



# M

# MILITARY SYSTEMS & Technology

The Defence Suppliers Directory Magazine

## **FEATURING...**

**LEONARDO DRS**

**HORSTMAN**

**EXCELITAS**

**RUNFLAT INTERNATIONAL**

**DEFENCELL**

**PLASTPACK DEFENCE**

**POLYAMP**

**MILAN BOX CORPORATION**

**SMITHS DETECTION**

**PELI BIOTHERMAL**

**ELECTROTHERMAL**

**RUBB MILITARY BUILDINGS**

**PPM SYSTEMS**

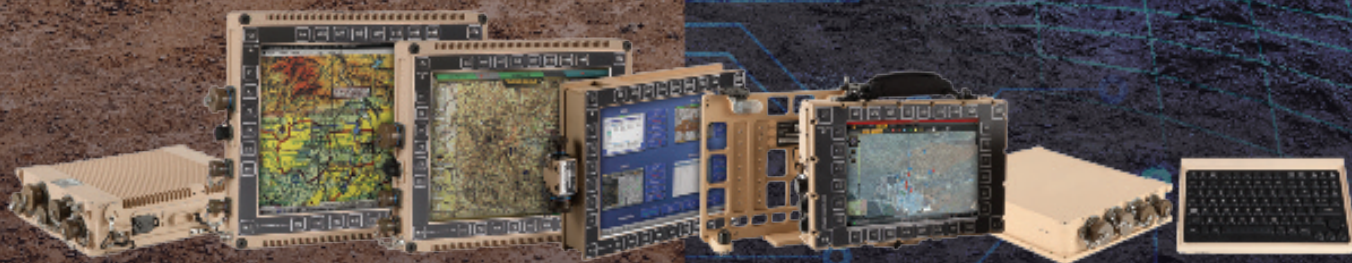
**...& MUCH MORE**

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PLATFORM COMPUTING

# Proven on the battlefield. Trusted by the warfighter.



The battlefield is no place for compromise. Warfighters shouldn't have to choose between mission-critical performance and innovation. That's why Leonardo DRS' Proven Platform Computing systems are both. Modernized for the warfighter and rugged for the battlefield. Connecting warfighters to the mission information they need, all while protecting from cyber threats and reducing size, weight, power and cost (SWAP-C) — ultimately enabling situational understanding, so you own the edge.





**W**elcome to this  
Spring 2020  
edition of the  
**Military Systems &  
Technology Magazine.**

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.

#### **A Multi-Media Portal for the International Defence & Aerospace Industry**

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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**THE EXSEL GROUP**  
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**GREENRAY**





2022

# EUROSATORY

13-17 JUNE 2022 / PARIS

THE UNMISSABLE  
**WORLDWIDE**  
EXHIBITION



**1,802**

exhibitors

↑  
**+14,7%**

from 63 countries  
65,9% of international

**65 startups at Eurosatory LAB**

**98,721**

**Total attendance**

(exhibitors, visitors,  
press, organisers)

**227**

**Official delegations**

from 94 countries  
and 4 organisations  
(representing 760 delegates)

**696**

**journalists**

from 44 countries

**75** Conferences

**2,102** Business meetings made



2018 key figures





# MONITOR THE INVISIBLE

**CBRN THREAT  
DETECTION SOLUTIONS**

**UNATTENDED GROUND SENSOR  
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THE DEFENCE  
Design Agency

# DESIGN, PRINT & WEB SOLUTIONS

For more than a decade, the Defence Design Agency (DDA) has worked with defence and aerospace clients worldwide, bringing shared expertise and knowledge of the defence industry for the benefits of our clients.

We have a team of talented web designers, graphic designers and copywriters on hand, to do justice to the quality and excellence of your products with stylish and accurate marketing collateral.

Whether it's printed material which looks more vibrant than your current offering, some compelling content written and designed into a press release or a download, or you're looking for help with a new website or exhibition stand, we can certainly help you.

The management team behind DDA is shared with MS&T – we know

from talking to our customers in the industry that creative marketing probably isn't something which comes naturally to you. If you have your own team, that's fine. But many defence businesses would love to be able to outsource the marketing and design work to a trusted partner who understands the industry and also has avenues on hand to get the brand out there. That's where we come in.

