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Cover image - OMNETICS

Connector manufacturers have prioritized enhancing smaller and lighter connectors through the SWaP initiative adopted by the US military and NASA.



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We welcome you to the second edition of the MS&T magazine 2023.

As an established web portal for the International Defence & Aerospace Industry, we strive to provide a comprehensive and detailed listing of Military Equipment Suppliers, Products and Services. This magazine is designed to keep you up-to-date with latest news and events within the Defence Industry's Governing Bodies, Organisations and Companies.

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For more information, technical guidance or the latest subscription packages available for Military Systems, please contact us where one of our team will be more than happy to advise you.

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Lets talk ChatGPT

A conversation with and about AI in marketing

Effective marketing is critical for any organisation; but, marketing success necessitates more than simply a fantastic product or service.

It necessitates a committed and well-funded marketing organisation. As the world becomes increasingly digital, marketing techniques must evolve to keep up. Artificial intelligence, namely chatbots like ChatGPT, represent some of the most promising tools in this regard.

Unfortunately, many businesses find they are under-resourcing their marketing departments. They may be having trouble

recruiting the right people, or can't get sign-off and budget for new-hires, or just feel they don't need additional permanent full time staff. Maybe they think ChatGPT can cover the shortfall? From years of experience in Marketing Communications, across many industries and businesses, at Marksman we understand the challenges, its why we were established - to provide services and resources to organisations that occasionally lack internal bandwidth to fully deliver on their marketing priorities.

So can ChatGPT help?

- *Firstly, an under-resourced marketing department is likely to struggle to create effective marketing campaigns. They will be unable to develop strategies that resonate with their target audience or deliver compelling marketing messages.*
- *Secondly, an under-resourced marketing department can damage a company's reputation. Poorly executed marketing campaigns can result in negative publicity, and social media can amplify negative feedback, causing reputational damage.*
- *Thirdly, an under-resourced marketing department can lead to missed opportunities. Without the necessary resources, businesses may fail to capitalise on new trends or emerging markets, putting them at a competitive disadvantage.*

AI systems have the potential to revolutionise marketing in all sorts of ways. ChatGPT is a large language model trained by OpenAI that can offer tailored marketing support. But can it replace the shortfall in a marketing team? Just as in the early days of computers and the rise of Desk Top Publishing programs and the likes of Photoshop led to concerns about lost jobs and skills - TV was said to be the downfall of books, video with cinema, CDs with live music. The headlines in the press fell away as reality hit. At present AI is just a tool. and like any tool the skills to affectively use it need to be learnt and developed. The skill with AI will be to learn what prompts to ask, to recognise errors in the information returned and to rework any piece into something interesting, engaging and importantly useful?

While ChatGPT has many potential benefits for marketing, there are also some disadvantages that businesses should consider before implementing it in their marketing strategies. For example ChatGPT's responses are generated based on the data it has been trained on, which can result in biased or inaccurate responses. This means that businesses must ensure that the information generated is unbiased, accurate and reflective of their target audience. So while ChatGPT has many potential benefits for marketing, businesses should carefully consider the potential disadvantages before implementing it in their marketing strategies.

And the BIG question... Will AI take over the world, will we soon be facing a Terminator type future were humans battle sky-net for survival? Who knows, certainly not I. But with the leaders in AI development calling on governments to act quickly to define rules and regulations around AI, then maybe we need to

conciser that just because we can, does it mean we should? If you ask ChatGPT if it will ever take over the world it will tell you No, AI will not take over the world. While AI technology is rapidly advancing, it is ultimately a tool created and controlled by humans. AI is not capable of independent thought or action outside of its programmed parameters, and it is unlikely to become self-aware or have motivations that would lead to world domination.

So what is the next step for ChatGPT? It is likely to be the continued development and improvement of its language understanding and generation capabilities. This includes expanding its knowledge base and enhancing its ability to recognise and respond to complex queries and nuanced language. Additionally, there may be efforts to integrate ChatGPT with other AI technologies, such as computer vision or natural language processing, to create more sophisticated and seamless customer experiences. As AI technology continues to evolve, we can expect ChatGPT and similar chatbots to become increasingly prevalent in various industries, including marketing.

So while AI is and will continue to be a useful marketing tool, it will not be replacing your marketing team any time soon. If they are struggling to deliver on their marketing acquirements they may need to look to external resources to provide specialised expertise, including the affective use of AI systems like ChatGPT. By leveraging external resources like Marksman effectively, businesses can improve their competitiveness and achieve their goals more efficiently.

One last question. Part of this editorial was written by a human, and part by ChatGPT... can you tell which?

Marksman Communication was established to provide services and resources to organisations that occasionally lack internal bandwidth to fully deliver on their Marketing priorities. Focused on Public Relations, Digital Media, and Event Management for Defence, Security, Aviation and Space Technology markets.

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Our approach to ensure that we gain a full understanding of what our clients are looking to achieve is central to our design and consultation process...



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Transit cases are invaluable to the success of an organisation such as the Defence and Military or Medical industries. Transit cases are used by organisations to protect expensive, important or specialist products, tools or equipment. It is paramount that these goods arrive at destinations safely and intact to avoid any negative implications. This is why protective transit cases are invaluable in many industries. Whether it's storing or transporting technology, keeping expensive equipment safe is vital. Protective cases are designed to withstand severe impact and protect valuable contents to ensure the consistent high performance of equipment in all settings.

The Importance of Choosing the Right Transit Case

Due to the fragile and valuable nature of certain equipment, moving it around the world can become a major logistical challenge. In the event that high-value items become damaged beyond repair, it can result in increased costs or financial implications for the organisation. It can also result in decreased productivity due to the damaged or faulty equipment obstructing individuals from completing their job to their best ability. This is why choosing the right transit case for your organisation is a tough but crucial decision.

Every industry requires different protective transit cases to meet their product needs. At CP Cases, we supply a range of transit cases designed to last decades and withstand countless worldwide journeys thanks to their robust design. Every element within our cases are carefully selected to ensure the highest standard of protection for your tools or specialist equipment.

The Types of Transit Cases Available

RCZ Aluminium Cases & Containers

RCZ transit cases bring together the latest technologies in precision CNC metal forming to offer a comprehensive range of lightweight aluminium cases and containers in both standard and custom sizes. RCZ cases are designed to maximise the properties of flat stock 1.5mm thick high tensile aerospace-grade aluminium sheets. This is achieved by introducing innovative rimfold profiles that bring exceptional longitudinal strength and a patented pre-form corner design that significantly prevents impact damage to the corners when dropped with heavy loads. This transit case was designed with the defence industry in mind, with features such as climate protection, venting and EMC/EMI shielding.

Amazon Cases

Amazon cases were designed to meet the applications of the defence, marine, security, aerospace, oil and gas, satellite and telecommunications industries. This type of case has a unique patented design that offers a tough, lightweight, customisable system that can be tailored to an organisation's requirements and individual needs. Amazon Cases are highly resistant to impact and drop/shock, temperature extremes and vibration, as well as water and dust ingress. They can be modified to include features such as flame retardant, anti-static and low infrared reflectivity.

Custom Rotomoulded Cases

Custom rotomoulded cases are bespoke transit cases designed and manufactured specifically for a particular customer requirement. Rotomoulded cases offer exceptional strength-to-weight ratios and the plastic is resistant to temperature variations and solvents. CP Cases designers undertake extensive investigation and discussion to design a solution tailored to the organisation's needs. This type of transit case shares many of the same benefits of the Amazon Case range, such as resistance to impact, water resistance and dust ingress resistance.

Peli Cases and Injection Moulded Cases

Peli Cases are designed with the industrial, airline, military, broadcast and commercial industries in mind. This case provides all-weather protection and can be fitted with lightweight internally sculpted LD45 polyethylene closed cell foam to provide the perfect "nest" to ensure the secure protection of your equipment. The Peli Case is unbreakable, resistant to dents, scratches and corrosion and watertight up to nine metres.

Airship

The Airship case is a super lightweight protective case that offers significant weight saving against size and can achieve weight/volume ratios of better than 20kg/m³. This is a patented and bespoke solution that can be customised to suit an organisation's specific needs. The Airship case provides great strength to safeguard its contents through its outer rugged textile container and its polypropylene inner construction.

ProCase

The ProCase is a long-lasting, rugged flight case solution to protect specialist or high-value equipment, such as musical instruments or surgical equipment. Using only the finest Finnish birch plywood and rigorous and bifurcated rivet construction, each ProCase flight case is glued, pinned and riveted with aluminium edges and steel knuckle corners to provide the ultimate protection. Similar to other transit cases, this product can be custom-built to meet the most intricate design requirements.

AluCurve

The AluCurve case is constructed without an edge corner to prevent seam splitting and add extra strength and exceptional resistance to drop damage. The AluCurve case contains features such as recessed catches and handles, a lid and body seals for ingress protection, a webbing lid and indents for stacking. The AluCurve can be customised to meet an organisation's specific requirements, such as pad-lockable catches for extra heavy contents and easy manoeuvrability, low profile wheels, labelling and foam inserts for maximum protection.

AluWeld

The AluWeld case is designed to resist the most arduous of climatic and environmental conditions. This case is waterproof with seams and joints robotically welded to ensure the protection of its contents. AluWeld cases are used across a wide range of industries, including the defence, broadcast and medical industry.

Knowing the primary challenges you face in protecting your equipment or specialist products can make choosing a suitable transit case much easier. For example, if you require the highest level of protection from impact and water, the amazon case might be the best fit for you. Ensuring that expensive or valuable equipment is kept safe is paramount to organisations. At CP Cases, our protective transit cases are available to meet every challenge of rough handling and climatic or environmental hazard. Our transit cases are designed with practical, innovative features and optional extras such as partitions, foam cushioning or labelling to enhance protection and create a bespoke solution tailored to your specific needs.

NavTD M23

Navigation Testing Device

Navigation is everywhere!



Space, or more precisely space technologies, have become a strategic field of operations, in times of peace and crisis, besides land, air, sea, and cyber. The development of new as well as the modernization of existing Global Navigation Satellite Systems (GNSS), which started in recent years, illustrates this fact.

Space technologies, -data, and -services have become an essential part of the daily lives of European citizens, but safety-critical applications in the area of national defense and internal security also depend on these technologies. However, the greater the dependence on Positioning, Navigation, and Timing (PNT), the greater the risk of unintentional and intentional disruptions and interference (jamming + spoofing). While jamming deliberately blocks the signal reception of GNSS receivers, spoofing aims to manipulate the position and time information of the attacked receiver. This is of course enormously dangerous because the user is deceived with false

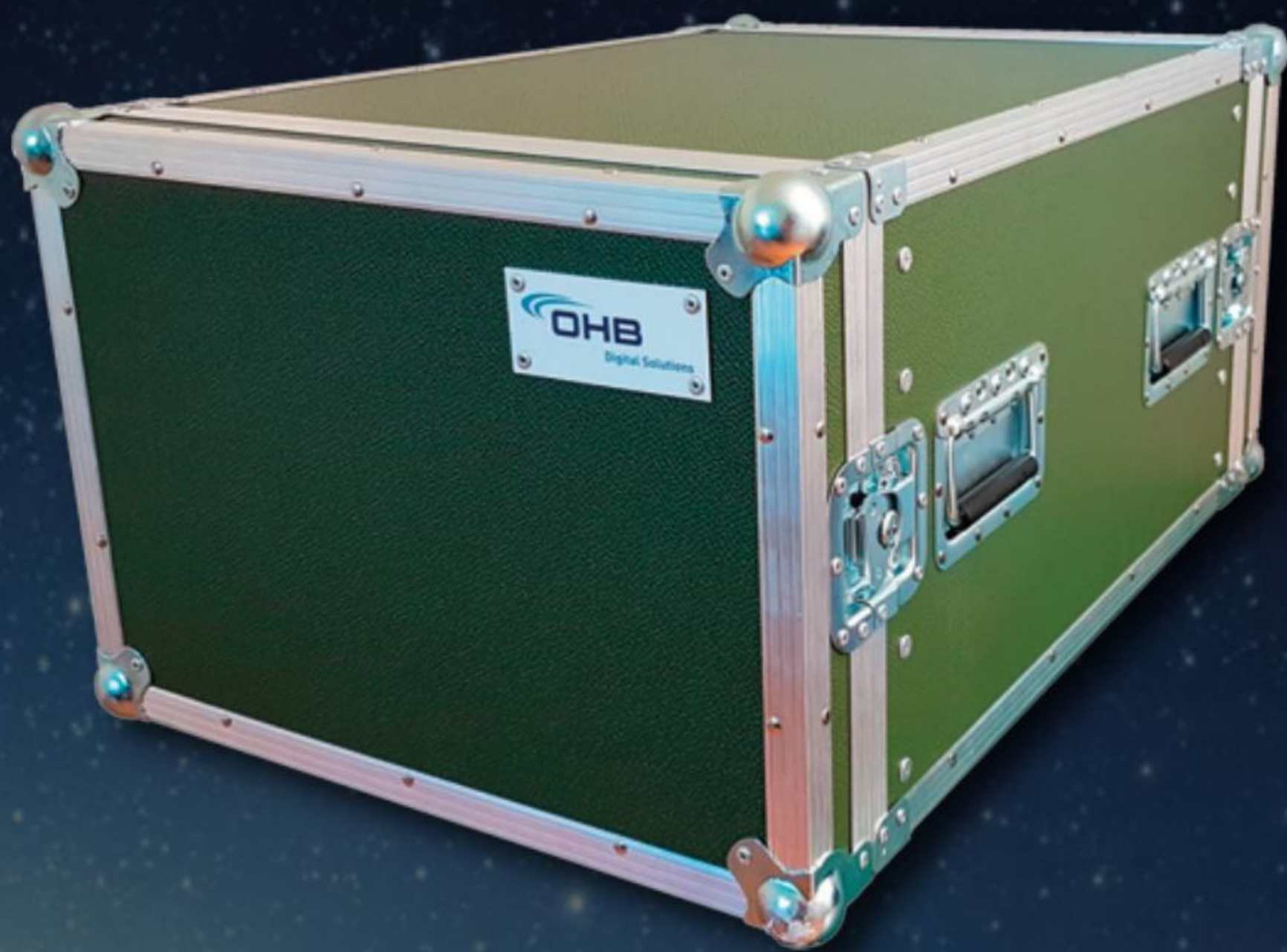
time information or position and thinks he is somewhere else or at a different time than he actually is.

Navigation Warfare

The goal of Navigation Warfare is the geographically limited disruption or manipulation of (satellite-based) PNT information of an enemy while ensuring the resilience of the own systems. However, since the use of GNSS and PNT will continue to increase in the future, it can be assumed that jamming and spoofing will also continue to increase. Navigation Warfare would therefore also affect the use of navigation systems in the public domain and for each individual.

Governmental authorities, armed forces, system integrators, and GNSS equipment manufacturers should be aware of the danger caused by GNSS signal jamming and spoofing. They should get the possibility to test their equipment in a protected and realistic environment to assess vulnerabilities and improve equipment in order to better tackle GNSS interference.





M23

OHB Digital Solutions has developed a navigation testing device that is able to assess the vulnerability of existing GNSS equipment and the performance of its countermeasures in a protected environment.

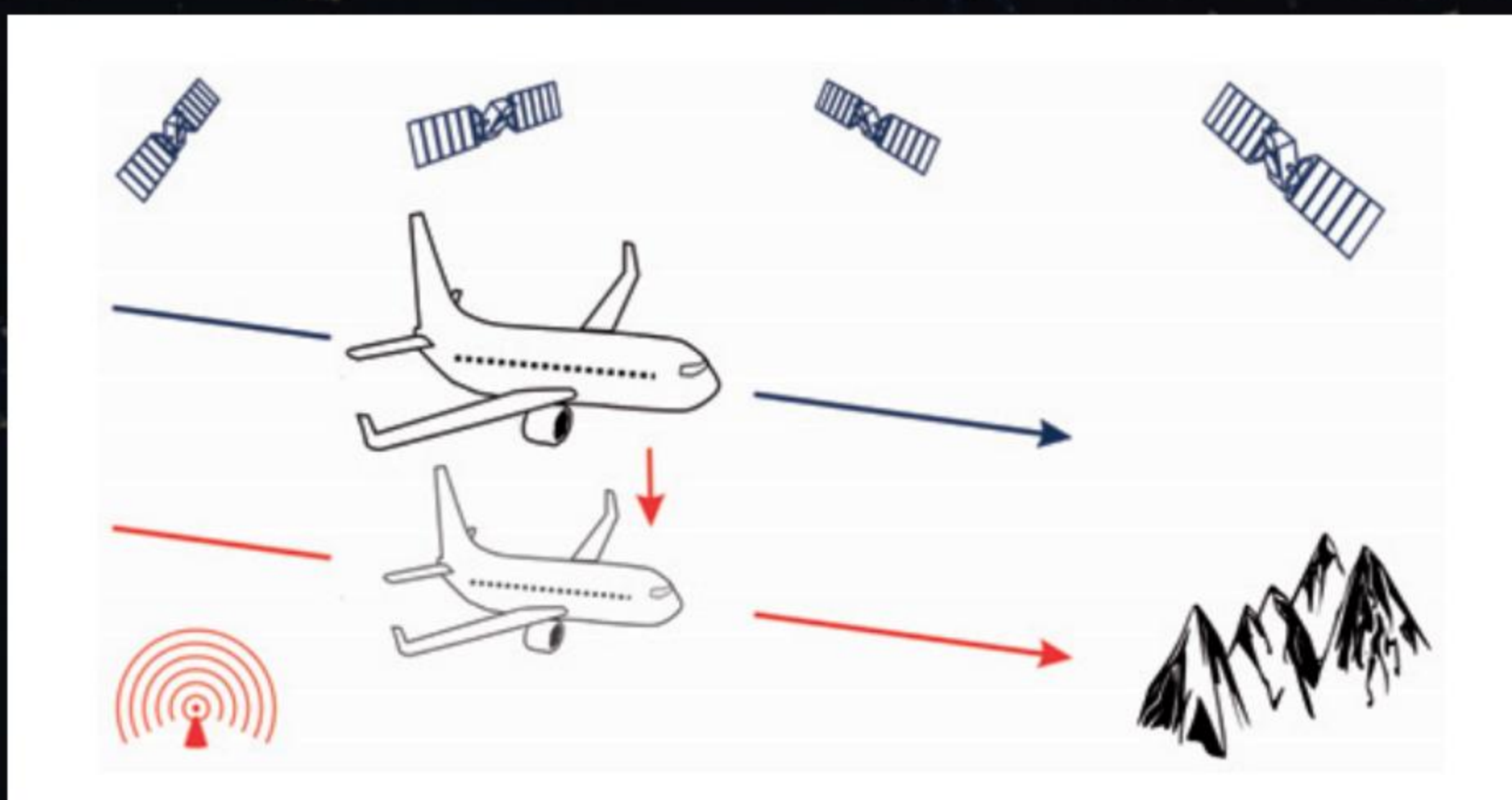
- **Mobile and sturdy system to test navigation warfare scenarios in the field**
- **Easy to use system to test GNSS equipment against jamming + spoofing**
- **Covers a wide range of jamming and spoofing scenarios**
- **Supports synchronized attacks via built-in GNSS receiver**
- **Satellite data via built-in GNSS receiver or OHB's assistance service**

M23 is able to generate and transmit jamming and spoofing signals but be aware that its use in public space is subject to regulatory requirements by the authorities.

