of the L3Harris Vampire programme, under which the US is providing support to Ukraine," he added.

Demand for RWS continues to grow worldwide, as customers seek further network integration of their sensor-to-shooter assets and continuous improvements to the survivability of their soldiers.

"The RWS is now viewed as a key lethality sub-system available to a force rather than simply as another platform accessory. The EOS family of products is leading the way in defining these new market expectations," Schwer said.

EOS' focus, he said, has always been on ensuring the RWS is optimised and integrated with other on-board sub-systems, as well as being compliant with the customer's architecture.

# PAS not loitering about over N-Raven delivery schedule

The UAE-based Paramount Aerospace Systems (PAS) will start production of its N-Raven loitering munition in April this year with first deliveries in October to

meet the urgent requirements of armed forces around the world.

PAS, a subsidiary to Paramount, said N-Raven has been digitally designed with quick transfer of

technology in mind, to enable governments to make these loitering munitions in their countries, in less than a year.

According to a company official,

N-Raven meets the requirement of the new battlefield in both asymmetrical and symmetrical warfare.

"Recent conflicts around the world have confirmed that loitering munitions will play a key role on the new battlefield," said Steve Griessel, Paramount's global chief executive officer.

N-Raven consists of three different models – GPS guided, fixed optical seeker head target identification, recognition and tracking; and a Gimbal version of the optical seeker head. A swarming version of the N-Raven is in advanced stages of development and is scheduled to be industrialised in the second half of 2024.

With a wingspan of 3.6 metres, a maximum cruise speed of up to 180km/hr, a loitering endurance time of roughly two hours (electric) and 4.5 hours (petrol), and a range of up to 100km, the 55kg N-Raven delivers capabilities to find, fix and destroy, neutralise and suppress targets.

The 13.5kg payload is key to this ability. Mobile and deployable in a short period of time, operational units can utilise and launch the N-Raven from both land-based and naval platforms.

"Designed to strengthen armed forces' aerial reconnaissance, engagement and precision strike capabilities, while removing humans from harm's way, the N-Raven addresses the increasing requirements of governments for defence industrial autonomy and maintaining security of supply," Griessel concluded.



Miles Chambers with the Jeniah UCAV unveiled at the show

## Edge unveils stealthy Jeniah UCAV

Edge is showing off a lot of new capabilities on its vast stand, including several new autonomous UAVs.

Undoubtedly the stealthy-looking Jeniah uncrewed combat air vehicle (UCAV), unveiled at IDEX, is attracting a lot of interest.

With a wingspan of 6.5 metres and length of 10.5 metres, it is being developed as a high-speed, low-observable system capable of deliv-

ering various munition payloads.

Designed to meet diverse mission requirements, for both land and sea operations, Jeniah will have a cruising speed of up to Mach 0.8, with a maximum speed of more than 1,000km/h, delivering payloads in an internal weapons bay.

Miles Chambers, Edge director, international business, was a little coy about revealing too much detail

on when it was expected to fly, or details of the powerplant, but he did say: "Jeniah is a programme in development; it's an evolution of the investments we made over the last three years, and before that the development of the capability in autonomous systems."

Displayed next to the Jeniah is a comprehensive-looking ground control system.



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▼  
Rick Lemaster believes the region has potential for more Boeing products

## Boeing KC-46 – a better option than A330 MRTT?

Boeing is currently promoting several platforms to the region, with the KC-46A Pegasus multi-role air-to-air refuelling aircraft among them.

Although the UAEAF&AD is operating the A330MRTT with more on order, the strongest prospect would appear to be Saudi Arabia.

“We think they [Saudi] could use the capabilities of KC-46; we view it as a combat aircraft so, from a protection standpoint, it has more capability than the MRTT,” said Rick Lemaster, the company’s regional sales and marketing leader Middle East.

“The KC-46 has been designed to rapidly re-role from one mission to another – to carry a mix of passengers and cargo, as well as medevac.”

While the Airbus A330 MRTT can do all this, Lemaster said that it doesn’t do it as quickly as the KC-46. “They have the passengers on a higher level and the cargo

below, whereas we can fill with passengers, cargo, or mix of two on the same floor, through a cargo door allowing the aircraft to be uploaded and unloaded much more quickly.”

Boeing doesn’t build C-17s any more, but believes the KC-46 is a good alternative option because it has as many pallet positions as a C-17.

“You can’t carry as much weight, but usually our customers are not filling up all the cargo space anyway. We view the KC-46 as a multi-role strategic airlift aircraft that also refuels with a boom, and hose drogues,” said Lemaster.

**“The KC-46 has been designed to rapidly re-role from one mission to another – to carry a mix of passengers and cargo, as well as medevac”**

RICK LEMASTER BOEING

On the remote vision system issues currently affecting the KC-46, he said they are well on the way to being resolved, and the USAF will get a better system than it envisaged. “Those changes into the system need to be approved; we can’t say when those fixes will go into the aircraft,” he added.

The USAF currently has 179 KC-46s on order, with nearly 70 delivered so far.

Does Boeing have aspirations to develop the automatic air-to-air refuelling system similar to the one that Airbus is currently working on?

“We are investigating how we could do that,” said Lemaster. “We have the MQ-25 Stingray UAV, our refuelling capability for the US Navy, which is autonomous, and we’d like to get the MQ-25 to refuel from the KC-46, then refuel other [US Navy] aircraft, so we have ongoing discussions for an automatic AAR.”

▲ NEWS IN BRIEF

### YTS countering the drone threat

The use of drones by terrorists and terror organisations is increasing sharply, posing a major challenge to homeland security agencies and forces. In response, Israel’s YTS has developed a counter-drone vehicle (CDV) housing the latest technologies, allowing for quick deployment.

The vehicle offers a multi-layered, counter drone solution for detection, localisation and mitigation of hostile drones, to create a virtual protection dome over the protected area.

The CDV includes RF sensors and direction-finder, combined with frequency jammers.

The full system includes 360-degree radar in order to increase the detection range and to manage up to 100 targets simultaneously. Day and night cameras installed on a high mast allow detection, recognition and real time tracking of the drones, and also helps to distinguish between real threats and false ones.

“The whole concept was developed based on real field experience,” explained Rami Waxman, the company’s CEO. “The CDV is a holistic solution that takes every need into consideration, from the best radar detection to the comfort of the operators’ chairs, and I am looking forward to a lot of interest at IDEX.”

YTS specialises in the design, engineering and integration of special mission vehicles that are tailored to the customer’s tactical and strategic requirements.

### Taking the long view

Exavision is showcasing its Nemosis electro-optic/infrared product range. The Nemosis-XRTM-HD is based on a French-made high-definition cooled thermal camera for extra-long-range surveillance and observation applications. It provides users with longer ranges and wider fields of view, improving surveillance, detection and identification capabilities. The system also proposes an optional 20km laser range finder, directly bore sighted with an EO camera.

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