Take a look at our services below and visit the dedicated pages for more information about what we do, who we've worked with and for some testimonials from our many satisfied customers. We're sure you'll find us a reliable partner.

Here's how we can help:

## Events and Exhibitions

We know how difficult it can be to show your wares off worldwide – the logistics is hard enough without worrying about design and technicalities. Let us take the burden off your shoulders. Organising events and exhibitions around the world can be a trying experience. From liaising with various suppliers in different countries, transporting products to a specific place at a set time, to organising stands... if you add in technical and creative demands as well, it can be a challenge, to say the least. That's why many of our clients prefer to pass the responsibility for exhibition display management and design over to us. We'll coordinate every aspect of the build – from registration and fee negotiation, to electrics, lighting, furniture designing and printing. Let us work with you as your creative partner,





so you have a faultless stand when you arrive at the show.

On design, DDA's graphics team can create bespoke graphics for any event, at any size, giving your products the impact they deserve. We'll work closely with you on design, editing imagery, on layout and printing.

## Brochures and Data Sheets

They're one of your most important sales tools, but they're often neglected. Make them sing! We'll turn your documents into dynamic collateral which does justice to your products. Often neglected, brochures and data sheets are one of the most important sales tools a company can produce. Done right they're informative and engaging, communicating important information about your products' key features.

Easy to download digitally, brochures and data sheets work well when printed as a tactile and engaging piece of sales and marketing collateral. They're really important.

So why not create something which matches the quality of your product? DDA has a back catalogue of stunning, bespoke brochures and data sheets which we have produced for our defence clients. We have a team of professional graphic designers and print managers with years of experience, on hand and ready to work with you to achieve your required goal.

Things to consider are your target audience and the key benefits which need communicating. We can help you draw those out, then complement our advice with compelling copy, concise product specifications and stunning technical illustrations to maximise impact.

We're happy to enhance your existing collateral within your current brand guidelines or, if you want, we can help you develop something completely new.

## Websites

Sales prospects will increasingly end up here as a first introduction to your products, so you need to strike the right first impression. We can host, design and maintain your website so it does what you need it to. Increasingly, websites are the first port-of-call for potential customers. All too often they're clunky, hard to navigate and lacking in style – an inferior representation on the quality products they're supposed to support.

DDA has supplied custom built websites to a range of small and

medium-sized defence companies and associations. The process starts by establishing and articulating your requirements and goals, so our designers can create conceptual ideas before instructing our experienced developers on how to execute the build process.

A good website is one of several key elements of your digital marketing strategy. We'll help you find something which properly represents your brand, a one-of-a-kind site which is tailored to your specific requirements.

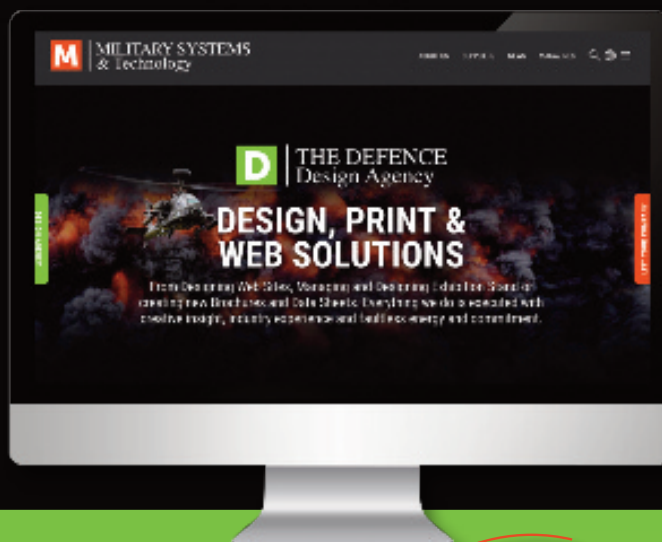
And websites shouldn't be stagnant – they need to be updated as your offering changes. So we can provide ongoing hosting, management and maintenance packages so that your site remains fresh and relevant.