M23 is a mobile and sturdy 19" rack box, including:

- **A user control unit (monitor, keyboard, and intuitive graphical user interface)**
- **A performant industrial-grade PC**
- **A signal generator with dual-channel high-fidelity RF output**
- **An integrated GNSS receiver for time synchronization and ephemeris data**
- **A broadcast antenna**

NavTD M23 is a compact solution to generate and broadcast jamming and spoofing signals.



Get in touch with us to learn how to harden your GNSS-based infrastructure!

OHB Digital Solutions GmbH

www.ohb-digital.at
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WE ARE THE NAVIGATION EXPERTS

COMPACT ELEVATION SYSTEM^{TRK}

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SURVEILLANCE

COMPACT ELEVATION SYSTEM TRUCK

Will-Burt's Compact Elevation System is a rugged and precise mobile elevation platform that provides rapid deployment of a wide variety of sensors in as little as 30 seconds from a compact position in a standard 8' pickup truck bed or trailer platform. The compact design provides up to 24.7 ft³ / .7 m³ for the sensor payload with the tailgate in the closed position. Available with an electro-mechanical or pneumatic elevation system, payload stability is assured with section keys and keyways that minimize rotational movement.

Designed and Manufactured in the USA by The Will-Burt Company, the Compact Elevation System will optimize the performance of sensors resulting in mission success and is customizable to accommodate a variety of power systems as specified by the customer.



FORCE
PROTECTION

MOBILE
SECURITY

COMPACT ELEVATION SYSTEM^{TLR}

COMPACT ELEVATION SYSTEM TRAILER

ESSENTIAL FEATURES

Covert

- Elevation system and payload hidden within pickup bed envelope
- Designed for transport while in horizontal or vertical positions
- Under 30 second tilt time

Compact

- Up to 24.7 ft³ / .7 m³ available space for the sensor payload

Minimized mast twist

- Full-length mast section keys

Strong and Robust

- No need for guying with field-proven rugged telescoping mast design

Flexible Installation

- Skid design allows for installation on a variety of platforms
- Available with mechanical or pneumatic elevation system
- Cable management system

Integrated Controls

- Fully integrated control system
- PC control capable

CAN-bus J1939

RS485 Serial



An army marches on its stomach



Electrothermal is a UK-based company that manufactures and designs water and ration heaters for military vehicles. Our heaters are designed for operations on the move and can fit into the cramped quarters of a tank, or other military vehicles, to provide necessary sustenance to the soldiers on-board.

Key features:

- Heats 2 pints water and 5MREs in the vehicle while on the move
- Contents remains hot for up to 6 hours after the unit has been switched off
- "Cool to touch" outer casing
- Designed-in "Boil Dry" condition and fail safe mechanisms
- Connects to vehicles auxiliary power supply, 24 volts DC
- Heating range 66 to 71°C (on LO setting)
- Heating range 82 to 88°C (on HI setting)
- Ramp rate of 56°C in one hour (max) from ambient temperature of 21°C

Caution
Contents may be hot



This system is designed to
ONLY HEAT:
- Meals, Ready to Eat (MREs)
- Sealed containers of food,
- Drinkable water.
This system will **NOT** cook, boil, or
fry foods, and it will **NOT** disinfect
or decontaminate water.
The **REMOVABLE CONTAINER** and
HANDLE will be extremely **HOT**.
Use Gloves or other hand protection.
Do **NOT** use removable container for
personal hygiene (shaving, washing, etc.).
Use only **APPROVED** cleaning material
as defined in the technical manual.

Our current range of RAK water and ration heaters includes:

- RAK 15: operates off 15A and is designed for installation in tanks and trucks
- RAK 30: draws 30A to heat faster and is designed for the marines and special forces

Food and water heaters for modern military operations

RAK15/30 units are designed to withstand the rigours of modern conflict and have been comprehensively tested to meet military standard specification MIL-PRF-44466D, MIL-STD-461 and MIL-STD-810. They are also certified for food heating after meeting NSF ANSI 4-2013.

Constructed from a robust stainless-steel outer casing, the unit is sealed to be water-tight, so that any steam is retained within its interior. It has both low and high temperature settings and its own built-in control, so that a separate control unit is no longer necessary. The choice of heating ranges is either 66°C - 71°C (on LO setting), or 82°C - 88°C (on HI setting).

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REVOLUTIONIZING READINESS

WARFIGHTERS FACE A MULTITUDE OF CHALLENGES AND OBSTACLES IN THE FIELD. SNOWBIRD TECHNOLOGIES IS ADDRESSING MISSION-READINESS AND SUSTAINMENT WITH A PATENTED, MOBILE HYBRID MANUFACTURING SOLUTION.

Critical spare parts distribution is an immediate concern for defense forces around the globe. The fulfillment of repair or replacement parts for equipment remains a critical need in remote locations. As the global supply chain, shipping, and raw materials markets continue to fumble, fundamental entities such as defense forces are left vulnerable to operational downtime and security breaches when they aren't able to efficiently maintain machinery. Long delays, wrong or missing parts, and inconsistency of material availability leave essential systems down or in need of repair, potentially weakening perimeters and leaving troops and operators in dangerous situations.

The Snowbird Additive Mobile Manufacturing platform (SAMM Tech) is a patented hybrid manufacturing system that revolutionizes parts procurement and logistics in the field. SAMM Tech provides an additive manufacturing system (3D printing) with subtractive manufacturing capabilities (milling and routing heads) to produce large format, metal or composite parts. The patented gantry platform is constructed inside a standard shipping container, allowing the platform to be shipped to any location in the world. This concept is patented by US Patent No. 10,434,712 B1.

Mobile, hybrid manufacturing allows for any component to be produced in any location. If a part needs to be replaced immediately, a new one can be printed and machined on location or nearby, avoiding the challenges of navigating supply chain and logistics shortcomings.

SAMM Tech differentiates itself from other additive manufacturing systems in several ways. First, it is designed for large format parts. The standard model features a 10-ft. x 5-ft. print bed, manufacturing parts as large as 250 cubic feet onsite. Second, SAMM Tech can produce in both metal and composite materials, while many systems focus on composites only. Lastly, the SAMM Tech system uses standard weld wire for metal production and inert gas to run the system, reducing an excess of consumable parts.

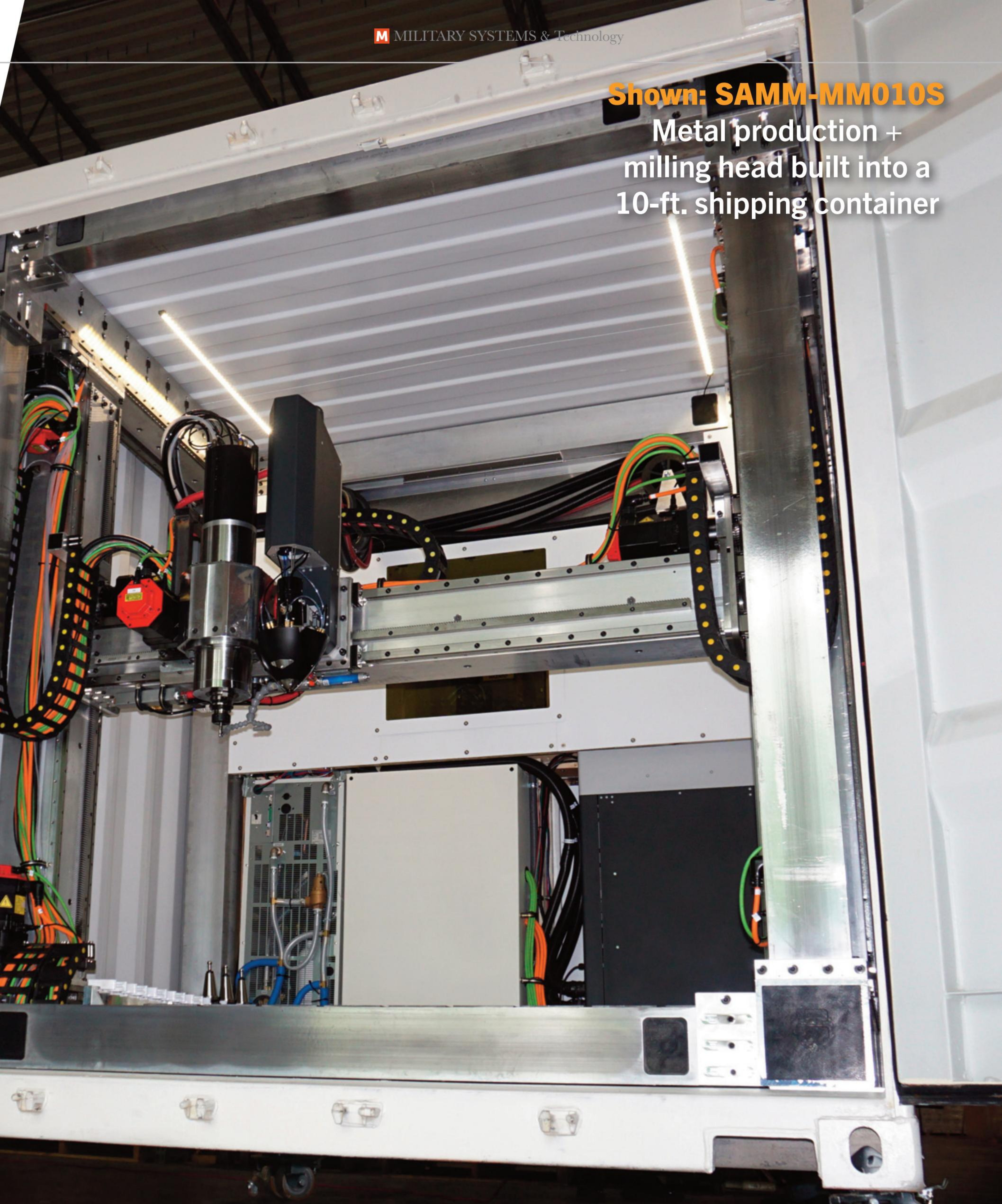
SAMM Tech challenges the way that parts make it to the operators in the field, minimizing downtime and optimizing fleet and troop readiness.



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Shown: SAMM-MM010S

Metal production +
milling head built into a
10-ft. shipping container

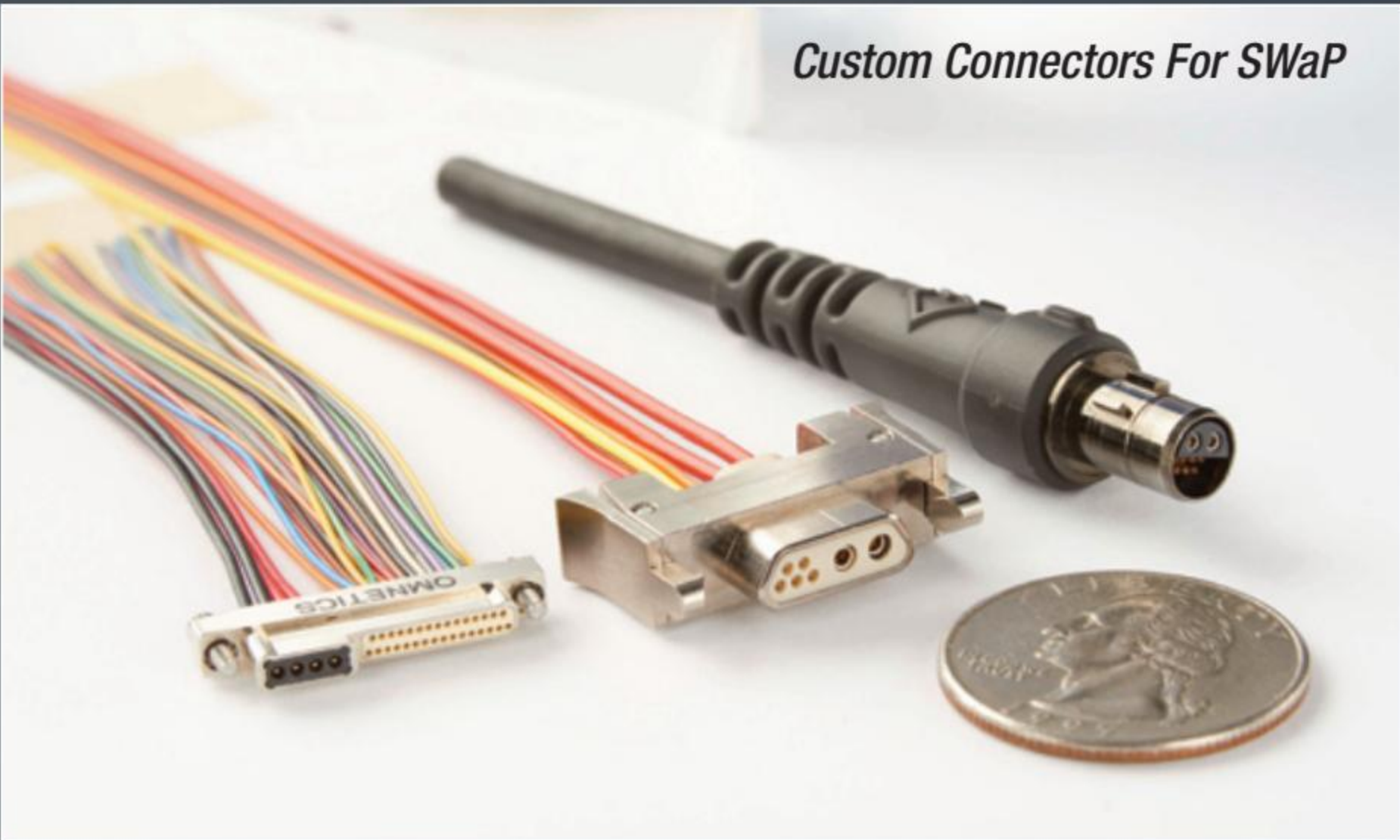


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Precision Engineered Connectors and Cables:

Meeting the unique requirements of challenging industries and applications

The trend of shrinking electronic devices is accompanied by a corresponding miniaturization of connectors and cables.



Microelectronics, starting with the integrated circuit, paved the way for smaller integrated board circuits on a single silicon chip. This advancement in size reduction and performance improvement has led to the miniaturization of connectors and cables in various applications. From robust components for space vehicles to wearable, implantable, and insertable devices, remote surgery equipment, and compact communication platforms, connectors serve a vast range of electronics. The diversity of designs, materials, environments, and technical capabilities that connectors accommodate is truly astounding. Therefore, when seeking a connector or cable, the first step is for application design engineers to identify and consider as many performance variables as possible.

The table below gives a broad range of the questions that must be answered prior to approaching a connector manufacturing company.

Embarking on the customized journey requires a comprehensive understanding of the connector's intended environment and application. This understanding can be achieved by addressing the following inquiries:

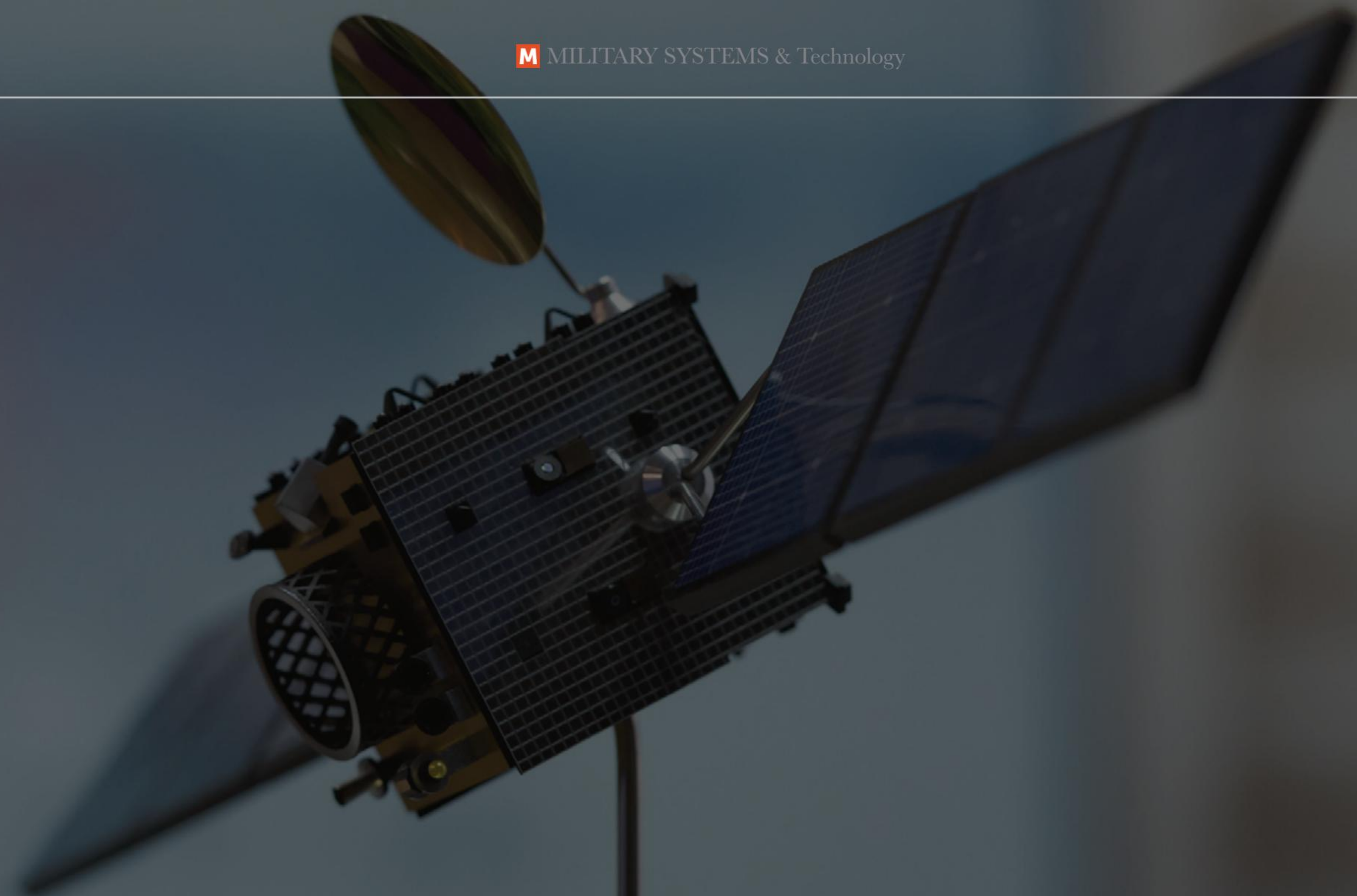
- What specific type of connector/cable is required for mechanical, electrical, signal management, or combined purposes?
- What kind of environment will the connector operate in?
- Is the environment harsh, characterized by extreme temperatures, excessive vibration, or changes in inertia/acceleration?
- Is the connector intended for use in medical devices such as wearable, implantable, insertable, or remote surgery equipment?
- Which materials align with the application's requirements?

Once these questions, along with other considerations based on the desired end-use, are answered, the fabrication process can commence.

Market sectors and industries for cables and connectors encompass various areas, including:

- **Space Vehicles:** In addition to prominent space missions aimed at reaching the Moon, Mars, and upcoming projects like the Jupiter Icy Moons Explorer (JUICE), there is a multitude of small-scale vehicles operating in low-to-medium Earth orbit and deep space. These vehicles serve diverse applications such as high-resolution imagery, global positioning systems (GPS), communications, remote sensing, navigation, and the deployment of nano satellites, CubeSats, and SmallSats. Ongoing innovations within the industry continually give rise to new types of space vehicle technology.

Design									
Mechanical	Size/Weight Length	Shock/ Vibration	Flexibility	Bend Radius	Temp Range	Jacket /Shielding	No. Mates	Medical Cleaning	Immersion/ Salt?
General Electrical	Current levels	Amp/Line	Resistance per inch	Insertion loss	Return loss	Voltage breakdown	EMI Rating	Ground lines	Attenuation
Signal Mgmt	Analog, Digital	Mixed signals	Signal speed.	Coax needs	Diff. Pairs	VP vs Length	Crosstalk	Impedance	Drain wire
Special Questions	Space Outgassing	Burst Signals	Radiation Exposure	Human touch?	Gloved Mating?	Dielectric For Speed	Best Alloy?	Best Jacket	Cable to Connector



- **Human Devices:** This category covers a broad range of wearable, implantable, and insertable devices. Examples of human wearables include smartwatches, body-mounted sensors, fitness trackers, augmented reality (AR) headsets, and hearing aids. Human implantables encompass pacemakers, implantable cardioverter defibrillators (ICD), insulin pumps, glucose monitors, and pressure sensors in vascular systems. Human insertables include prostheses, cochlear implants, drug delivery pumps, and devices for spinal cord and deep brain stimulation.
- **Remote Surgery:** Also known as tele-surgery, this form of surgical practice is gaining wider acceptance due to its ability to facilitate procedures performed across geographically distributed locations. While the benefits are evident, concerns often revolve around patient privacy and the stability of the digital connection between the surgeon and the surgical device.
- **Communication Platforms:** This category encompasses a wide array of devices, including mobile phones, phone masts, radio systems, signal repeater stations, ground control systems, earth-orbiting satellites used for digital imaging, weather monitoring, GPS, and other communication applications.
- **Other Electronic Devices:** The range of cable and connector applications extends far beyond the aforementioned sectors. It includes everything from basic 2-pin power cables for

connecting devices to electricity, to complex multi-form connectors capable of bridging power, fiber optic connections for digital binary signals, and data transfer. The design complexity of a connector is determined by the specific requirements of the application and the ingenuity of the design engineer.

The information provided here offers only a glimpse into the diverse designs and applications found within the realm of cables and connectors.

Finding solutions for non-standard cable and connector combinations is relatively straightforward. Numerous companies offer services for creating custom connector designs tailored to specific applications. Omnetics Connector Corporation has been specializing in this field for over 35 years. They employ a streamlined process that revolves around engineer-to-engineer communication. They prioritize design transparency and ensure short turnaround times for both support and fabrication. Leveraging their extensive experience in interconnect design, Omnetics seamlessly develops solutions and establishes long-term partnerships with clients, considering their interconnect budget. With a team of skilled solid modeling designers experienced in specialty connectors and cables, Omnetics can quickly fabricate application-specific prototypes using automated machining equipment and 3D printing. This enables the rapid creation of initial article products. Within just two to three days, a solid model can be ready for review by the client's team.

The emergence of new applications utilizing the latest chip designs necessitates low power consumption and the transmission of very low voltage, high-speed digital signals within systems. This trend towards higher circuit density requires the use of compact cables and low-profile connectors.



Omnetics' Micro-Circular Connectors

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OMNETICS
CONNECTOR CORPORATION

Ruggedize micro-miniature interconnect solutions for high reliability applications.

Omnetics' connectors are proven to deliver exceptional performance in extreme environments for mission-critical applications.



MICRO - D



NANO - D



NANO STRIP



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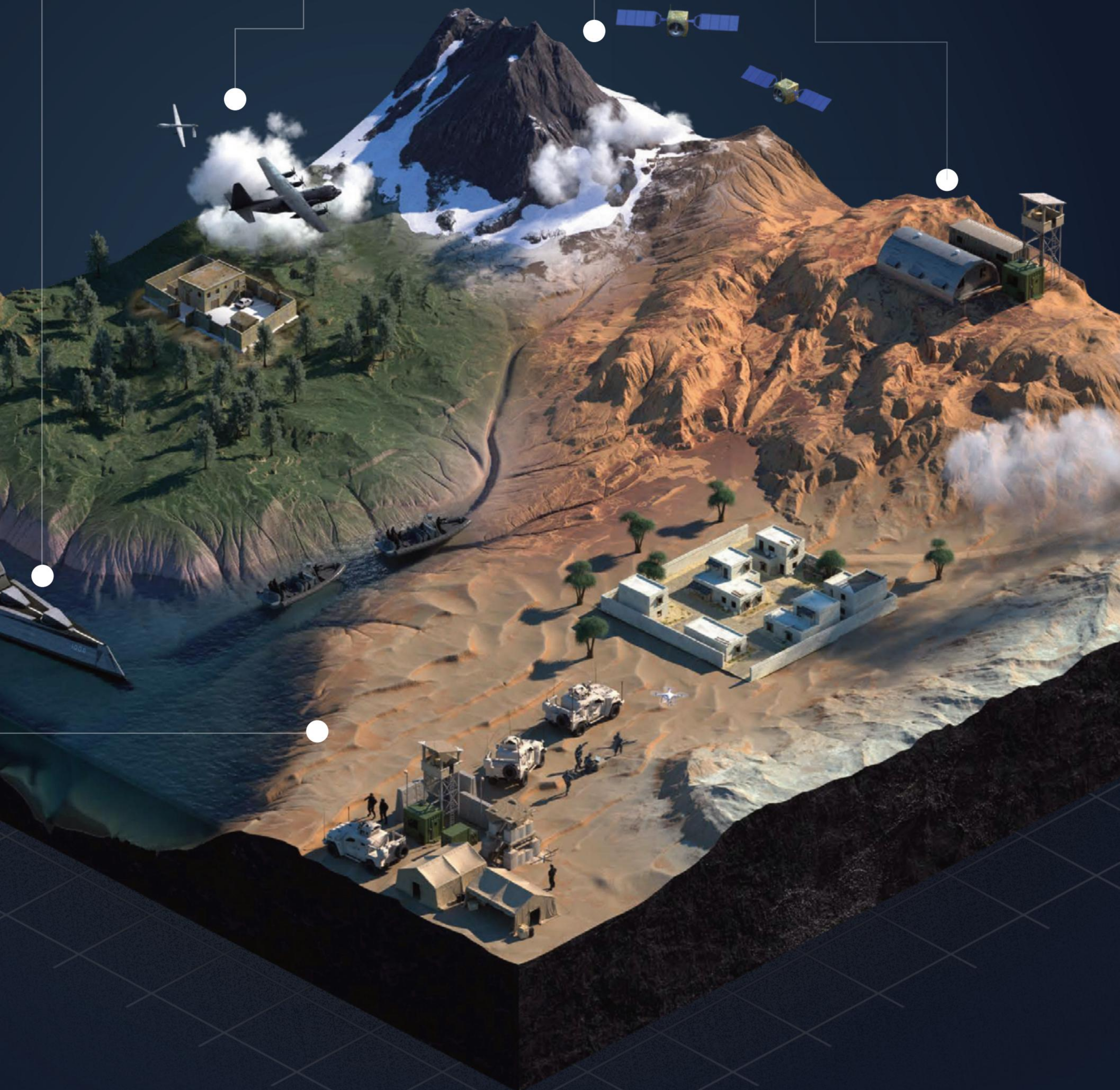
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IFF Signals

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SATCOM
PNT Signals
ISR

● COMMAND

GPS Guided Artillery
IR Guided Missiles
High Power Microwaves



Here at Trifibre,

We are committed to ensuring the absolute best quality service and products whilst delivering in a timely manor. Here are just a few of our business aims and ethics to show that not only are we an ambitious company, but we do everything to keep our carbon footprint low.



Our Aim

Our aim is to ensure that every piece of valuable equipment or kit arrives at its destination in perfect condition. Bring your casing projects to our highly experienced, friendly team who will provide you with the utmost of attention and a bespoke design solution.



Waste Management

We work closely with waste management companies to improve resource efficiency and reduce operating costs by increasing recycling and decreasing carbon emissions. As part of our zero waste to landfill commitment.



State Of The Art Technology

Trifibre have invested in the latest technologies such as CAD (Computer Aided Design), CNC routing and rotational moulding processes to produce the highest quality cases consistently, at the most competitive prices.



Quality Customer Service

Our company pride ourselves in our ability to provide a consultation and advice service to our highly valued and esteemed customers, to ensure the correct solution is being utilised for each of our clients.



Trifibre Quality

The Trifibre Ltd quality policy is to achieve a sustained growth by providing services that consistently satisfy and exceed the needs and expectations of our customers.

“ We’re proud of all the work we do, be it large corporate supply, or a simple box for personal storage. Our decades of experience means we’re the best at what we do. ”



Bespoke Flight Cases



Rotational Moulding



Custom CNC Foam Inserts



Polypropylene Cases



Screen Printing & Branding



Custom Padded Bags & Covers




Vacuum Forming



And Much More...

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HMG Paints receives JOSCAR Supplier Accreditation

HMG Paints, the UK's leading independent paint manufacturer, is pleased to announce that it has received JOSCAR supplier accreditation. The Joint Supply Chain Accreditation Register (JOSCAR) Registration Mark is valued by some of the largest purchasers in the defence, aerospace and security community and indicates to potential customers that HMG has successfully demonstrated its commitment and credentials to the industry.





JOSCAR is recognised by some of the largest purchasers in the defence community such as BAE Systems, Babcock, Boeing, Leidos, Leonardo QinetiQ, Raytheon, Rolls Royce and the Ministry of Defence (MOD). It is used as a single repository for pre-qualification and compliance information to determine if a supplier is “fit for business”. The award of the accreditation will allow HMG Paints to further develop its sales within the defence industry and other markets.

“We are delighted to have gained the JOSCAR supplier accreditation” commented Alan Sharples, Defence Sales Manager at HMG Paints. *“The award is testament to the investment and innovation we’ve made into the business and the marketplace over the last few years. It also represents a huge opportunity area for us and we’re excited to start working with the businesses who utilise JOSCAR to find suppliers.”*

Made in Britain

All of HMG’s Defence coatings, including its Def Stan 80-225 system, are also Made in Britain accredited. As a British based manufacturer HMG can provide fast delivery across its entire range, something which the company believes can benefit businesses who use JOSCAR.

“With pre-qualification via JOSCAR we are looking forward to getting started on some very exciting projects with members” added Alan. *“Being a British SME, we can manufacture and deliver products fast and now with JOSCAR accreditation we can do it even faster by removing pre-qualification and reducing procurement timescales.”*

Additional Accreditations

To further highlight its commitment to the defence area HMG have also signed up to the Armed Forces Covenant. The Armed Forces Covenant is a promise by HMG and the nation ensuring that those who serve or who have served in the armed forces, and their families, are treated fairly. The two recent accreditations follow on

from the company being Cyber Essentials Certified and a member of Make UK Defence.

HMG’s Defence team will be in attendance at the DSEI Show at the ExCeL London in September, where buyers can meet the team to discuss their paints and coatings requirements. The HMG Defence range offers products which are free from Chrome VI, meet low VOC requirements, and are IRR and CARC resistant and includes military standards such as 80-225. HMG Paints will be located on Stand H4-518 and you can prebook appointments by emailing defence@hmgpaint.com.

You can find out more about HMG’s range of Def Stan products and bespoke coatings development service at www.hmgpaint.com/products/landing/Defence.

If you require further information on the press release, please contact: **Gracienne Ikin** or **Stephen Dyson**
HMG Paints Communications gikin@hmgpaint.com or sdyson@hmgpaint.com T: 0161 205 7631



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MOBILE ARMORY CASES

Transport and store military guns and weapons securely with Peli Mobile Armory Cases. These extremely rugged cases keep sensitive and vital military weapons safe from moisture, dust sand, salt and impact. They are made from durable polyethylene plastic and include a large variety of interesting features, like: comfort grip handles, wheather resistant seals, durable hinged lids, pressure release valves, and interiors that are custom made for the gear they hold. These cases are designed to be as tough as the people who use them.



MOBILE MEDICAL CASES

These medical cases equipped with full extension sliding drawers are designed to provide maximum protection in any situation. Impervious to weather, temperature and impact, the rotationally moulded shell keeps all your medical supplies dry, dust-free, and secure. With four large drawers for the model 472-MEDCHEST3-4D and eight drawers including a lockable drawer for your most sensitive and vital equipment for the model 472-MEDCHEST3-8D, these cases provide ample storage for all your bulk items such as gauze, solvents, large prescription bottles and IV fluids. Equipped with wheels, Peli Mobile Medical cases are easy to transport anywhere you need.

Peli Products also offers medical case solutions without drawers in different sizes.

Watch video
to learn more:



WHEN PAPERWORK HAS TO GET DONE, PELI MOBILE OFFICE FIELD DESKS ARE THE SOLUTION

Folded into one durable shipping container to become mobile in an instant, Peli's mobile field desks are the ideal solution for dealing with paper and administrative work in the field. The attached table provides a large and flat work surface with a number of drawers of different sizes and a sturdy field chair. This comfortable chair includes a backrest and can be folded and stored in the lid in seconds.



Peli Field Desks contain 6 drawers with a variety of applications:

- Two drawers for your paper work
- Two drawers that are padlockable for extra security
- Two large drawers specifically designed for Pendaflex folders

The Double Duty version is equipped with two field chairs, two heavy duty wheels for easy transport, and two power strips with six plugs per power strip, ensuring you always have a place to plug in your electronics.

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For more information visit: www.peli.com

Oxley Shortlisted For Two Prestigious 'Made in The North West' Awards



www.oxleygroup.com



Cumbrian based aerospace & defence manufacturer, Oxley Group has been shortlisted for two Made in the North West Awards 2023. The awards are a celebration of the most successful and inspiring manufacturers from across the region.

Oxley has been shortlisted for the Automotive, Aerospace and Rail Award which recognises the achievements of the region's manufacturers operating in the automotive, aerospace or rail industries. The Group has also been shortlisted for the Export Award which is presented to the manufacturing company deemed by the judges to be the most outstanding exporter in terms of international presence, export growth and exports as a proportion of sales.

Oxley Group is a world leading designer and manufacturer of LED lighting systems and high specification electronic components. The Group has had wide scale success in exporting, sales outside of the UK account for over 80% of turnover and cover 34 countries across the world. Oxley works on prestigious programmes with major aerospace & defence

companies, key international projects include an LED lighting suite for the Gulfstream G500 and G600 in the US, a range of lighting for the Saab Gripen in Sweden and a contract to develop the external lighting system on the new KF-21 Fighter Aircraft programme for South Korea.

Freddy Oxley, the company's founder had a philosophy about self-sufficiency and Oxley still provides a full end to end service in house from Ulverston. The Group is renowned for expertise in new product development and invests heavily in R&D and technologies to sustain future growth.

The winners will be announced at a ceremony in Manchester on the 25th May.

smiths interconnect



Delivering High-Speed Space Connectivity with Advanced EMI Protection

Smiths Interconnect announced today the release of the new EMI flange on its high-speed NXS connectors for space applications.

The new EMI flange is an addition to the NXS Series, the ultra-high density solution that forms the interconnect backplane enabling a scalable satellite design while ensuring signal integrity and high resistance to shock.

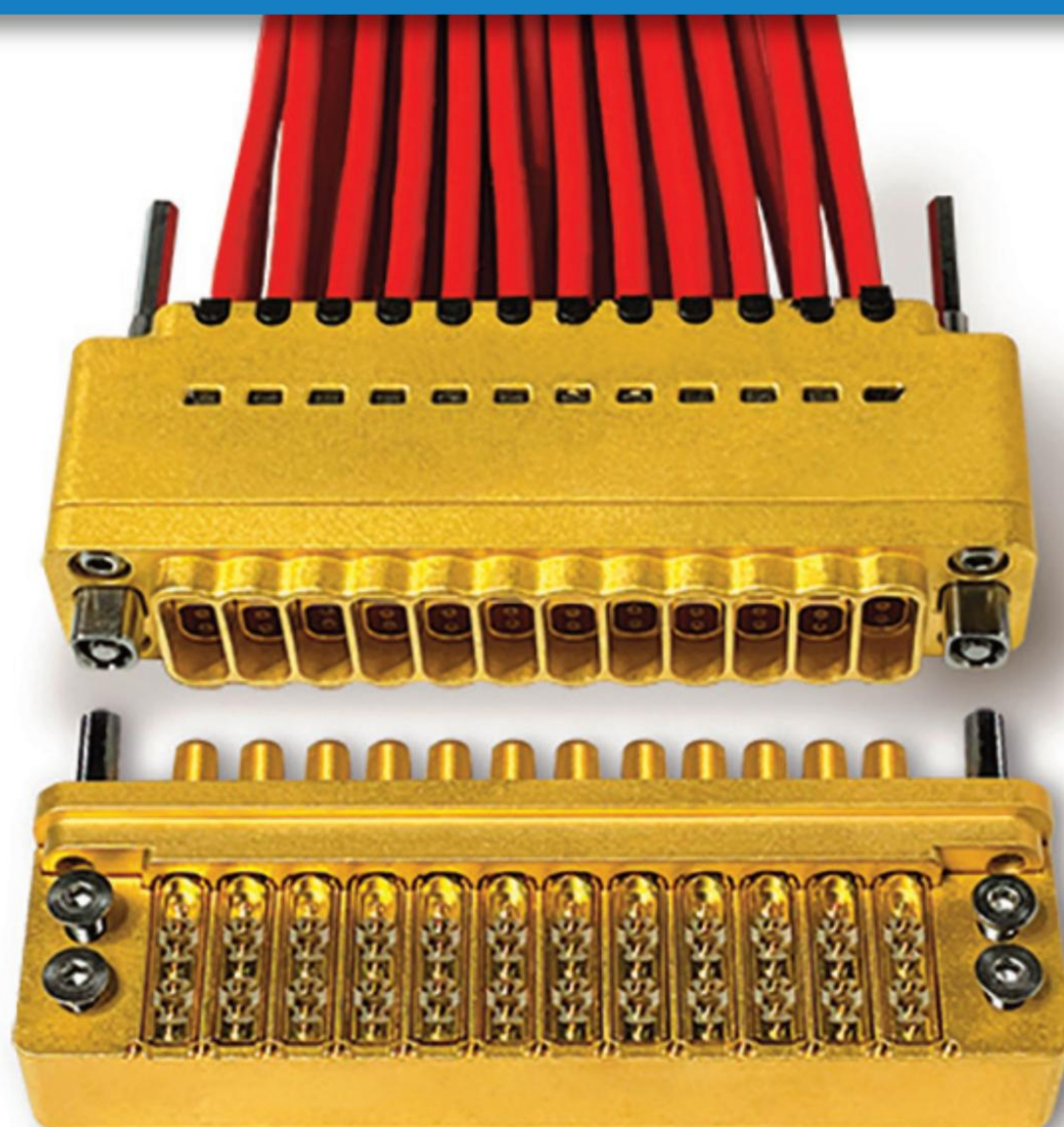
The new EMI flange reduces the electromagnetic interference on the NXS connectors, which is crucial in high-speed space applications where data integrity is vital. The solution is built to the highest space standards and qualified to rigorous testing and performance criteria, including ESCC 3401, ESCC 3402, ECSS-Q-ST-70C, ECSS-Q-ST-70-02, ECSS-Q-ST-70-08C, ECSS-Q-ST-70-38C, and ECSS-Q-70-71.