## Adverts and Editorials

It's a competitive world out there and it's hard to attract eyes and keep them focused. We can help draw attention to your products and provide written content which tells the right story. How do you make your products stand out from the crowd – the one which eyes rest on, while a reader is flicking around a website, online publication or a print magazine?

Creating an advert or an editorial which has genuine impact is no simple feat. If you're trying to sell a product, promote a brand or highlight company news, DDA has the creative insight and industry experience to create something with real impact that engages with your customers.

Adverts which are designed with style to communicate key messages to potential customers. Editorials which pull in and engage readers, raising brand awareness while telling them a story at the same time. It's tricky stuff to get right, but we can help.



## EVENTS & EXHIBITIONS | BROCHURES & DATA SHEETS | LOGOS & BRANDING | WEBSITES | ADVERTS & EDITORIALS

For more information on how the Defence Design Agency could help with your next project, contact us now for a friendly chat to discuss your requirements.

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or, visit **www.militarysystems-tech.com/design**

### Outstanding!

Tony and his team have been outstanding. The design, management and communication from start to finish has been second to none.

**Mr Steve Kennon,**  
Head of Business  
Development,  
VALENT Applications



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# DRAWING LESSONS FROM YEARS OF EXPERTISE TO SUPPORT THE EVOLUTION OF MILITARY COMPUTING

By Peter Hurst,  
Vice President, International Projects & Business Strategy  
at Leonardo DRS, Land Electronics

Leonardo DRS has been involved in the UK Bowman project since its inception, having competed for and won a substantial contract for the vehicle-based tactical workstations in 2002. Key to the success of the programme was the high degree of commonality between the three different workstation variants: VUDT (Vehicle User Data Terminal), BMDT (Bowman Management Data Terminal), and PBPU (PBISA Processing Unit), leading to economies of scale and making software and through-life support economic and effective. This initial modular and upgradable approach has proved to have long-term benefits to not only Leonardo DRS, but also to the UK Ministry of Defence (MoD).

Leonardo DRS provided more than 14,000 tactical user data terminals to General Dynamics UK (GD UK) for the initial Bowman implementation. The User Data Terminals (UDTs) are installed in all tactical vehicles, wheeled and tracked, with the BMDT and VUDT (now referred to as CT1 and CT2) being dismountable for use within command posts or autonomously off the vehicle platform.

Leveraging Leonardo DRS' position as the major supplier of tactical computing to the US Army



*BOWMAN Management Data Terminal*

has been a core strategy of ours over a number of years. When we had the opportunity to re-compete for the Bowman UDTs in 2008, we took the approach that upgrading the delivered systems was the most competitive and impactful way to provide the enhanced capability that the British Army now required.

Key to this strategy was the high degree of re-use that could be made of vehicle infrastructure, including cabling and installation kits, which represented a significant saving to the customer. In winning the re-compete BCIP5.4/5.5 Bowman contract in 2008, we were





*Mounted Family of Computer Systems Tablet*

able to draw together the product development roadmaps for both the US Army and the UK Army. We did so by leveraging technology drawn from the US Army Force Battle Command Brigade and Below (FBCB2) contract that DRS had won and was being delivered at the time.

## US AND UK ALIGNMENT

In 2016 we were once again presented with an opportunity to compete for the next spiral of Bowman technology insertion in the form of Bowman 5.6. This was a key phase of development as 5.6 would provide the tactical computing infrastructure on which the evolution of the UK's Morpheus' to a more open system will be built.

Maintaining our incumbent position on Bowman was, and is, of great importance to Leonardo DRS and the Bowman 5.6 project provided another opportunity to deliver a value-for-money solution (built on the principles discussed above). Leonardo DRS was pleased to be awarded the 5.6 contract continuing the highly successful partnership developed with both GD-UK and the British Army.

On this occasion, we were able to exploit the US Army Mounted Family of Computer Systems (MFoCS) contract that we had originally won in 2013, and again in 2018, in the form of MFoCS II. US Army MFoCS effectively replaced FBCB2 so this was a natural progression and once more allowed Leonardo DRS to align the primary US and UK brigade and below C4 projects by providing a solution, which had a high degree of commonality across both programmes.

It also ensured that Leonardo DRS continued to deliver the benefits of ongoing technology insertion, underlying capability development and enhancement to both projects based on a significant degree of commonality in terms of the core computing, display, networking and security architecture.