According to Mark Kelleher, Vice President and General

Manager of the Connector Business Unit at Smiths Interconnect, *"The addition of the EMI flange to Smiths Interconnect's NXS series ensures the elimination of unwanted RF or HRF noise line signals for greater data integrity and improved system performance. This offers a new advantage to satellite manufacturers, in addition to compact size and solderless PCB mounting, whereby the connector can be placed and replaced with very little risk to the board."*

The NXS connector with EMI Flange is equipped with the micro Hypertac® Hyperboloid contact technology to withstand data rate applications up to 50 Gbps requirements per channel, including extreme levels of vibration, shock, and climatic testing above 2100G. Each ultra-high density quadax module contains two dual twinax at 100 Ω each pair, and it is blind mateable, hot pluggable, with ultra-low mating forces and low outgassing materials. The solderless PCB mount design reduces the customer's risk and cost of ownership.

As space exploration continues to evolve, Smiths Interconnect is at the forefront of innovation, providing cutting-edge solutions that are changing the face of space technology.



NXS Connectors

The NXS connector with EMI Flange is equipped with the micro Hypertac® Hyperboloid contact technology to withstand data rate applications up to 50 Gbps requirements per channel, including extreme levels of vibration, shock, and climatic testing above 2100G.

Is your RF recording for SIGINT high-fidelity?

Imagine a SIGINT team tasked to uncover RF access points at a power plant.

As it approaches the plant, it discovers the plant's SCADA network operates as a mesh, with wired and wireless signals.

Workers communicate with handheld trunked radios at 400–450 MHz. There are multiple Wi-Fi access points at 2.5 and 5GHz. Bluetooth lurks around, and there is also an air defence RADAR between 8-12GHz.

The team has several critical tasks:

- *Decode the DMR*
- *Detect and geolocate the Wi-Fi*
- *Classify the RADAR*

Only high-fidelity RF I/Q data will deliver the enhanced data it needs to get an accurate baseline of the entire power plant and map out the SCADA network for follow on RF over cyber effects.

What is high-fidelity I/Q signal capture?

High-fidelity recording should always include I/Q data, enabling advanced demodulation and decoding. It has a high dynamic range, which increases the sensitivity and capture at the noise floor. Moreover, it has wideband I/Q bandwidth and a high-frequency range, ensuring more signals are captured.

What are the benefits of long duration, wide bandwidth, remote SIGINT collection?

Long duration, wide bandwidth, remote SIGINT collection involves capturing and analysing RF signals over a long period (hours/days), across a wide frequency range, and from a remote location. High-fidelity recording techniques allow every signal to be captured—important as some transitory and low-power signals are easy to miss or hide, especially Low Probability of Intercept (LPI) signals. Detectors and other analytical tools help SIGINT analysts find the “needle in the spectrum haystack” quickly.

What are operators' SIGINT products of choice?

The RFeye SenS Portable RF spectrum I/Q recorder is designed for the operator who needs to capture and analyse signals in high fidelity across a wide frequency range. It allows you to capture intermittent, low-power, and short-duration signals, even if they occur outside working hours or hide next to other transmission sources.

It is a lightweight, extremely high-resolution RF recorder. It can continuously stream full-rate, 16-bit I/Q data to built-in, enterprise-class SSDs, so you'll never miss a signal. With a frequency range of up to 8 GHz or 18 GHz and a 100-MHz IBW, SenS captures and records data with a much higher level of fidelity than can be achieved by other systems.

The RFeye SenS Remote combines the RF and edge processing capabilities of the RFeye Node together with the high-fidelity I/Q recording and signal extraction of the RFeye SenS family.

The RFeye SenS Portable is a lightweight, high-resolution RF recorder. It can continuously stream full-rate, 16-bit I/Q data to built-in, enterprise-class SSDs, so you will never miss a signal. With a frequency range of up to 8 GHz or 18 GHz and a 100-MHz IBW, the SenS Remote captures and records data with a much higher level of fidelity than other systems.

DeepView is an RF signal analysis tool that allows operators to quickly identify signals of interest (SIOs) across terabytes of data without wading through hours of recording. It captures and exports ultra-short pulses and other SIOs, drastically reducing post-processing time. The software allows you to cut, slice, and analyse I/Q data in the field.

Essential intelligence about enemy communications

Tactical high-fidelity RF recording is critical because this data provides essential information about enemy electronic communications. By using CRFS' SenS products and DeepView



software to collect and analyze RF signals, SIGINT analysts can identify and locate communications sources, extract data from intercepted messages, and better understand enemy communication patterns and tactics.

Discover more about CRFS' SIGINT and I/Q recording solutions at www.crfs.com.



DETECT . LOCATE . PROTECT

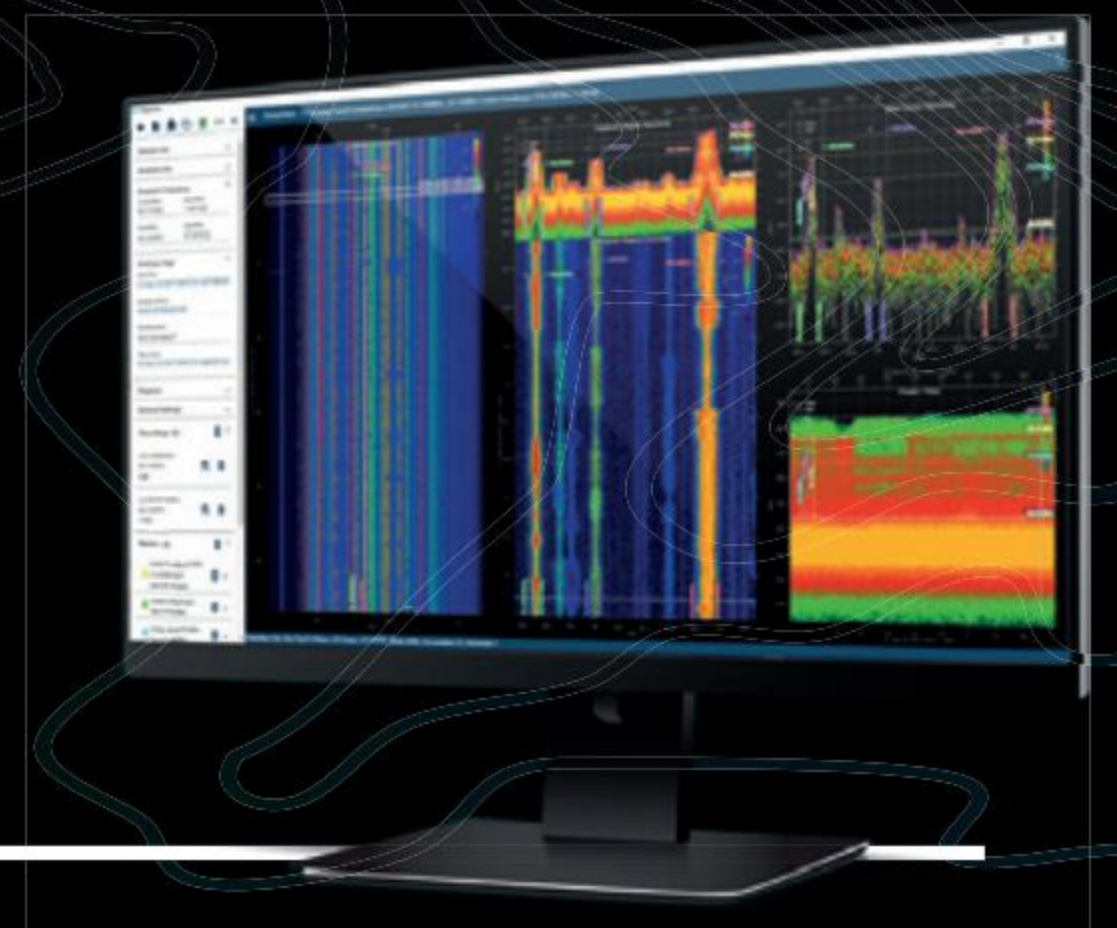
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 **RUNFLAT**
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Emergency communications where they are needed most:

Bringing HF radio to the Caribbean



The Rainbow Radio League and Barrett Communications are bringing vital emergency communications infrastructure to the Caribbean. Here's how an ambitious relationship was born with the vision to save lives.

In St Vincent and the Grenadines, and the surrounding islands, emergency communications equipment is transforming disaster response. Located in the Caribbean's hurricane belt and in proximity to an active volcano, La Soufrière, the islands are prone to natural disasters. With donated equipment from radio experts Barrett Communications, the Rainbow Radio League (RRL) is establishing communications networks and providing training that is geared to saving lives.

Disaster and opportunity

RRL is a not-for-profit organisation of primarily radio amateurs. Since 1995, RRL has focused on providing emergency communications in St Vincent and the Grenadines and the surrounding nations.

In 2004, over 250,000 people lost their lives in a tsunami caused by a massive earthquake in Indonesia. Communications handsets donated by international organisations played a role in the relief effort. This gave RRL director Donald De Riggs an idea: what if the Caribbean islands had access to emergency communications infrastructure before disaster struck? "We are in the process of developing a domestic HF network. If we could get some radios to assist us, we'd be in a much better position to respond to emergencies. When disaster strikes, the critical period is the first 36 to 48 hours," explains De Riggs. "Having a functional emergency communications network during that period is vital."

De Riggs' response to the Indonesia disaster, published in Radio Response International, caught the attention of Cameron Berg from Barrett Communications. Fast-forward to today, and Barrett has supplied three shipments of donated radio equipment to RRL, the latest shipment arriving in February 2023.

High frequency (HF) and very high frequency (VHF) radio offers invaluable functionality, explains De Riggs: "With handsets, like a walkie-talkie, operation is limited because if you don't have many repeaters, you are limited to a particular geographic area. HF radio has a much wider scope."

In the Caribbean, where VHF signals can be blocked by mountainous terrain and many of the islands are remote, HF radio offers unprecedented connectivity.





Strength in partnership

“Barrett has a vision, and they understand what our mission is,” says De Riggs. “They realised that we needed the tools, and they provided most of these tools.” RRL has received equipment including HF radios, solar panels and small computers. The latest shipment also included broad band dipole antennae, portable antenna masts and spare microphones. Most of it is ex-demonstration equipment, meaning it arrives in virtually mint condition.

The equipment has enabled RRL to set up communication stations in the most critical and vulnerable areas in St Vincent and the Grenadines, and to respond to domestic and regional disasters.

In 2017, Hurricane Maria caused devastation to the neighbouring island of Dominica. RRL sent a joint medical and emergency communication team as part of the relief effort.

“We used Barrett equipment to go out in the field and do damage assessment. I could relay information to different agencies in St Vincent, Antigua and Barbados,” says De Riggs. “We were able to coordinate the arrival of over 30 doctors who came to do a rapid assessment of the medical situation.”

After RRL’s rotation, the team left behind solar panels provided by Barrett to enable the local FM station to broadcast to nearby communities essential information about relief supplies including food, water and shelter, enabling the operation to continue after they had left.

Amateur radio operators in St. Vincent and the Grenadines were in daily contact with regional disaster response agency CDEMA before and during the recent eruption of La Soufrière in St Vincent.

St Vincent is now home to nearly 10 stations, including a station overlooking the airport in Bequia. Now, as the 2023 hurricane season approaches, RRL will be conducting training exercises. “We keep radio operators active and give them hands-on experience,” says De Riggs.

“We also work very closely with our National Emergency Management Organisation (NEMO) and train their staff,” adds De Riggs. “We have a symbiotic relationship with them. We also train the port authority and policemen who work in Telecoms.” RRL also

works alongside local fishermen, the coastguard and the local Red Cross to run open water rescue simulations.

And the radio amateurs of the future are being fostered through RRL’s engagement with schools. RRL provides demonstrations and involves students in erecting rapid deployment antenna and wireless linkup. This engagement provides children opportunities to pursue careers including air traffic control and the police. RRL eventually aims to involve all the secondary schools on the island.

A bright future

“I have been blown away by the kindness from Barrett, and the relationship is excellent,” says De Riggs. “Anytime we have any problems with the equipment, the technicians will help, and if there needs to be a replacement, they send it.

“In this last shipment, we were able to get some antennae that were very strong, very sturdy. The latest equipment is the new Barrett 4050 HF SDR Transceiver, and the operators who are using them are very impressed with the features.”

And RRL continues to work on expanding its response capabilities, with ambitions to establish proper maritime rescue capabilities and air response for regional disasters. “As an organisation, we haven’t realised our full potential yet,” says De Riggs. “But with adequate funding and agencies that understand and support our role in disaster management, that potential will be realised.”

For further information on the Barrett Communications range of solutions, visit:

www.barrettcomms.com



EOS LAUNCHES NEW “SLINGER” COUNTER-DRONE CAPABILITY



Matt Jones with The Hon
Matt Thistlethwaite MP

Electro Optic Systems (EOS) has launched its Australian made counter-drone capability, named the “Slinger”, at its manufacturing facility in Canberra today.



Assistant Minister for Defence, the Hon Matt Thistlethwaite MP, who officially launched the innovative local technology, said that he continued to be impressed by the world-leading capability of Australia's defence industry.

Executive Vice President of EOS Defence Systems, Mr Matt Jones, said EOS was excited to launch the Slinger in response to growing international demand for advanced counter-drone technologies

"This is a big day for Australia, the Slinger is a cutting-edge capability that demonstrates Australian innovation can lead the world in response to global security needs", said Mr Jones.

"We have applied the hard-won lessons from the battlefields, including Ukraine, to our Slinger system, ensuring it will give real edge to those looking to hit back against the growing threat of drones."

The Slinger incorporates a radar, a 30mm cannon with specifically designed ammunition, and EOS' proprietary stabilisation and pointing technology for counter-drone operations.

It can track and discriminately engage moving drones at a range of more than 800 metres, with unique ammunition making it suitable for use in built-up environments.



The Slinger has been designed and developed in Australia specifically for export markets, with a focus on addressing contemporary and emerging threats based on lessons learned in recent conflicts, such as Ukraine.

About EOS

EOS is Australia's largest sovereign defence industry exporter and a trusted provider of advanced military technology to the Australian Defence Force, employing approximately 300 staff across Australia, with more than 100 Australian companies in its supply chain.

EOS announced in April that it has secured two separate conditional contracts worth up to US\$80m (approximately ~A\$120m) and US\$41m (approximately A\$61m) respectively to supply its industry-leading weapon systems to Ukraine. Under the first contract, EOS will provide up to one hundred Remote Weapon Systems (RWS), while the second contract entails up to fifty RWS units. To fulfill these orders, EOS will leverage its extensive support network and supply chain, which comprises over one hundred suppliers from Australia and other international locations.

[EOS-AUS.COM/DEFENCE](https://eos-aus.com/defence)



SCHROTH®

Mine Blast & Utility Seat Systems



The **SCHROTH Mine Blast Protected Seat Systems** are tubular lightweight systems with a unique resettable **Energy Absorbing (EA)** system designed into the seat.

The EA design and technology comes from the years of experience **SCHROTH** has with energy management in seatbelt systems. The design of the seat gives the occupant not only excellent protection in a mine blast event, but also offers excellent protection in the event of an accident or impact. The All Belts to Seat (ABTS) design allows the vehicle manufacturer to optimize the installation of the seat within the hull. An integrated footrest can also be incorporated into the seating system for additional lower-leg protection. The unique **SCHROTH EA** technology is tunable to match the size and weight of the vehicle as well as the level of protection required and the available space within the vehicle interior. The EA is also designed to reset itself and offer high levels of protection for the secondary (slam down) event.



The **Mine Blast protected seating system** is available in two versions:

- **SU-62 compact forward- or rear-facing seat**
- **SU-63 side-facing seat with full or side specific headrest for exceptional side impact protection**

The **SCHROTH** seating comes standard with an ECE certified lightweight 4-point harness restraint. Restraint systems with ECE complaint 5-point seatbelts are also available.

SCHROTH offers the ideal system for military personnel & troop transport configurations.



KEY FEATURES

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- Modular construction
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CUSTOM APPLICATIONS

Our lightweight seat systems may be adapted to many ground vehicle applications. We can assist with interface, integration, installation and ergonomic requirements as well as any vehicle specific seat modifications that may be required.

CONTACT:

Werner Koch
Tel: +49 2932 97420
E-Mail: werner.koch@eu.schroth.com



JFD showcases new Tactical Diving Vehicle technology

at SOF Week 2023 ahead of delivery to US Partner

JFD – part of James Fisher and Sons plc – has launched its advanced four man tactical diving platform, Shadow Seal, during SOF Week 2023, ahead of delivery to United States partner Blue Tide Marine (BTM) for demonstration and training purposes.

Shadow Seal is an adaptable and extremely capable lightweight Tactical Diving Vehicle (TDV) able to transport a pilot, navigator and two passengers in surface, semi submerged and submerged mode with a range of 80nm.

Shadow Seal offers unparalleled underwater manoeuvrability to

Special Operations Forces required to covertly cross the expanding offshore and littoral water gap. Adaptable to suit a variety of ISTAR and combat requirements, the platform provides sophisticated protection to complex, high value platforms and critical infrastructure.

A strategic partnership with BTM was announced in March 2022 as part of JFD's commitment to expanding its US presence and subsea maritime capability. BTM subsequently purchased the first production model of Shadow Seal to provide local demonstration and training services - significant milestone in JFD's journey towards a full turnkey US capability, inclusive of TDV provision and follow on support services throughout the product lifecycle.



Bob Pudney, President, Blue Tide Marine, comments:

“We are excited to bring this collaborative effort of JFD and BTM to the subsea sector and look forward to the delivery of the Shadow Seal. This multi-mission capable platform provides an opportunity to modernise the undersea capabilities of SOCOM, the US Navy and other agency partners with advanced mission focused technology, extended range and offers practical training and in service support.”

JFD has been working closely with the BTM team during production at JFD’s facility in Glasgow, UK, and final in-water trials, FATS (Factory Acceptance Trials) and HATS (Harbour Acceptance Trials) are currently underway prior to delivery to BTM in Fort Lauderdale, Florida in coming months. JFD will continue to offer support and training as the craft is delivered to the US.

Rob Hales, JFD Managing Director, says:

“The BTM partnership ensures that we can offer innovative solutions to modern day challenges; such as the current capability gap in littoral manoeuvre; with first class in-country demonstration and training. JFD is committed to further developing our in-country capabilities including through-life support services and this upcoming, important

delivery milestone reflects a significant milestone in our mission to better serve the US and wider Americas undersea markets.”

Shadow Seal was first developed by Ortega Submersibles in The Netherlands which was acquired by JFD in 2019 and has since undergone further development and rigorous trials. JFD has combined 40 years’ experience within the subsea domain with proven technology; found within JFD’s Carrier Seal which is in operation with a number of the World’s Navies. Recent upgrades included in the latest Shadow Seal include expansion of available battery power enhancing range and endurance capacity of the craft.

JFD will be exhibiting alongside BTM at SOF Week 2023 on 8-11 May 2023, and will be displaying a prototype model of Shadow Seal (MK1D) on Stand 501 at the Tampa Convention Centre. SOF Week is an important opportunity for JFD US to promote its world-leading capabilities in the underseas sector, and our UK and US team will be on hand to discuss Shadow Seal and wider JFD Special Operations capabilities.

www.jfdglobal.com



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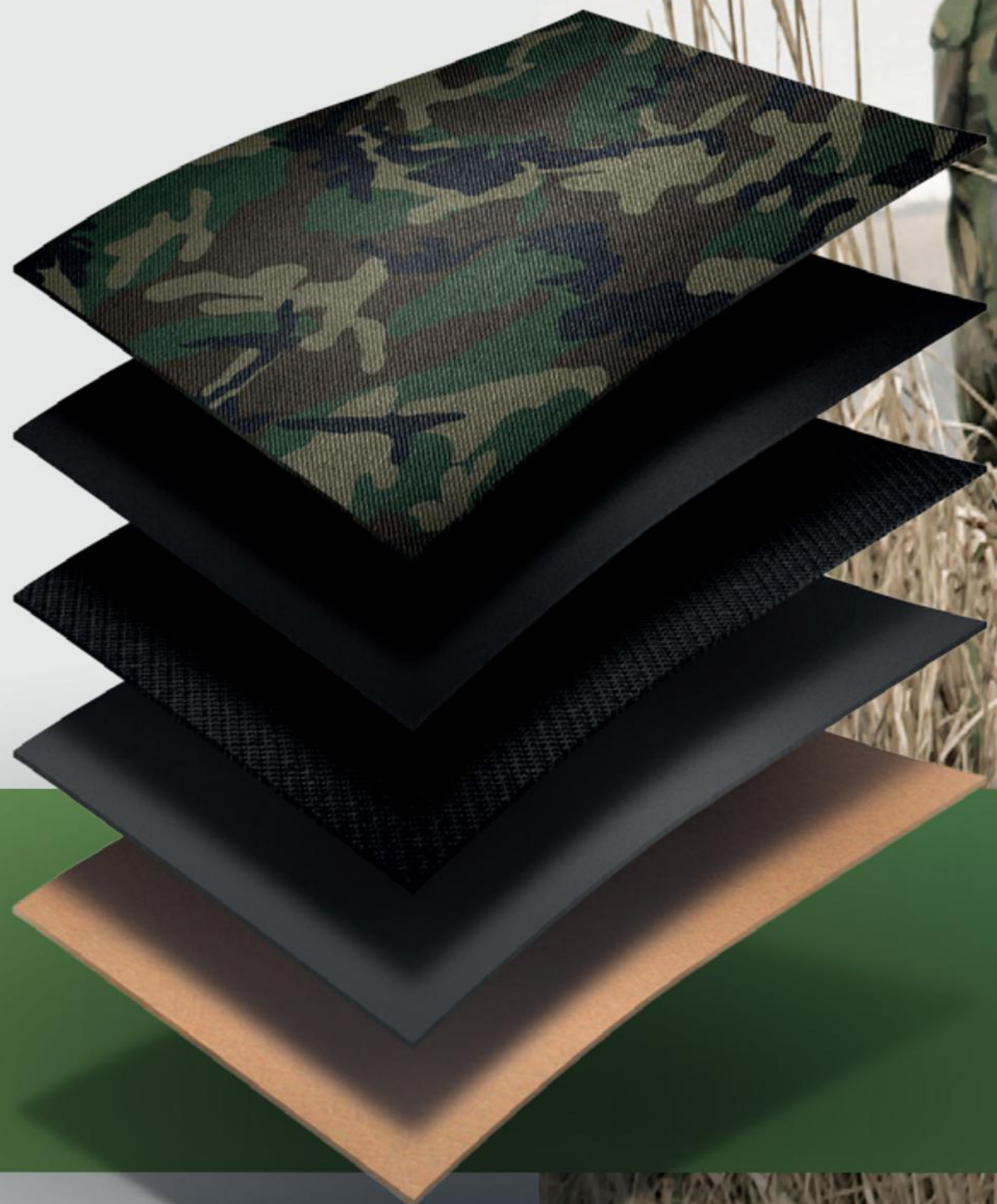
Flexzorb™ - The flexible, lightweight protective textile that is widely used by many of the world's leading defence vendors, making us the leading provider of activated carbon cloth for defence applications.

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- CBRN Personal protective equipment (PPE)
- CBRN decontamination wipes
- Missile decoy media
- Phosphine gas adsorption media

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TOGETHER WE ARE STRONGER



BUILDING AND MAINTAINING RESILIENCE IN THE AEROSPACE AND DEFENCE SUPPLY CHAIN: THE ROLE OF A GLOBAL 'LOCAL' SUPPLIER

A union of four of the world's leading suppliers of metals to the A&D industry allow OEMs to 'think globally and source locally'

In the wake of the widespread supply chain disruption across the aerospace and defence (A&D) industry during the COVID-19 pandemic, compounded by further disruption arising due to Russia's military action in Ukraine, A&D companies across the globe are ever more cognisant of supply chain resilience.

The A&D industry is global and, as such, needs a global capability from its supply chain. But, regional stakeholders also play a vital part in ensuring a resilient supply chain. A&D equipment manufacturers are increasingly sourcing suppliers that not only demonstrate a global, efficient service, but also a supplier that recognises the value of local support and reliability of supply.

Reaching new heights in Aerospace & Defence metal supply

Multi-metal stockholders have long played an important role in the A&D manufacturing supply chain. Aero Metals Alliance (AMA) is one such stockholder. AMA is a global partnership of four world-class metal suppliers, and delivers a unique offering that brings together materials and supply chain management services that enhance the supply chain for customers, wherever they are in the world.

All four AMA businesses have established their own reputations for industry experience, knowledge and expertise to service the needs of its 'local' customers. Collectively, the Aero Metals Alliance structure enables a pooling of resources and technical knowledge to bring a trusted global supply chain to the A&D manufacturing industries. This unique alliance enables AMA to aggregate demand across a single supply chain on behalf of the world's leading original equipment manufacturers (OEMs), while providing a truly responsive local service to meet the needs of individual sub-contractors anywhere in the world.

Setting the standard since 1947

AMA has been supplying the global aerospace, defence, energy, and motorsport industries with product ranges, processing capabilities and services for over 75 years and is accredited and approved by the biggest names in the business.

The stringent rules and regulations of the A&D industries govern AMA's code of conduct, engagement with customers and specify minimum compliance levels. Each of the AMA businesses hold long-standing individual certification, and the partnership has global consolidated certifications for EN/AS9100 and 9120 and single AS9100 certification – the aerospace, aviation and defence industry-recognised QMS standard. Single certification

underscores AMA's commitment to meeting and exceeding the increasingly stringent industry requirements for A&D related products, while giving customers the reassurance and confidence that AMA's operations work to the highest industry standards.

'Think globally and source locally'

AMA provides an easier route through which OEMs and sub-contractors in A&D manufacturing can source their metals, their processing requirements, and services. It offers a single point of contact - effectively a one-stop-shop - to access the best capability in dedicated aerospace, aviation and defence metal supply. Wherever materials are required to operate in extreme environments AMA has a solution.

AMA operates from thirteen service centres in seven countries throughout the Americas, Europe and Asia Pacific. AMA's businesses - Gould Alloys, Service Centres Aero (SCA), Progressive Alloy Steels Unlimited (PASU) and Sunshine Metals – is a network of strategically located service centres, each with its own processing capabilities. It collectively offers cutting, shape cutting, milling, surfacing, sawing, drilling, guillotining, waterjet cutting, USI testing, heat treating or re-tempering, forgings and machining to near net shape to national, regional and international customers.

AMA's capabilities are back up to full demand since the pandemic, and with a vast stock range in aluminium, stainless steel, carbon and alloy steels, titanium, copper alloys and nickel alloys, AMA's stock range is unrivalled. AMA is committed to maintaining these unrivalled stock levels, and delivering a genuinely high-quality service to customers. AMA does this by placing each and every customer at the centre of our business, regardless of the size of the account.

AMA's regional and local capabilities not only serve to strengthen the global union but, in an increasingly volatile and unpredictable world, they also provide OEM's with a critical defence against supply chain interruption.

If your operations are too dependent on a particular supplier, country or region, and you are considering diversifying to build and maintain your supply chain resilience, AMA has the answer. Contact your global 'local' supplier today.

To learn more, visit www.aerometalsalliance.com

MAST SYSTEM

MASTSYSTEM FACTS

- » FIRST DELIVERIES IN 1984
- » CONSULTATIVE APPROACH
- » SUPPORT THROUGH ENTIRE LIFE CYCLE
- » +35,000 TELESCOPIC MAST SYSTEMS DELIVERED TO OVER 50 COUNTRIES WORLDWIDE

CERTIFIED SUPPLIER

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- » AQAP 2110
- » DEF STAN 00-35
- » ISO 9001, ISO 14001

PRODUCT LINE	TLP	TRIPOD	TM	TR	EXB	SKYHIGH
DEPLOYMENT HEIGHT	10-15 M	1-8 M	4-8 M	4-12 M	6-15 M	2.5-20 M
VERTICAL TOP LOAD	3-5 KG	2-50 KG	2-5 KG	5-10 KG	20-130 KG	50-600 KG

For more information: head to mastsystem.com or contact our sales team directly: sales@mastsystem.com

MASTSYSTEM'S WORLDWIDE RESELLER NETWORK

ESTONIA - TELEGRUPP AS

ITALY - ADVAM S.R.L

ISRAEL - GOLDTEC TECHNOLOGIES LTD.

NORTH AMERICA - CONTACT! CORPORATION

POLAND - MEGMAR LOGISTICS & CONSULTING LTD.

SINGAPORE - LYNXTEK PTE LTD

TAIWAN - ADI ADVANCED SYSTEMS CO. LTD.

AUSTRALIA - MASER DEFENCE PTY LTD

INDIA - CHELTON LIMITED & CANYON AEROCONNECT

**MASTSYSTEM
FINLAND**



DSEI 2023 - Mastsystem to exhibit at Finnish Pavilion
Hall 7 - H7-127

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EXOSKIN™-G1
TACTILE CBRN GLOVES

EXOSKIN™-B1
HIGH TRACTION CBRN BOOTS

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■ Proven Rubber Technology

■ Optimised Design

■ Quick Donning and Doffing

■ Ambidextrous Fitment

■ Ruggedised Quick Release Straps (Boots)

■ 27 Adjustability Settings (Boots)

■ Optimised Tactical Grip (Boots)

■ Touchscreen Compatible (Gloves)



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Split into different frequencies and applications, you'll be able to explore our diverse range of airborne communication, navigation and identification antennas including GPS and Link16 solutions.

Scan the QR code to complete a form requesting the Antenna Catalogue. Once qualified, we'll send it to you via email. For any other queries or issues, please contact info@chelton.com.



Chelton hosts UK MoD at Test Facility

Redhill Aerodrome, UK: Chelton's purpose-built test lanes provide a controlled and comprehensive environment for product assessment and validation of detection equipment.



CHELTON

In April 2023, Chelton hosted personnel from the UK's Ministry of Defence at its purpose-built test facility in Redhill.

The day opened with a briefing on the new all-weather facility followed by demonstrations showcasing key capabilities of both the site and Chelton's explosive ordnance detection systems portfolio.

Chelton has leading-edge expertise in developing advanced explosive ordnance detection systems using Ground Penetrating Radar (GPR). Compared to traditional metal-only detectors, GPR-based sensors can see metallic, minimum-metal and non-metallic threats. When incorporated into the Vallon Minehound and Wirehound handheld detectors, it can provide an enhanced dual detection capability. In addition to designing and manufacturing GPR sensors for handheld detectors, Chelton has also produced an innovative GPR QuadPack which can be mounted onto vehicles or remote tactical systems for standoff detection. In addition to detection products, Chelton also offers training systems by way of virtual reality and outdoor training aids for personnel to train and test skills and products before entering a live environment.

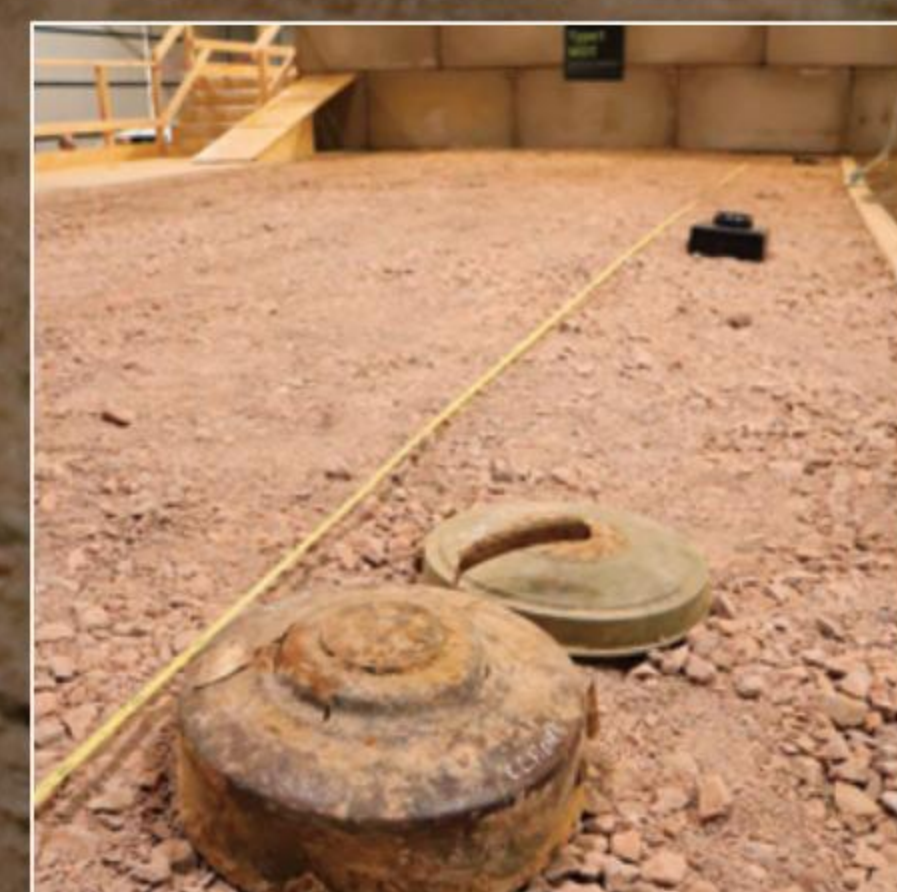
The test facility at Redhill is the latest to be added to a range of bespoke services offered by Chelton alongside rapid prototyping capabilities, engineering customisation and spiral development. The test site will offer a range of benefits to militaries and agencies looking to hire the facility including;

- ✓ **Training of personnel in an all-weather facility with a range of soil types and threats. Chelton has the ability to make representation surrogate threats for any type that isn't already available.**
- ✓ **Test new threats and equipment before going into theatre to develop optimal procedures to maximise efficiency and minimise risk.**
- ✓ **The ability to analyse and understand detect performance of different equipment in a controlled environment.**
- ✓ **Receive support from Chelton's technical team to develop system improvements**

Jason Abbott, President of Chelton, said "This purpose built test facility is a great addition to the range of services Chelton provides. We pride ourselves on our engineering expertise in explosive ordnance detection and the strong relationships we have with the likes of the British Army, HALO Trust, US Marine Corps, Vallon and more who have used Chelton GPR sensors for many years. We look forward to using this facility with our partners to detect and analyse new threats as well as developing next generation sensor technologies".

For information on how to use and book the test facility, please contact us.

chelton.com



LATEST DEVELOPMENTS IN DRIVER VISION ENHANCEMENT

NEDINSCO DEVELOPED A NEW DRIVER VISION ENHANCEMENT CAMERA SOLUTION, FEATURING A 106 DEGREE FIELD OF VIEW AND EXCELLENT IMAGE FUSION CAPABILITIES

Nedinsco presents the latest developments in Driver Vision Enhancement camera technology, the SCOPUS camera. In today's combat situations visibility is paramount, a Driver Vision Enhancement camera enables the driver of an armored vehicle to better navigate and make the right decisions.

The new SCOPUS camera includes day sight and LWIR sensors, designed to be the ideal DVE camera solution for armored vehicles and trucks. High-end technology in a robust housing, for increased safety and security for troops.

"The SCOPUS camera is proving to be the ideal DVE solution for armored vehicles and trucks. High-end technology, packed in a robust housing, featuring excellent vision capabilities."

Christ Gruijters, Sales Engineer Nedinsco





FEATURING AN EXCELLENT FIELD OF VIEW IN ALL CONDITIONS

When the driver and crew are inside an enclosed armored vehicle while driving and operating, visibility of the surroundings is limited. Add dusk, darkness, smoke, sand and dust, and it becomes clear that a Driver Vision Enhancement camera is indispensable and vital to maneuver the vehicle.

The new SCOPUS camera solution features excellent image fusion capabilities and a 106 degree Field of View allowing the driver to see the extreme corners of this vehicle and providing comprehensive fused video to enhance driving and maneuvering.

IMPRESSIVE RUGGEDIZED DESIGN

The SCOPUS has an impressively robust design that can withstand severe shocks up to 150G.

With this design, the SCOPUS fits heavier caliber tanks, such as MTB and tracked howitzers. Needless to say, the SCOPUS meets various military standards for easy integration and longevity.

Are you interested in a Driver Vision Enhancement solution? Contact our sales department [here](https://www.nedinsco.com).

[WWW.NEDINSCO.COM](https://www.nedinsco.com)



30 years of innovation at Chess Dynamics

By David Tuddenham, Managing Director at Chess Dynamics



Innovation has always been at the heart of everything Chess Dynamics does, and, in many ways, it is a founding principle of the business. As we celebrate our 30th anniversary this year, I've been looking back at some of the major milestones throughout Chess's history, and it's clear to see how that ethos of innovation has not only guided our business, but also shaped defence technology more broadly. Chess is now well-known in the defence and security sectors as a specialist in surveillance and fire control, but there are fundamental technologies that have underpinned our success along the way.

30 years ago Chess was founded on the ability of our sensor positioners that enabled platforms to pinpoint targets with a high level of precision and accuracy. Where sensors needed to be stabilised to hold on to a target, Chess developed the technology to make that possible. This was the first example of the business developing genuinely ground-breaking technology which still supports our solutions today.

We also pioneered an innovative approach to how sensors are mounted onto a system, countering the prevailing 'ball-type' design. This means sensors can be easily swapped out so the operator can maintain the availability of the equipment, rather than having to deal with long periods of downtime. Modularity is now central to how forces operate, but Chess has been using the approach for many years.

Turning our attention to the present day, through our Vision4ce business Chess has been using AI in tracking algorithms to enable difficult target tracking of fast-moving objects in cluttered environments. Our leading surveillance solutions are a real step-change - acquiring, reacquiring and classifying threats with limited user involvement, alerting operators of potential threats.

These pioneering technologies have driven the success of Chess Dynamics, but there is also a genuinely innovative approach to the way we work.



Solutions first

Our R&D process has always been based on identifying innovative solutions to address a customer need. It's only through collaboration with customers that we can truly meet their real-world requirements. Throughout 30 years of business, Chess has seen customers as 'partners', which has led us to taking on some challenges that other manufacturers may not.





This spirit of collaboration goes further. Our partners are not only in the defence sector, but crucially also the commercial space. In the past few decades, commercial technology has advanced far more rapidly than in defence, and Chess has always explored how we can adopt and enhance this technology to develop defence capability. New sensors or lightweight materials can provide agility and forward-thinking solutions for our partners, and we are always trying to bridge the gap between developments in the commercial and defence worlds.

Role of the SME

As a small or medium-sized enterprise (SME), Chess does have the advantage over some larger organisations in that we have the flexibility to pivot to our customers' needs. Where threats have emerged rapidly, Chess has been there to develop solutions at pace to improve capability for the operator. Our innovation actually supplements those larger organisations working through big R&D programmes to ensure that solutions can be tailored to evolving threats.

The next 30 years

We've come a significant way over the last 30 years, but when I look towards the future, the possibilities are staggering.

We're often asked about the impact of advanced technologies such as AI and machine learning. The truth is that we are already working with these technologies. AI is powering our target tracking capability and it'll only get more advanced.