## NO COMPROMISE

Leonardo DRS' ultra-rugged tactical computers are designed to allow for ongoing technology insertion and upgrade. Over the course of a project the size of Bowman and MFoCS, we were able to use the same basic infrastructure to deliver ever-increasing amounts of capability as computing technology advanced. The Intel™ Core 2 Duo systems delivered back in 2002 have now been upgraded through two spirals to new Intel multi-core technology, maintaining legacy I/O and introducing new interfaces for future expansion.

The ability to use the current infrastructure and upgrade the current systems is more cost-effective than buying lower-grade, rugged COTS systems and ensures that there is no compromise regarding the environmental performance of the system. Modern Battle Management Systems are mission-critical and Leonardo DRS believes that there should be no compromise in their ability to perform in the harshest of conditions.

The nature of the capability that Leonardo DRS provides has changed considerably over the past 15-16 years since we first won the Bowman contract, and then soon after, the US Army FCB2 contract. The original focus of our efforts was to ensure that we provided the very best tactical computing solutions that would stand up to the rigors of a battlefield environment.

Leonardo DRS' track record in this regard is unmatched. We have installed over 300,000 systems to date and are delivering unparalleled performance in terms of reliability, availability and resilience. These product attributes remain constant today.

However, the nature of modern fighting vehicle architectures has moved on and so our hardware and software has evolved as well.

## GVA

MFoCS is much more about delivering an integrated networked capability, which can support a wide range of user needs and applications, as opposed to the previous stove-piped system which supported a single application. Although Bowman 5.6 may not mirror the multiple applications and network interfaces supported by MFoCS, the solution that Leonardo DRS is now delivering has the capability and capacity to migrate to the basis of a common vehicle architecture capable of supporting multiple applications.

The MFoCS/Bowman LSU computing baseline will support multiple virtual machines and Local Area Networks, interface with a range of video sources, and support more complex security architectures, and therefore provides the basis for capability growth. This positions Leonardo





*Leonardo DRS Data Distribution Unit Block IV*

DRS to continue to develop our solutions as the MoD looks to the future and to Morpheus.

A key part of the Leonardo DRS product roadmap is the development of Generic Vehicle Architecture (GVA)-compliant versions of the MFoCS core-computing products, which again leverage the common computing and display technologies and economies of scale with such a large US project of record, while adhering to the requirements of standards such as Def-Stan 00-82 and 23-09.

Leonardo DRS is in a unique position. We have derived a great deal of experience in delivering tactical computing content into the two largest BMS/C4i projects conceived in the form of FBCB2, evolving to MFoCS in the US and UK Bowman over a 15-year period. This experience has provided us with a wealth of knowledge and capability that goes into everything we do.

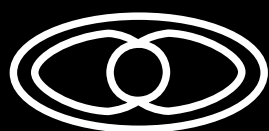
Today, Leonardo DRS is able to provide complete vehicle architectures that are both

network and application-agnostic and cybersecure while delivering world-class networking, voice, video and tactical computing infrastructure. The development of Leonardo DRS' latest variant of Data Distribution Unit Gen 4 (DDU-4) is a prime example. The DDU-4 shares much of its DNA with the primary MFoCS II tactical server, but builds in capabilities for additional functionality such as voice-crossing banding between radios with different waveforms, additional Ethernet and CanBus interfaces along with support for Tactical LTE and enhanced GPS capabilities. It also fully integrates with our Vehicle Intercom System and multi-touch Commanders Display.

For more information on Leonardo DRS platform computing products, technologies and expertise, please visit our website at [LeonardoDRS.com/platform-computing](http://LeonardoDRS.com/platform-computing).







# BARRETT

**PRC-4090  
HF SDR  
Tactical  
Manpack**



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# PRC-4090 HF SDR







# Engineering Integrity

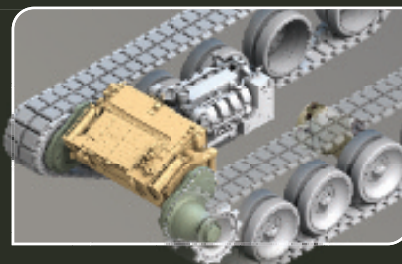


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**Horstman InArm®  
Suspension System**



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- Ride Height
- Lock Out



# Horstman

With a time tested pedigree in design, development, project management and high quality manufacture, Horstman is the pre-eminent mobility solution provider in the global heavy armoured and tracked vehicle suspension market.