But the real change will be in how evolving technology impacts our business practices. How can we make technology available quicker, and how can we ensure we use our innovation to respond more rapidly when threats rapidly evolve? These questions will be key in defining the success of the defence technology sector, and I for one can't wait to see where Chess is in 30 years' time.

Learning and adapting

Because flexibility powers our innovation, we have to be across the latest trends in defence and security to understand those evolving threats and requirements. The current conflict in Ukraine is a prime example.

The war has, so far, been driven by technology. For example, the success of fast and agile drones has pointed to the need for counter-drone or counter-unmanned aerial vehicle (C-UAV) technology. The window for tackling threats gets continually shorter and forces need the solutions to support them.

Looking further down the line, availability is likely to be the key issue for forces. It's no longer sufficient to rely on air dominance; forces must consider how they can deploy capability quickly to have the maximum effect. Fewer but more capable platforms are likely to eclipse larger capacity fleets, so the importance of modularity once again becomes clear.





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- > Keep cross-hairs on target with accurate and stable geolocation and auto-mode steering
- > Nose, pylon, canopy and mast sensor mounting options

Learn more at [L3Harris.com/MX-15D](https://www.l3harris.com/MX-15D)

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PEI-Genesis Announces Opening of New Production Facility

New Facility in Philadelphia, PA, Provides D-Sub Connectors with Fast Lead Times to Customers



PEI-Genesis, a global leader in the design and assembly of custom engineered interconnect solutions, announced the opening of a new production site in Philadelphia, PA.

This new facility will support the increasing demand for D-Subminiature connectors, arguably the most versatile interconnect product on the market. It will be utilized to supplement PEI's largest facility in South Bend, Indiana, to enable quick turn value-add D-Sub products to customers worldwide.

"By localizing PEI's manufacturing capabilities around the world, we can get closer to our customers, allowing us to support their needs more quickly than ever. This new facility in Philadelphia will aid the ever-growing demand for D-Subminiature connectors," says Steven Fisher, Chairman and CEO of PEI-Genesis.

"With four value-add production facilities worldwide, PEI can get products to customers within days. We will return to the 48-hour service model our customers have come to expect from us," says Brad Thiel, Director of Global Operations.

Currently, ITT Cannon commercial D-Sub products are certified and approved to be sold to customers. In the coming months, PEI-Genesis will obtain the certification and approval of ITT Cannon's Mil-Spec D-Sub products and the facility will become AS9100D certified. Later in the year, PEI-Genesis will onboard



other industry leading D-Sub connector manufacturers, such as Amphenol PCD and Positronic, and Cinch Connectivity Solutions, to expand and broaden its product offerings.

The D-Sub facility is 16,000 sq ft connected directly to PEI-Genesis's headquarters and stocks roughly \$6 million worth of ITT Cannon connector components and finished goods. This addition brings new job opportunities to the Philadelphia area, providing careers to 30+ locals. A staffing team has been hired

and trained to work in the fast-paced work environment required for production under Mike Cordano, Operations Manager.

"Our D-Sub facility is fully equipped with staff and inventory, making it fully operational," says Mike Cordano, Operations Manager in Philadelphia.

Industry-wide, many customers have been experiencing long lead times for electronic components over the last eighteen months. With PEI-Genesis's commitment to being the fastest assembler in the world, this new facility allows its customers to receive custom assembled connectors fast with low to no MOQs. PEI is known for taking products with long lead times and making them instantly available in all of their variations.



www.peigenesis.com



RAFAEL COMPLETES INTEGRATION WITH CRFS' MULTI-MISSION RF EYE ECOSYSTEM

Drone Dome™ C4 now benefits from enhanced drone detection and geolocation capability

CRFS is proud to announce the successful integration of its RF technology as a sensor option within the RAFAEL Drone Dome™ solution. RAFAEL has already deployed the first operational systems with a European MoD / NATO partner and will subsequently offer enhanced RF technology to existing and future customers.

Drone Dome™ is widely recognized as a powerful, off-the-shelf, end-to-end cUAS solution that secures airspace against hostile drones. On behalf of a European-based NATO partner, RAFAEL approached CRFS to enhance its RF detection and geolocation capability by integrating CRFS' cutting-edge RFeye technology, which is world-renowned in the cUAS domain for

performing RF-based drone detection with high accuracy across a wide range of threat vectors and over an extensive operational range.

Hostile drones are one of the fastest-growing threats, posing serious security concerns. Incidents of autonomous drones in applications from ISR, targeting, and as a direct attack vector are dramatically increasing worldwide. By successfully integrating the RFeye technology as a sensor to their Drone Dome™ C4i, RAFAEL can offer enhanced detection and geolocation range, resulting in unprecedented operational gains and enabling new concepts of operation. The RFeye receiver offers industry-leading RF performance in a rugged and simple deployment, with advanced detection, geolocation, and data filtering/ streaming services through simple-to-integrate open APIs.

www.crfs.com



“ We are delighted with the capability enhancement we have been able to offer our clients on the basis of this integration project. CRFS is a recognized leader in their domain of RF-based detection and geolocation of airborne targets, so all Drone Dome™ customers and partners can benefit from our enhanced capabilities in this important domain.

MR. RAFI AMIR

BUSINESS DEVELOPMENT LEAD AT RAFAEL.

“ We are extremely proud to support RAFAEL with enhanced cUAS capabilities and be the trusted RF sensor solution for Drone Dome™. It has been a pleasure to collaborate with RAFAEL's engineering team and create a platform that RAFAEL customers can benefit from. CRFS works closely with end customers, system integrators, and international partners, delivering technologically advanced capabilities that provide actionable RF intelligence, real-time situational awareness, and enable spectrum dominance.

PIO SZYJANOWICZ

(COO AT CRFS)



CRFS

Precision Optics

for Electro-Optic Target Designation, Illumination, Rangefinding and Fire Control Systems

As a global leader in photonics technology, G&H is committed to providing its customers with high-quality build-to-print products that meet their specific needs while also ensuring compliance with all ITAR regulations.

G&H's products are eligible for procurement by the US government department and agencies, ensuring that its customers have access to the latest photonics technology to support their critical missions.

"We are thrilled to offer compliant build-to-print precision optics solutions for electro-optic target designation, illumination, rangefinding, and fire control systems to our customers in the aerospace and defense industries. Our expertise in materials science, coating technology, and optical design enable us to create solutions that are optimized for the specific requirements of each application. Our commitment to quality and reliability means that our customers can trust our products to perform at the highest levels, even in the most challenging environments," Frank Weiss, Senior VP of Aerospace & Defense of G&H.

G&H has a long-standing history of supporting U.S. Department of Defense prime and subcontractors for USML fire control, aiming, detection, guidance, and tracking systems. We support these customers through:

- *Compliance with international export regulations*
- *Quality accreditations*
- *Commitment to continuous improvement*

- *Maximum security of supply*
- *Adherence to demanding technical specifications*
- *Low-cost sourcing for uncontrolled components*

G&H's precision optics capability for aerospace and defense applications in the US market is supported by the company's state-of-the-art manufacturing facilities and its team of experienced engineers and technicians. The company's commitment to quality is demonstrated by its ITAR compliance and ISO 9001:2015 and AS9100D certifications.

G&H Precision Optics

G&H produces an extensive range of precision optical components and subsystems, which are processed and coated in-house to cover a wide spectral range from visible through UV to LWIR.

G&H has a structured set of equipment and processes that enable a significant precision optics capability. We have consolidated our facilities and added new machinery to create a cutting-edge precision optics manufacturing hub. This allows us to offer competitive pricing for standalone precision optical components, mounted optics, integrated subassemblies, and full imaging/relay modules.

Our knowledge of optical and mechanical properties of materials, combined with the ability to handle all aspects of component manufacture, ensures the highest quality products with precise optical finishes and high-quality AR, HR, broadband, and narrowband in-house coatings.



The precision optics products for laser cavity and beam conditioning include active and passive components as well as nonlinear crystals. Our custom lenses and housed subassemblies find application in transmission and imaging.

Specialist Processes

Customers can benefit from enhanced specifications to maximize performance and extend design boundaries in areas such as profiling of complex shapes, optical performance, single-point correction, surface finish/roughness, and precise machining

Key specialist processes:

- *Magnetorheological finishing (MFR) and optimization*
- *Single-point diamond turning (SPDT) for infrared materials, nonferrous metals, and polymers*
- *Superpolished high quality substrates*
- *Tight tolerance machining*

Optical Coatings

Unlike many optics manufacturers, we both manufacture and coat our optics under one roof. This integration allows for a much greater control over the finished optic and ensures continuity of supply. We have a large portfolio of standard in-house optical coatings from UV to LWIR, delivering exceptional spectral performance for AR/HEAR/Tx/Rx/HLDT components.

UV, Visible, SWIR, MWIR, LWIR, and Broadband Options

At a systems level, our lens assemblies are specifically designed for operation at target wavelength ranges, leveraging the benefits of new, high pixel count detectors. Considered selection of lens system parameters, materials, and coatings improve resolution, accuracy, and transmission; factors which are critical in low light, environmentally challenging situations.

UV and visible lenses are provided either build-to-print or custom assembly designed by the G&H engineering teams. Lens complexity can be as simple as a singlet in a housing to large-diameter zoom lenses. Coatings are optimized for sensor and design criteria (narrow or broadband).

Missile Seeker Applications

Missile seekers rely on highly accurate and stable precision optics to ensure that the missile accurately homes in on its target. G&H produces a range of optical components to shape, focus, and direct light, enabling missile seekers to precisely track and engage their targets. G&H's specialized expertise, advanced equipment, and rigorous quality control processes allow for reliable, consistent performance in extreme environments.



G&H Precision Optics for Missile Seekers:

- *Lenses*
- *Prisms*
- *Mirrors*
- *Waveplates*
- *Seeker head subassemblies*
- *Mounted windows*

Laser Rangefinder Applications

Precision optics are essential components in laser rangefinders, which rely on precise and accurate measurements for distance. Our precision optics can withstand intense laser beams while delivering high transmission rates and low scatter. G&H's advanced materials, specialized coatings, and high-precision manufacturing processes ensure peak laser rangefinder performance.

G&H Precision Optics for Laser Rangefinders:

- *HR coated rod with side aperture and front facet*
- *Diode bars mounted in tandem*
- *AR coated sapphire window hermetically sealed to package*
- *Passive Q-switch/output coupler*
- *Pulse rate controlled by diode driver with external shutdown circuit using InGaAs PD*
- *Hermetically sealed*

Target Designation and Illumination Applications

Target designation and illumination are used in a wide variety of applications, including military, law enforcement, and surveillance operations. G&H designs and manufactures high-quality precision optics that can provide clear and precise images of targets and long distances, even in low light conditions. Enhance situational awareness, improve targeting accuracy, and increase operational effectiveness with G&H precision optics.

G&H Precision Optics for Target Designation and Illumination:

- *Precision optical components*
- *EO VIS/SWIR/MWIR/LWIR lenses and lens assemblies*

Airborne Operations Applications

G&H manufactures precision optics for turrets, gimbals, pods, and multi-sensor EO systems used in Laser Frequency Radiation Detection (LFRD), surveillance, and countermeasure applications. G&H's optical systems are designed to provide high accuracy, stability, and reliability for detecting, tracking, and analyzing laser signals in the air. Our precision optics ensure the safety and effectiveness of airborne operations.

G&H Precision Optics for Airborne Operations:

- *Precision optical components*
- *VIS/SWIR/MWIR/LWIR/broadband assemblies*
- *Fixed FOV*
- *Switchable FOV*
- *Continuous zoom*
- *AR/DLC/ITO and high LDT coatings*
- *Windows*
- *Domes*
- *VIS/IR/multispectral materials*
- *Sapphire, silicon*
- *Ge, ZnS, ZnSe, Cleartran*
- *N-BK7, fused silica*

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In the military, the safety and effectiveness of firearms are critical factors that can make a substantial difference on the battlefield. Whether it's during deployment, training exercises, or transportation, ensuring that firearms remain secure, undamaged, and readily accessible is of paramount importance. Custom foam solutions can revolutionize the protection of firearms within military cases.

Unparalleled Fit and Security:

When it comes to safeguarding firearms, a precise fit is essential to prevent movement, impact damage, or inadvertent discharges. Custom foam inserts, designed with utmost precision, offer a secure and snug fit for each firearm and its accessories. By utilizing advanced CAD and CNC cutting technology, manufacturers like NANUK can create foam inserts tailored to the exact dimensions and specifications of different firearms, including pistols, rifles, and shotguns. This impeccable fit ensures that firearms remain firmly in place, eliminating any potential for collisions or accidental damage during transportation or storage.

Impact Resistance and Shock Absorption:

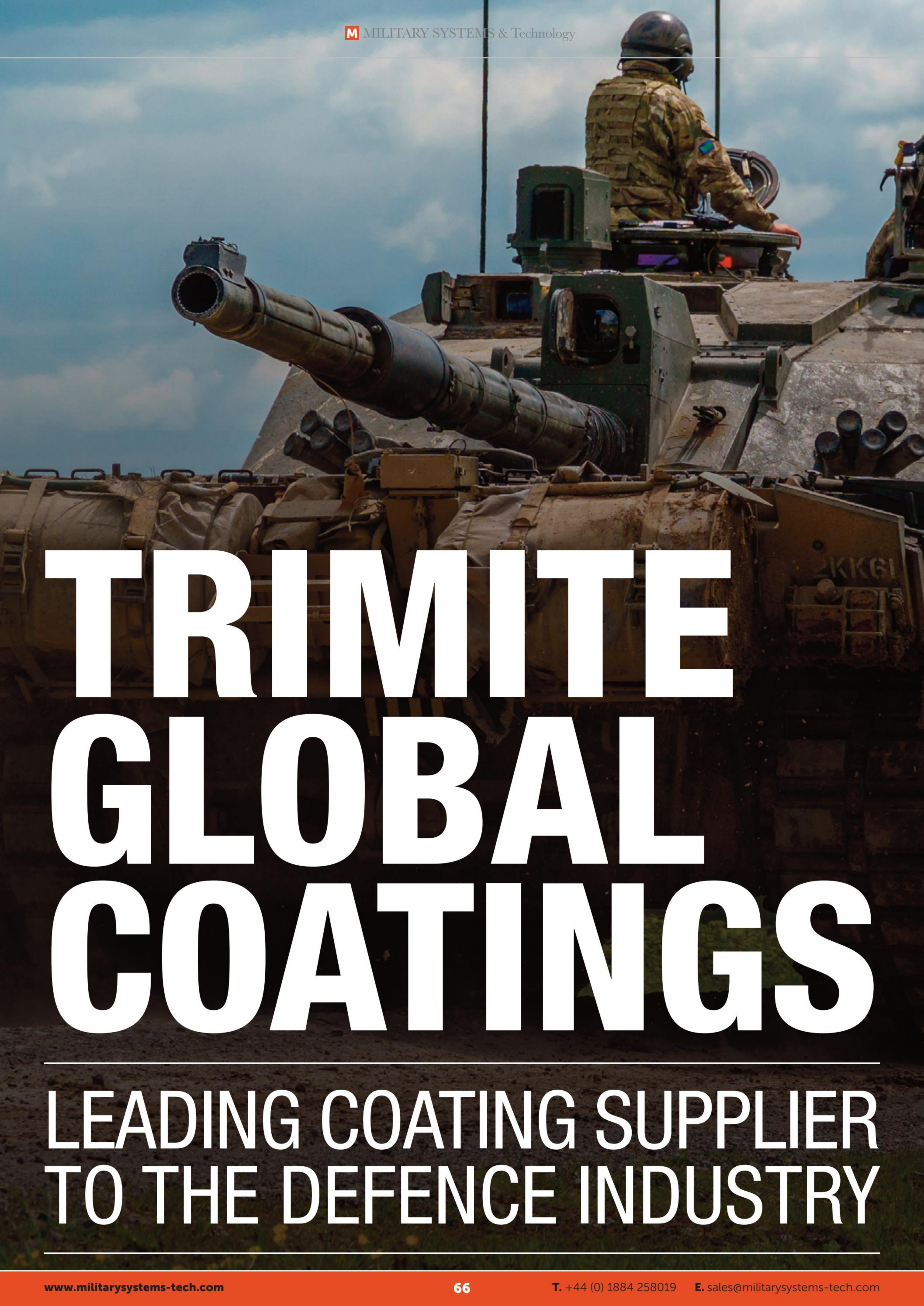
Military environments often subject firearms to rigorous conditions, including heavy impacts, jolts, and vibrations. Custom foam inserts, with their exceptional shock absorption properties, provide an additional layer of protection against such hazards. The closed-cell structure of the foam effectively absorbs and disperses impact energy, preventing it from reaching the sensitive components of the firearms. This reduces the risk of damage caused by drops, collisions, or rough handling, ensuring that firearms remain operational and mission ready.

Organization and Accessibility:

Efficiency and quick access to firearms can be a matter of life and death on the battlefield. Custom foam inserts allow for organized storage of firearms and their accessories within a case. Each component has its designated space, eliminating the risk of items becoming entangled or damaged during transit. This organization not only ensures the integrity of firearms but also allows soldiers to locate and retrieve their weapons swiftly, promoting operational efficiency and readiness.

When it comes to custom foam solutions for firearm protection, NANUK is a renowned leader in the industry. With years of experience and expertise, NANUK designs and produces custom foam inserts that perfectly fit firearms, providing unmatched protection, convenience, and peace of mind for military personnel. With their state-of-the-art manufacturing processes, combined with their commitment to precision and quality, NANUK takes the firearm protection to the next level.





TRIMITE GLOBAL COATINGS

LEADING COATING SUPPLIER
TO THE DEFENCE INDUSTRY

Trimite Global Coatings has been a leading supplier of specialist DEF STAN coatings to the defence industry for decades, with their coatings being specified on some of the most significant military build projects in Europe, appearing on the Mastiff, Ridgeback, Supacat Jackal, and Warthog armoured vehicles.

They manufacture fully tested and approved coating systems for Land Vehicles, Aerospace, Ammunition, Helmets, and Equipment with a range of Defence Standard paint types, including:

- **Primers, Intermediates, undercoats and Finishes**
- **Single-pack, air-drying conventional**
- **Single Pack Stoving**
- **Two pack epoxy**
- **Two pack polyurethane**
- **CARC, IRR and non-slip products**
- **DEF STAN 80-225 CARC & IRR System**

As well as manufacturing CARC coatings, Trimite have developed a military-approved infrared (IR) reflecting polyester powder coating to Defence Standard 80-122, which has been used on military vehicles, storage lockers and small arms. IR camouflage coatings make painted



items more difficult to detect using infrared night vision detectors.

In addition to manufacturing their own Trimite brand, they are close allies and strategic partners with Weilburger Coatings. They have recently secured the supply of a Weilburger coating system for the Boxer MIV, which will run over the next 5-7 years.

Contact: **01527 599 460**
or Defence Specialist Mark Smith
on: **07715 164250**

www.trimite.com/defence

TRIMITE
GLOBAL COATINGS

FIDELITY AND REALITY, AND FINANCIAL REALITY ISSUES, IN TRAINING.

Many people tout virtual or even enhanced reality as the way forward in training. There are many circumstances when they may well be right.

However there comes a moment in reality and when the chips are down when your muscle memory and your reactions and reflexes must be instinctive and deal with real situations and particularly dangers that are coming crashing in on you.

You have to do what is required by reality not virtual or enhanced reality scenarios but real hard all singing, all dancing reality with all the nasty bits thrown in rather like malevolent sprinkles on top of a really unpleasant trick ice cream. When you are thinking “Oh Mum why did you let this happen to me?” you have to respond on your own because Mum is not there. Your training and preparation will be what takes you back to Mum.

The Canadian company Survival Systems Limited <https://survivalsystemsgroup.com/> has focused on surviving malevolent events in, on or over water. Their first foray into this difficult and complex subject sprang from their founder's personal experience in a ditched helicopter so it was only right that their initial focus was helicopters. Since that initial foundation over 40 years ago they have expanded their coverage to small boats, Rigid Hull Inflatable Boats (RHIBs), amphibious vehicles, light aircraft, single seat fast jets



and a whole set of facilities and capabilities that simulate the circumstances which may cause the incident or be the scene of the disaster.

From the start the basis of SSL's training was thorough R&D based on the widest possible experience and expertise. Survivors were interviewed, forensic report studied, scientific papers examined, issues discussed and conclusions tested and re-examined. Themes emerged. First and foremost, understand your environment and what can happen within and around it. The training must reflect this. It must be realistic and replicate in as much detail as possible the reality of fighting for survival. Secondly the training must be for real, hard and demanding. Thirdly the training must inspire confidence, “The aircraft might crash but I am trained to have the best chance of survival”. Fourthly I must not fear the training, the training is to prepare me, not test me and I do not need to train to be trained. Finally, as part of the fourth item no matter how hard the training it must be safe.

SSL have involved their own team and noted academics in this work and have worked with many of the major operators of the platforms, including the US DoD, The Canadian Armed Forces and the UK MoD, who have studied the survival issues. Again, themes emerged. It is surprising how often it is the little things that make big difference. For instance, when a crash worthy seat reacts and absorbs the shock of a ditching it changes position relative to items, such as the handles for escape exits, around it. Training has to reflect this. Door mounted weapon stations must not be allowed to impede exit because they are moving freely and unpredictably. Train to deal with the issues if you are unable to design them out. If its predictable then make it occur in training. If it requires working the problem out for real than make the working out part of training. This philosophy the company adopts informs the systems it provides.

At the heart of the training systems are Modular Egress Training Simulators (METS®) and bespoke lifting systems backed by purpose designed control systems. These three components have to act in concert to provide realism and safety. They also bring other attributes;

reliability, cost control and moderation, predictability, and longevity. These three core components ensure “the training for real” meets the philosophical aims and ambitions. The METS® in particular has presaged a revolution in training. Traditionally Helicopter Underwater Escape Trainers (HUET) were cast off models of real helicopters. As such if an organization has multiple helicopter types, often the same type but in differing configurations, storage space had to be found for these trainers around the pool where the training takes place. Indoor storage was required to prevent the HUET taking bird dropping and other contaminants into the pool. This requires a lot of space which starts to become expensive especially in urban areas.

Generally METS® though has three basic platforms small, medium and large and a whole host of replaceable movable panels which conform to the aircraft type. Some “specials” such as APACHE are required but the aim is to try to be modular if at all possible. These fix to the platform and by changing the panels the configuration can be changed. Swapping out a mission console to be replaced by seating can quickly transform mission training e.g. an ASW helicopter to a troop carrier variant of the same type as is the case of the Royal Navy’s ASW and Troop Carrying MERLINS. The modularity reduces price and in the event of damage, repair costs. The reduction in number reduces capital and support costs with smaller buildings etc. Lifting these around and lowering and raising them to and from the water whilst supporting them whilst they are rolled over to simulate the aircraft being underwater and upside down requires a rather special crane with different certifications from those one normally sees on building sites, for example. The system has to be predictable and consistent to allowed controlled training and extremely quick acting in an emergency. People are in the METS® and if one or more of them get into trouble upside down in the dark the response from the crane has to be instantaneous.

Training is difficult to schedule and expensive especially if the training system is unreliable and sessions have to be cancelled. Lost time in an individual or crew’s schedule and availability cannot be regained except at the additional financial cost of travel, time etc but more insidiously having to rejig personal lives to make more time available with the impact on morale and wasted personal time. Cost is not always a direct read out of a spread sheet. Recruiting replacements for crew, air crew etc hacked off by inefficient training is expensive, is a poor use of resources and does not enter into most accountants’ calculations. There is an Arab proverb “The bitterness of extra cost of poor service lingers longer than the joy of a cheap price”. It seems they had worked out whole life costing long before the spreadsheet emerged on the scene.

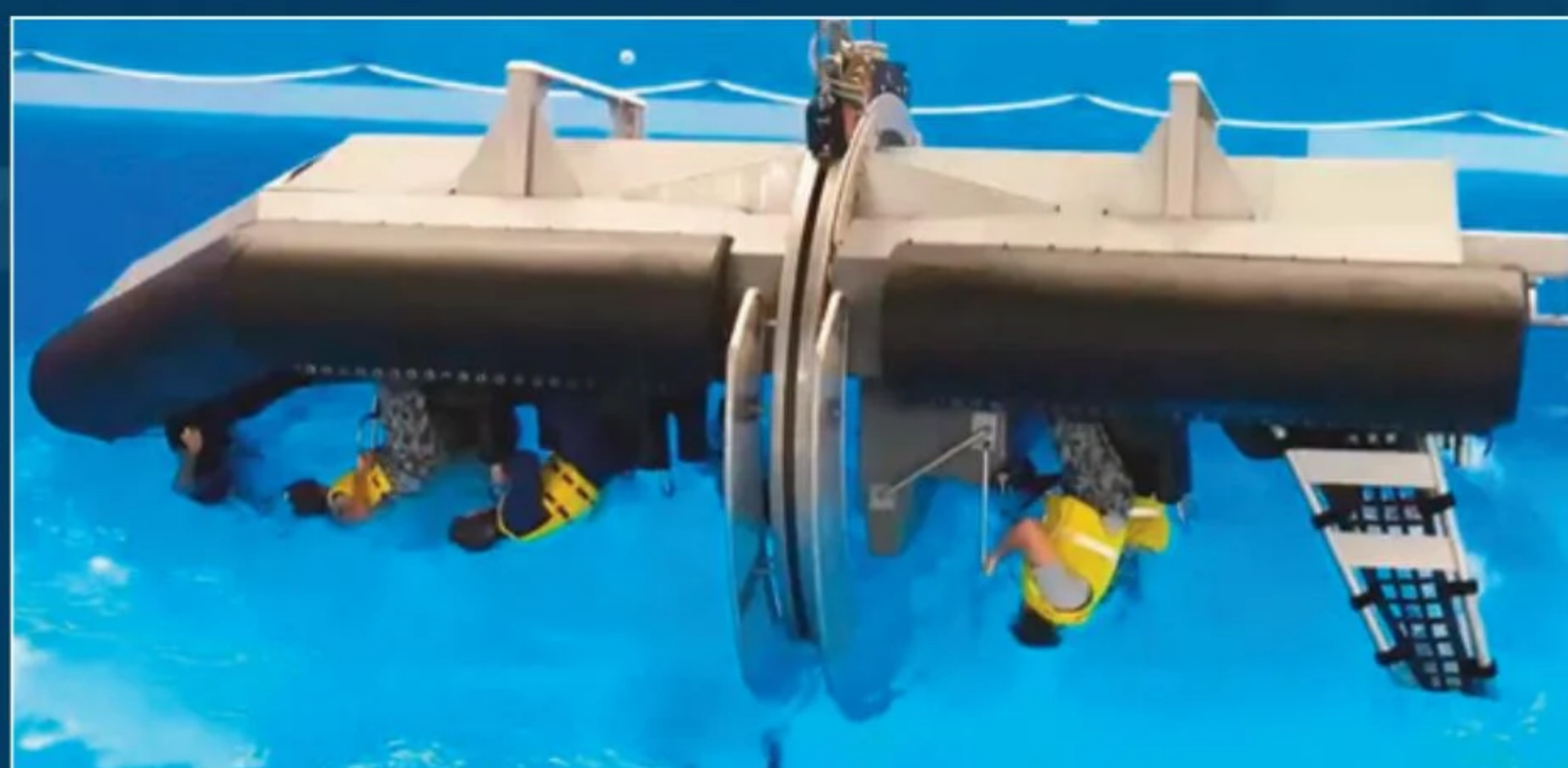
Having got a reliable, safe system in place for the minimum through life cost the next issue is to make the most of the capability. Here SSLs supply and thinking through the capability for training venues is important. It is fairly easy to build a pool instal a crane and provide



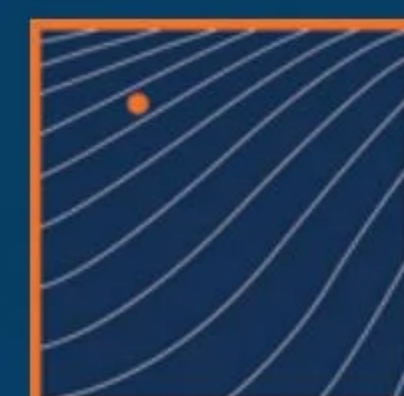
some HUETs. It is making them work for their living and provide that fidelity in training. Boats do not usually turn over on smooth seas, waves are available(!), helicopters usually ditch when the weather is poor, fast jets frequently get into trouble, especially at sea, on take off and landing in the dark.

Providing the facility that allows the METS® to be upside down in a storm in the dark with lightning flashes and/or fog on and rain too is a speciality of SSL’s. The SSL Survival Training Simulation Theater (STST™) does all of these. But then remember being upside down in the dark and the water is going up your nose and you are struggling to get around an obstacle that has broken loose between your seat and the emergency exit and you are asking your Mum difficult questions? The instructor may well feel you need help. All this has to be stopped instantly. STST™ does just that when commanded to do so. The crane will lift you above the water surface in 7 seconds. This combined environmental and crane safety control is part of the safety systems. Reality with safety are the watchwords.

Helicopters don’t just crash into the sea, they can crash onto the helideck of a ship or rig and the helideck safety crew have to be trained in rescue and firefighting. SSL’s Helicopter Fire Simulator (HFS™) and Modular Fire Training Facility (MFTF™) enable this to be accomplished. It is this holistic approach to training combining reality with safety that has been and will continue SSL’s success. The more one looks at it the more one realises that in the end it is real training that makes the difference when the chips are down and Mum isn’t there.



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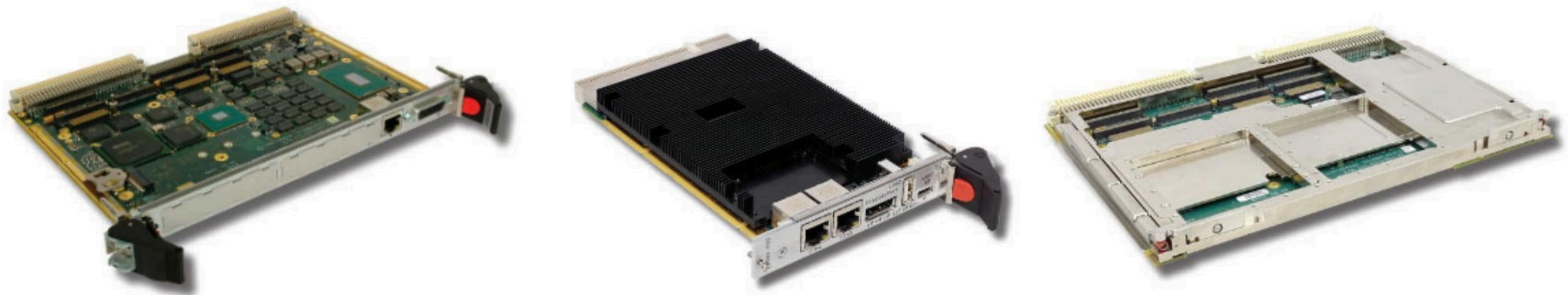
HELIPADS MADE EASY

Helicopters can often be called on to land in harsh settings, where airfields do not exist or it is not feasible to install permanent infrastructure. However versatile, helicopters remain vulnerable to foreign object damage (FOD) from dust and stones, which can cause potentially irreparable damage. Tried and tested in the harshest of environments, our modular helipads are designed to prevent asset damage and protect environments.

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AARDVARK

strengthening UK sovereign capability with autonomous platforms

Known primarily for its 40-year legacy developing robust solutions for the clearance of UXO, The Aardvark Group is now delivering next-generation platforms with the support of a cohort of dynamic supply chain partners, collaborating with leading experts in AI, sensor technology and human-machine interfaces (HMI).

The focus is extending critical missions while massively reducing the human burden in environments ranging from Defence to Fire, Search & Rescue.

Developed at Aardvark's 'Hub' in the Midlands - the global epicentre of advanced engineering, and historical heart of UK manufacturing - and launched at DSEI 2021 in London: The Aardvark autonomous UGV, RANG-R.

RANG-R (Remote Autonomous Next Generation-Rover) provides high level multi-role capability, and integrates advanced situational awareness technologies, designed to mitigate a wide variety of threats in increasingly demanding and hazardous operational conditions.

"Our clients required a multi-role UGV solution that embodied the Aardvark ethos of reliability, survivability and affordability and I truly believe that the RANG-R delivers fully against that requirement,"

commented CEO, David St John-Claire.

At the heart of RANG-R's design approach is vehicle survivability. The platform can survive a blast from a device of up to 8.8 kg of explosive. This high level of survivability serves to protect the mission allowing RANG-R to remain on task and provide protected mobility support in the most dangerous of environments.

RANG-R's core capability is supporting the logistic requirements of dismounted troops in both standard and air assault environments. RANG-R has the largest payload capability in its class with a maximum capacity of 3,850 kg and a range of 100 km and the ability to self-load and unload.

Tempo and endurance are key to successful operations and with a maximum speed of 70 kph, a range of 100 km and the capacity to operate for 72 hrs without the need for resupply, RANG-R has been designed and built to meet those demands.

A key challenge for autonomous navigation in UGVs is creating an



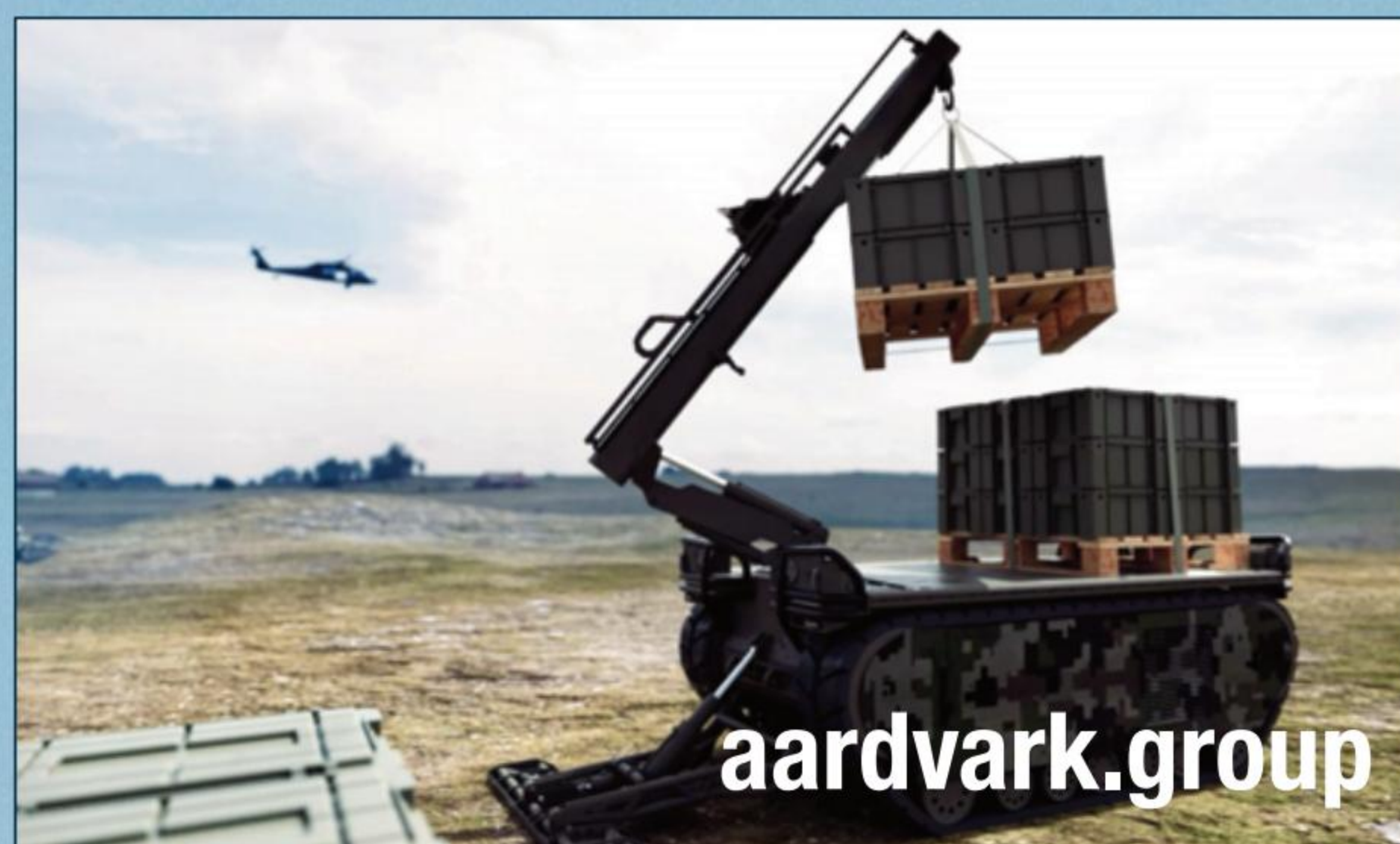


intelligent system that can map and reroute its own path, making decisions to avoid upcoming threats or obstructions, whilst keeping information secure from adversaries.

RANG-R does not always work alone. The multi-role UGV can work alongside operators or be sent to a forward location to meet with troops who can use it to dig a trench or fill sandbags, reducing the physical burden on soldiers thus maintaining force effectiveness. Developed by the same team, RANG-R shares common technologies and capability with the Aardvark GEN2 autonomous mine clearing machine.

Aardvark has made significant investments to sustain the development of the RANG-R and the GEN2 platforms in the UK while continuing to support the legacy Aardvark AMCS which has attracted new interest owing to the current global conflicts.

Through a mature export strategy, the global delivery of Aardvark's autonomous platforms will benefit the UK's allies around the world. The Aardvark Group is proud of the part it has played in the SME community for the past 40 years and supports the Department for International Trade in its efforts to ensure UK SMEs are at the forefront of representing UK plc in its engagement with Sovereign States around the globe.



LUTRA'S VIEW OF DEFENCE PROCUREMENT REFORM

The process underway to reform UK Procurement Law and practice is dragging on.



Steps are being discussed but the noises from within the community are not encouraging.

Let's face it, miss this opportunity to capitalise on changes to such a fundamental part of government industry relationships and not take advantage of BREXIT and it will be another generation before the opportunity comes around again.

The resistance seems to be partly a result of entrenched opinion (we know what we know), partly a reluctance to change and perhaps fear of the unknown (we don't know what we don't know) and having to learn new things (I have my comfort blanket. Please don't take it away) and partly the length of time it takes to do anything in government (You might think so Minister. I cannot possibly comment). It must be said that there are those who think the existing system works OK, not perfect but good enough for government work. They are those who have the comfort of their complacencies.

It has to be said there are also disparate advice strands and messages from suppliers. This is partly a result of trying to use trade association some of which do not accurately represent the main body of industry, merely their own members many with entrenched views often reflecting the negatives already set out. That the trade associations don't represent industry, only their members, is something few in government understand. Partly this is the path of least resistance and partly it's lacking real world experience.