## Hydrogas® and Rotary Damper Systems



**Hydrogas® and Rotary Damper Systems**  
High performance modular suspension units.



Variable spring, dual spring, selectable damping. Lever-arm and in-line rotary dampers with high power density and integrated wheel arms.





## Founded by Sidney Horstmann – 1913

Founded 1913  
by Sidney Horstman

Company renamed  
as Horstman

Sidney awarded  
an OBE

1920's  
"the Horstman Bogie"

Horstman bogie used on the  
Universal Carrier >113,000 built in UK,  
US & Canada (the most produced  
AFV of all time)

Hydraulic Rot  
for the UK V

Precision gauges  
Innovative mechanisms  
Automotive (>1000 cars)

War work  
Gauges  
Timing Mechanisms

Motorsport  
General Engineering  
Military Suspension

Slow Motion  
Suspension Patented

Naval  
depth charges

f





## Present Day – A company of the RENK Group

ary Damper  
Warrior IFV

Challenger 1, AS90 and  
K9 Hydrogas® and InArm®  
AMV and M777 Hydrostrut®

Naval  
instrumentation

Refocused as an export  
facing suspension specialist

Ride Height  
Control orders

MilAir  
acquisition

Auxiliary engines and gearboxes  
for AS90, Chieftain and Challenger  
MBT1999 Acquired AirLog

First large US sales - Primus  
(for Singapore), Paladin,  
FCS InArm®

Spearfish torpedo  
components

US footprint set up  
for growth, L-3 IPR acquired  
for technology leap

Spearfish Upgrade  
contract



**Horstman**

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# Clear vision in all conditions is a mission critical advantage.

With weapon systems capable of engaging targets at extended ranges during the day, the aim is to match that capability at night.

**H**owever the human eye only receives information from a narrow band of the Electromagnetic Spectrum and it has limited Night Time ability. To see at night, several technologies have been developed. You can illuminate the scene you wish to observe (Visible, IR) but this can give away your position. You can use Intensification of the visible light reflected by the scene and you can use Thermal Imaging (IR) – or a combination of these.

## Cooled and Uncooled Thermal

Thermal Imaging converts IR Energy radiated by objects into a visible Image. The system senses and measures IR Radiation and creates a video Image suitable for viewing. A cooled Thermal camera uses the addition of a cryocooled sensor and can detect very small temperature differences. Image Intensification - The Image Intensifier absorbs light energy and converts it into electrons that are multiplied thousands of times. Fused thermal / image intensified - To overcome the shortfalls of both systems and to maximise the advantages Qioptiq have created Fused or Blended sights. These systems use thermal and image intensified technology, combined in a powerful light weight package to deliver both identification and recognition.

## Thermal Sights

**DRAGON S** (Sniper) turns up the heat! This new Uncooled Thermal Imager - In-line Thermal Weapon Sight provides mission winning capability.

**DRAGON-S12** is the new In-line Thermal Sight, and is part of the latest development in thermal imaging technology. Providing snipers with 24hr surveillance and target engagement capability, the sight is designed specifically to meet target and surveillance requirements for military customers and law enforcement agencies, providing high performance within a lightweight compact and rugged military qualified design. This delivers a capability to detect, recognize and identify man and vehicle targets 24hours a day, in poor visibility, in total darkness and through battlefield obscurants.

**DRAGON-S12** utilizes a state of the art 640x480 format 12µm, 60Hz uncooled thermal sensor coupled with a near silent shutter, delivering class leading sensitivity and uniformity. The sight attaches to Picatinny and NATO accessory rails in front of the day sight via a quick release throw lever, providing 24hr capability without the need to remove or re-zero the day sight.



The DRAGON-S12



The Phoenix and Phoenix H



## Cooled Sights

**PHOENIX** rises to deliver enhanced range target location & engagement. The potential to integrate the mwr-hot technology into a robust, reliable and swap traded weapon sight has become a reality.

**PHOENIX**, is a suite of Dismounted VAS products that will provide the Warfighter with enhanced Observation, Target Location and Target Engagement capabilities, based upon a common thermal core and operating architecture, enhanced connectivity and capability growth potential. **PHOENIX-S** provides long range observation and engagement capability - well aligned to the range capabilities of modern 0.338" and 0.5" Sniper Rifles and Ammunition, whilst still being sufficiently compact and lightweight to be utilized on 7.62 Sharpshooter / Support Weapon platforms.

**PHOENIX-H** shares the HOT Thermal Core and central processing with **PHOENIX-S** for commonality, but also features a digital day channel, Laser Range Finder, Laser Pointer, GPS and an advanced AHRS (Attitude and Reference Heading System) which provides accurate own and target location. The **PHOENIX** systems are ITAR free solutions, whilst utilizing the latest in sensor and display technologies.

## Image Intensified

**MERLIN LR** proves mastery over the night. This new long range image intensified weapon sight delivers mission critical enhancements.

**MERLIN-LR** is a new Image Intensified Clip-On weapon sight. This state-of-the-art sight is fully military qualified and is designed to be compatible with variable magnification day scopes for medium to longer range surveillance and target engagement. It attaches to Picatinny / NATO rails in front of the day sight via a locking quick release throw lever, and provides 24hr capability without the need to remove or re-zero the day sight.

**MERLIN-LR** is equipped with a high performance catadioptric objective lens and a bright, sharp, large aperture collimating optics to give a lightweight, compact yet rugged package. It is available with the latest P43 and P45 phosphor Image Intensifier Tubes, from the world's leading suppliers. The sight is suitable for a wide variety of weapon systems including AR Platforms, Designated Marksman Rifles, and Single Action Sniper Systems up to and including 12.7mm/0.50 Calibre.



The Merlin LR

**EXCELITAS**  
TECHNOLOGIES®

**QI OPTIQ**  
Photonics for Innovation

An Excelitas Technologies Company

## Blended Sights

**SAKER** Fused Sight Soaring Above the Competition The latest Image Intensifier / Thermal – Fused Weapon Sight for medium range surveillance and target engagement operations.

**SAKER** is the new Medium Range Fused Weapon Sight, providing the Dismounted Warfighter with an enhanced, multi waveband Detect, Recognize & Identify capability. The sight is fitted with a 12µm, 60Hz uncooled thermal sensor coupled with a High FOM Image Intensifier Tube, in either Green or White Phosphor, delivering class leading sensitivity, uniformity and system latency.

**SAKER** provides a low power architecture and is a fully military qualified. Designed specifically for medium range surveillance and target engagement operations, it attaches to Picatinny or NATO accessory rails in front of the day sight via a quick release throw lever, providing 24hr capability without the need to remove or re-zero the day sight. **SAKER** is a state-of-the-art system combining the latest Image Intensification and uncooled Thermal Imaging capability in a single lightweight, compact yet rugged package.

Over many years we have developed the total capability to provide some of the most innovative and focused optical solutions to today's technological challenges. Whatever the requirement, we stand ready to support our armed forces with the latest mission critical equipment.

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The Saker





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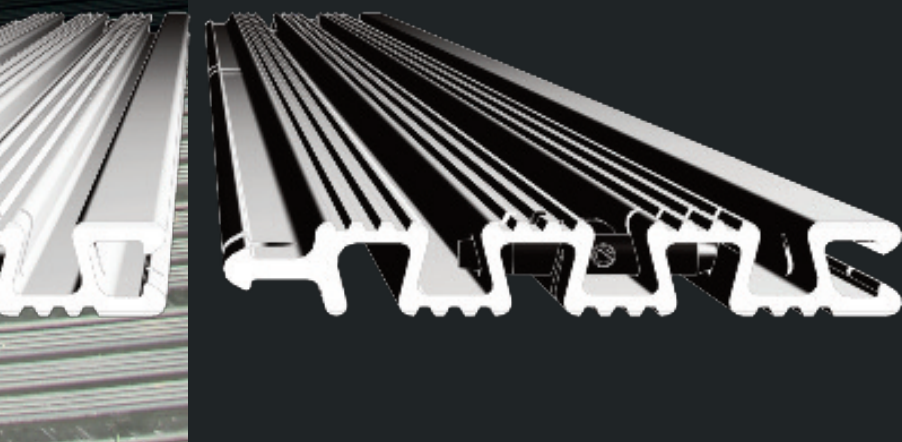
## Providing Rapid Access for Military Missions Worldwide

Supplying Armed Forces across the globe with bespoke ground stabilisation access, FAUN Trackway®'s renowned land Trackway® solutions enable vehicles to pass over challenging terrain conditions with ease.