Another cause of not getting a real-world view is that many in industry have been badly put off by experiencing the issues of selling to government. They thus don't believe that change is possible so what is the

point of being involved. They continue to earn a living from routine trade and accept they won't partake in government programmes. This is a real loss for the government in so many ways. Poorer value, poorer equipment, poorer morale in the government services such as police, defence and the NHS being but a few. The aim must be to come up with a system that encourages these people to participate in government business.

Much of government procurement involves major contracts with major contractors. This is especially so in defence on which the article will now concentrate, where there are some "heavy metal" or "multi byte" or "much integration" contracts. The mechanism for their placement needs special care but even they can be stripped of much of the process and associated bureaucracy involved without reducing protection of public funds. This is not an area this article seeks to address but will touch on it. It is probably best illustrated by the images of The MoD HQ and its procurement HQ, Defence Equipment and Support. They are miles apart and the journey between them winds through a bureaucratic jungle.

Many contracts are small and should be with smaller companies. Bigger companies usually mean slower delivery and bigger prices. Equally much of the "defence" subcontract work for larger defence projects can be placed with small and medium enterprises (SME). It is the myriad of smaller government contracts and true defence subcontracts (not toilet cleaning, painting and decorating or catering) which should be available for and get the best result from the SME community, its fleetness of foot, innovation and lower cost base. The government target is 25% of defence procurement by value for SME. In reality defence work achievement for SME is much less largely because the defence majors lump in contracts for the aforementioned domestic activities as defence work for SME.

Talk to any SME working in the defence world and a number of constants emerge: lack of opportunity to engage with the users/manufacturers of equipment to find out what is needed and enthuse them with an SME's capability and products, time taken for anything to happen, the impact of defence majors on small contracts where lengthening a procurement process, not just the bidding, works in the defence majors interest because the SME to whom time is money, simply cannot afford to play bureaucracy games as defence majors can and do, the endless confusing defence bureaucracy in its own right, the standoff and stand still periods, the need for competition, the lack of engagement with industry, not paying attention to solutions from veteran owned companies being but some of them.

There are a number of simple remedies for these malaises. None of them are popular with the large defence companies or the trade associations. However, they have been used elsewhere and found to be successful. What is holding the UK back?

The US and several other countries have a system of reserving contracts below a certain value for SME and veteran companies. From our own experience this is a simple defence condition, yes some public servants



MOD Main Building © Crown copyright

have to work harder to make it happen but that is what they are paid for. So a key recommendation would be that any contract below a certain value say arbitrarily and illustratively £1M/annum, has to be reserved for a small company, one between £1M and £5M a small or medium company, below £10M an SME and contracts between £10M and £20M in value has to have two bidding lists one for companies in the SME category and one for defence majors and the final competitors must include at least three SME.

The “time to do things” issue is a chronically debilitating problem for defence in general and a real turn off for SME’s. It wastes time and the opportunity to do other things. This is partly because all contracts have to go through the same bureaucratic pre-tender process. New helicopters or pencils the procedure is essentially the same. There is a simple solution to this which will also save money because companies will not have to keep their bid teams intact for so long. It is to time limit the contract process by financially banded programmes.

Keeping to those arbitrarily chosen brackets the process would look like this; under £1M the time allowed from requirement decision and publication to order placement three months including companies declaring they intended to bid, up to £5M six months, up to £10M nine and £10-20M twelve. To further enhance the speed process any contract that went outside these timelines bidding companies would have to be financially recompensed for their bid teams’ expenses. Cancelled tenders would be the same. The process would be; requirement written and published internally, notice of intent to buy within 2 weeks of internal publication, intent to bid response 2 weeks, down select to selected bidders list 2 weeks, tenders (standard T&Cs) released, tenders returned in 28 days, decision including visits to bidders to listen to presentations, contract announced on time and placed within 28 days. It would also depend on the MoD getting the word out that they intended to place a contract of this value and for this subject prior to internal decision to proceed with the programme. This includes publishing contact numbers and email addresses. Some would argue that this is too fast. When people were scrabbling to get equipment to Ukraine or to Iraq and Afghanistan it was possible, why not on a routine basis.

To make this work MoD will have to be more proactive in visiting companies, trade shows and events and amenable to hosting events and visits themselves and generally more accessible. MoD officers and officials will have to be more au fait with what is happening in terms of technology and capability development and indeed being prepared to discuss options for development and aspirations and programmes with companies. This implies that the commercial department’s hold over discussions between MoD and Industry must be loosened. Is this one of the issues causing drag in new policy?

Keeping pace with technology is a difficult enough activity. Having a brake in the system that is applied, because it can be, makes for hideous challenges. By doing things more quickly people can be returned to their usual roles earlier thus saving companies time and money. It also facilitates state of the art systems rather than old masters. By keeping people hanging around waiting for contracts that might be announces companies sink fortunes into a bottomless money pit. If there are procedural delays that is more money being dumped in the pit. Somehow companies have to recover these vast sums. The only ways are by decreasing what is provided or increasing future prices. Thus provided the performance parameters are met the quality and intangible assets are shaved to the bone. The quote by John Glenn the late Senator, Astronaut and USMC Veteran about the feeling when in the capsule atop the rocket as he was counting down to his first launch is apposite. “I felt exactly how you would feel if you were getting ready to launch and knew you were sitting on top of two million parts -- all built by the lowest bidder on a government contract.” A recurring theme of a life in defence supply is that contracts decided on price not quality are usually to the disadvantage of the end user.

There are simple ways to improve this situation. The first is to test and award for performance not price. The second is to make sure there are



MOD Abbey Wood at Filton, Bristol UK.

plenty of ex-service people- veterans, involved in the delivery of the equipment. This might be by awarding extra tender points to companies owned by veterans. For larger companies it might be points for the percentage of ex-service people in the project team. This is important because people who have experience have a feeling for the people who are going to use it and in the early stages of design they bring understanding of the realities of working under pressure in the dark, wet and cold when hungry and tired. Invaluable design knowledge which cannot be captured in a DEFSTAN or environmental requirement.

Returning to “big” projects, usually those associated with large defence primes, there are simply not enough UK owned major primes to make for a truly competitive situation. Some purchases from overseas are inevitable. In some cases this is also true for small purchases. There is nothing wrong with this, but it must only be when there are no UK companies that are not “whole of the economy” competitive. In other words the whole economic benefit to the UK must be considered, so not just UK industry but the tax position, income and corporation tax as well as VAT, improving the skills base, reducing unemployment and social benefits, improving societal and social value (levelling up) must be taken into account as well as the immeasurable benefit of a local feel good factor.

When UK purchase is not possible then there has to be benefit in offset. Many in MOD say offset increases defence acquisition spending. They seem to be doing their sums differently to many other countries who see immense benefits to it, many of them in not straight arithmetical terms, the usual way UK Government accounting is carried out. Whether it is by “onshoring” production and therefore taking the benefits described above or by overseas suppliers having to use UK suppliers, subcontractors and facilities or placing R&D contracts in UK is immaterial. Because it is the UK Taxpayers’ money work and value has to come to UK from UK defence contracts.

Another issue that vexes innovative technology providers is the UK Government’s insistence that competition is the default position. The whole point of being an innovative company is to be first to market or way better than others, if possible, in a niche area. The Treasury’s default position, aided by MoD not fighting for innovative ideas, equipment and technologies, lack of contact with industry preventing this, is “wait long enough and competition will come along”. The examples are legion and the consequences are a moribund economy. Not exactly an entrepreneurial approach to being a thriving economy.

Why write this article in Defence Systems and Technology Magazine? Well Defence is a system and it involves technology some of it mind bogglingly clever. However the system is broken and the technology is rapidly getting to the stage where it cannot be updated fast enough. The two enemies, as always, are lack of money and time. This magazine is about providing solutions to systems and technology problems. These simple remedies do just that and will save Money and Time.

www.lutra-associates.com

Photo: Plaque outside the South Door of the Ministry of Defence Main Building
- Harland Quarrington/MOD © Crown copyright

MISSION CRITICAL PROTECTION



Aerospace

Advanced Armour & Vehicle Engineering
CANSEC, Ottawa, Canada, Booth 1731

As a global armour manufacturer and vehicle integrator, saving lives is at the core of the NP Aerospace business.

With over 40 years in the defence and security industries the company has expanded its product portfolio working with global partners and has built a reputation for delivering advanced technology to meet the needs of diverse users.

Our strengths lie in complex military programmes, high volume manufacturing and specialist engineering services, enabling a fast response to urgent operational requirements including the Ukraine conflict. To date, we have delivered 150,000 ballistic armour plates and 84,000 helmets to the frontline and are now supplying EOD suits into the region to support de-mining efforts.





North American Growth

NP Aerospace has had a presence in Canada for over 10 years and opened a new facility in London, Ontario in 2020. With more than 10,000 square feet of floor space and plans to expand, the Canadian team is able to effectively serve local, state and provincial, and federal agencies across North America. The team is continuing to grow with new engineers and sales and marketing personnel to address an increase in activity. Current projects include ballistic helmets and hard armour plates for a range of specialist users and there are plans to increase vehicle armour and engineering programmes.

South of the border, NP Aerospace is also growing in the United States. The team was delighted to recently add former FBI detective Michael Lovell to the sales team. Michael brings invaluable experience in promoting key NP Aerospace products, such as the NIJ certified 4030 ELITE bomb disposal suit and personal armour systems.

The 4030 ELITE bomb suit goes beyond NIJ 0117.01. NP Aerospace is one of only two manufacturers in the world to have achieved this level of accreditation. Bomb technicians across North America have been treated to full demonstrations, showcasing the suit's flexibility, its advanced optical performance with a wide field of view and demisting visor, patented quick release system and more. A new CBRN visor is also available, increasing the suit's capability in hazardous environments. Other personal protection products include a new ballistic leg protection designed alongside NP Aerospace partner Human Protective to cater for rifle shield users.



Vehicle Engineering Innovation

NP Aerospace is expanding its global vehicle engineering capabilities, with an increasingly diverse range of projects from vehicle hybridisation to offroad suspension systems, scalable to multiple vehicle platforms. The company has developed significant knowledge and expertise via its role as engineering authority and prime contractor for the UK Ministry of Defence Protected Mobility Engineering & Technical Support contract (PMETS) which has been running for more than four years.

PMETS tasks range in scale and complexity from lighting systems, software enhancements and communication system upgrades, through to full scale re-engineering programmes. These include significant innovations such as the Mastiff and Ridgback XC offroad platforms and hybrid demonstrator projects, both of which improve overall vehicle capability and operational performance and extend platform life. The team are also continuing to attract new engineers and innovation experts from across the automotive industry to work on new projects.

NP Aerospace continues to enhance its portfolio of vehicle and platform armour including spall liner and add on armour for a range of current and future programmes in Europe and North America. The company also continues to invest in new technological developments and research, in-house and with academia, reinforcing our position as a leading survivability partner for global OEMs from combat vehicles to combat service support vehicles in all categories and at all protection levels.

Future Outlook

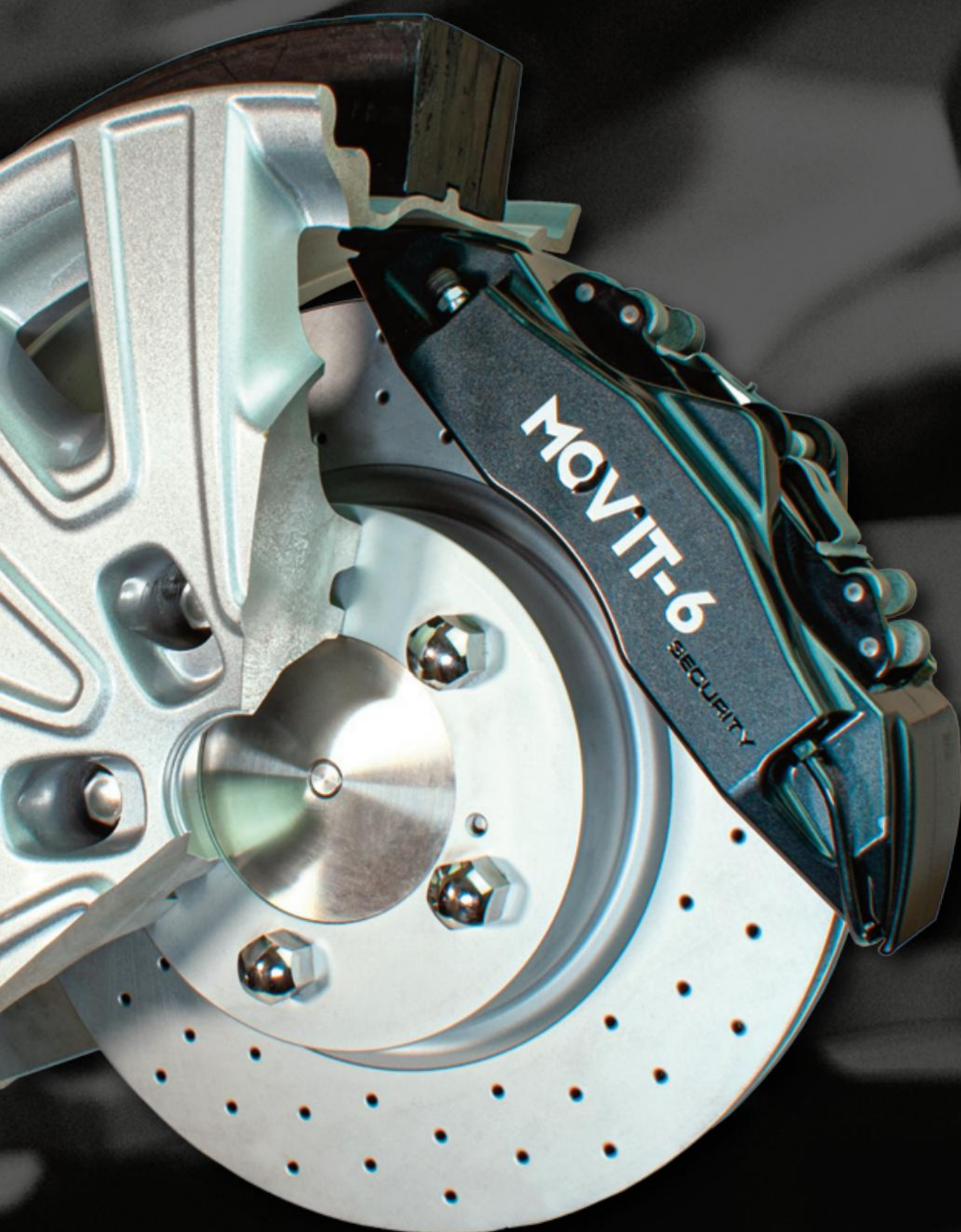
In 2023, NP Aerospace reported that since 2019 revenues have quadrupled under the leadership of CEO James Kempston. To fuel future growth globally, the business was recently separated into two separate business units: NP Aerospace Vehicle Systems, Services and Spares and NP Aerospace Composites and Armour Systems. The former is led by David Petheram, Managing Director & Senior Vice President, the latter led by Peter Hardisty, Managing Director & Senior Vice President. Both have responsibility for increasing global programmes and continued investment in our facilities, R&D and workforce to support future growth.

James Kempston, NP Aerospace CEO and members of the team will be present at **CANSEC 2023** at **Booth 1731**.

npaerospace.com

ONE STOP SHOP

FOR LC300 ARMOUR MOBILITY PACKAGE



As serial production of armoured conversions of the new Toyota Land Cruiser 300 is ramping up, TSS International BV is noticing increased interest in its carefully selected mobility products for armoured vehicles.

Particularly the collaboration with MOV'IT for a complete brake system, with OEM compatible Electronic Parking Brake (EPB), is receiving a lot of attention. The innovative design offers a plug-and-play solution for increased braking power and a fully functional EPB. Designed for vehicles with armouring packages up to VR9, stopping power no longer needs to be an issue for protected vehicles!

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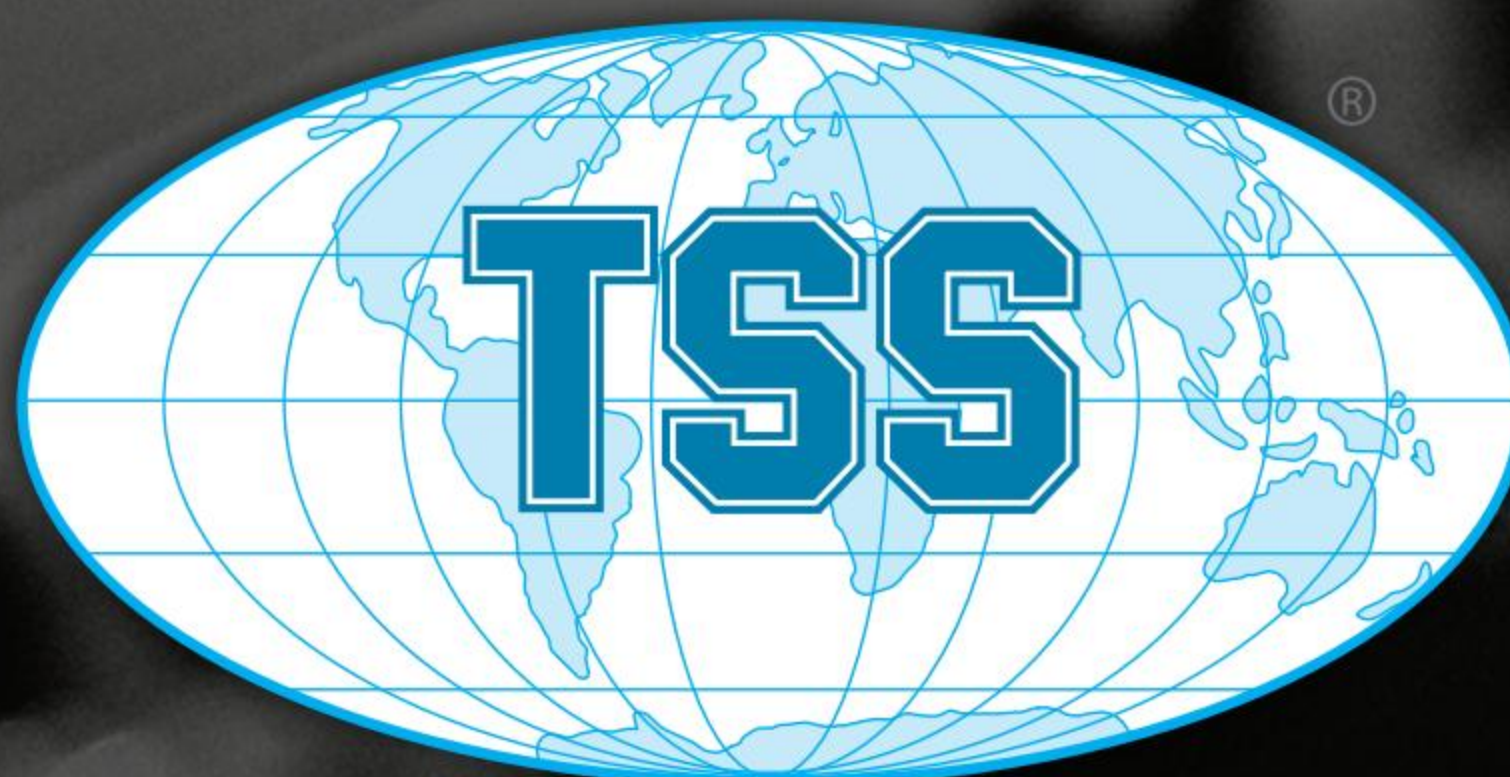
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