With a heritage rich in aluminium engineering and as the original Trackway® manufacturer, the first Trackway® panel was designed and developed in partnership with the UK Ministry of Defence, with the aim of improving the mobility of vehicles and tanks in an array of environments.

Since then, the evolution of the panels has enabled FAUN Trackway® to provide air-side solutions such as Helicopter Landing Mats, Runways and Taxiways. Boasting durability, versatility and supreme quality, their products have been thoroughly tried and tested in extreme environments and withstanding temperatures from -40°C to +60°C.

As the global leader of Trackway® solutions, FAUN Trackway® products are currently in use by over 40 militaries worldwide.

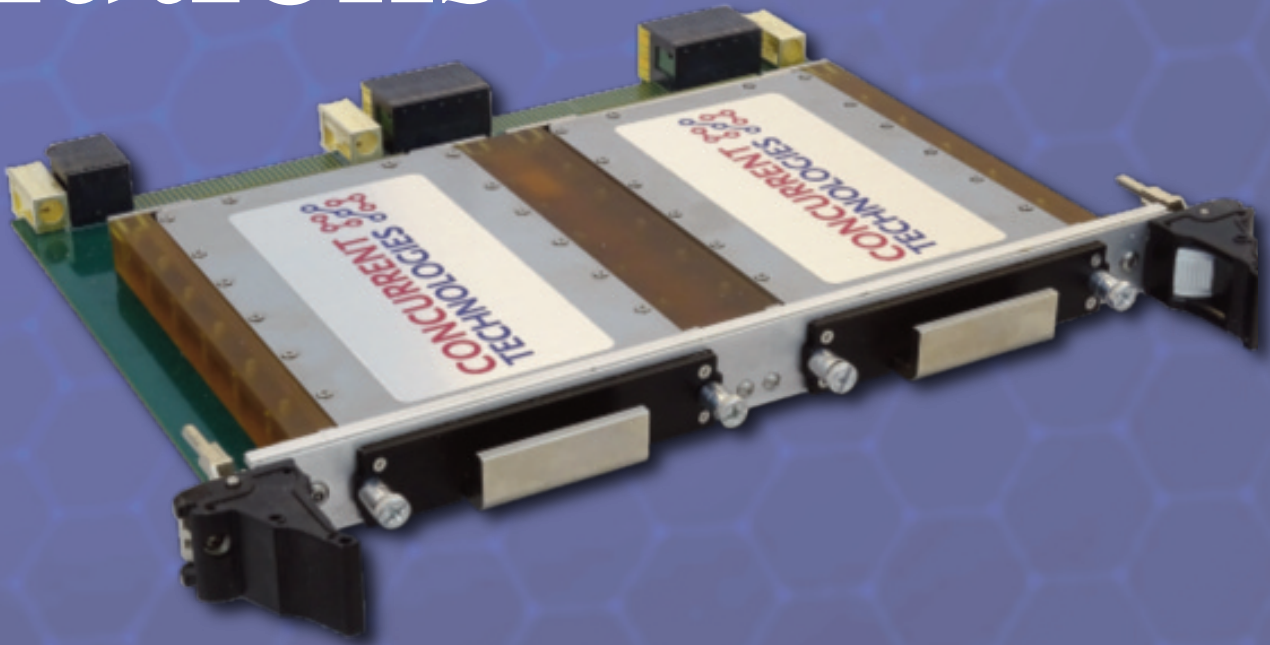




CONCURRENT  
TECHNOLOGIES



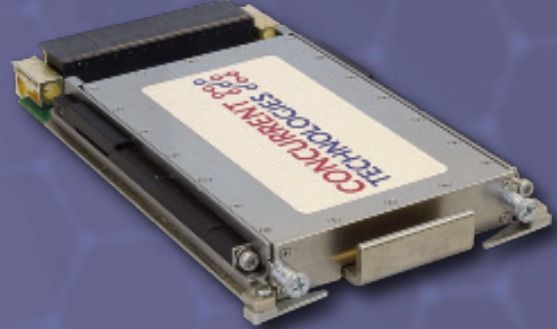
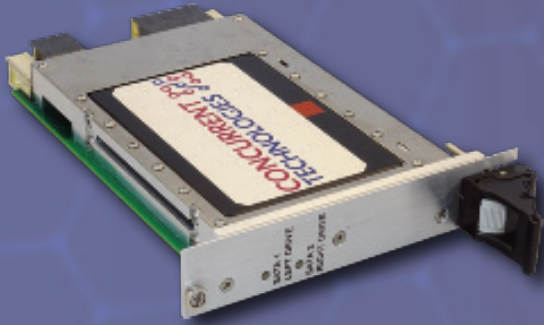
# New VPX Storage Solutions



## Concurrent Technologies announce an alliance with Vanguard Rugged Storage

Concurrent Technologies, a leader in high performance embedded computer solutions, has teamed up with Vanguard Rugged Storage to provide an enhanced range of storage solutions for VPX based systems. With the adoption of workload consolidation and Artificial Intelligence based inference at the edge technologies in addition to more traditional signal processing applications, the need for storage has dramatically increased. Furthermore, the requirement for rugged conduction-cooled systems that have front removable storage devices can now be satisfied with selected storage modules.

Initially, Concurrent Technologies is offering three new storage modules, all based on the OpenVPX standard with SATA connectivity for reliable operation and high throughput rates. TR MS6/522 is a 3U VPX board fitted with two fixed solid state drives for up to 16TB capacity and is designed for use in air-cooled applications. TR MS6/523 is also a 3U format module that offers a single front removable solid state drive for rugged conduction-cooled applications. VR MS6/524 is a 6U air-cooled board with two front removable solid state drives. These modules are released and available for deployment. Further developments are underway and are anticipated to be available later in 2020.



Jane Annear, Managing Director of Concurrent Technologies, commented:

***"Our processor boards offer direct attached storage suitable for some missions, but we've been looking to expand our capabilities to include Network attached Storage and Storage Area Networking solutions for some time. This alliance with Vanguard Rugged Storage helps us deliver on our objective to provide more content to our customers."***

Phil Loudin, CEO of Vanguard Rugged Storage, commented:

***"Our mission is to provide embedded data storage that is super fast and built to last. Our storage products are highly complementary to Concurrent Technologies' processor boards and we're excited with this relationship as it enables us to serve a wider market."***

**[www.gocct.com](http://www.gocct.com)**

**CONCURRENT TECHNOLOGIES**



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Processor Solutions  
for Inference at the Edge  
Applications**

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# RunFlat International invests in increasing production capacity.

RunFlat International has reaffirmed its long-term industrial strategy with a £1m investment in new casting facilities.

**T**his follows the commissioning of multiple CNC machines, the upgrade of our chemical plant and the opening of our new tyre fitting centre over the past few years.

This is the largest single investment the company has made for 20 years, demonstrating our determination to provide our customers with the latest polymer technology within short leadtimes. All our RunFlats are manufactured in the UK from raw chemicals. Our proprietary material is developed and processed specifically for RunFlat system applications, resulting in optimal ballistic resistance and run-flat performance.

Eric Cartelet, Managing Director, stated the following *“Over the past year we have been at full capacity so this investment will significantly boost our output and enable us to expand the quantity and size of the RunFlats we can offer.”*

## RunFlat International Company Overview

RunFlat International is the leading independent RunFlat systems supplier in the defence and security sector, having built a reputation on quality, performance and customer care.

We offer a complete range of wheel and RunFlat systems to suit all vehicle applications. When fitted, up to 100km can be achieved with deflated tyres following ballistic or terrain related damage.

RunFlat International Ltd | Gawne Lane | Cradley Heath | West Midlands | B64 5QY | United Kingdom

Email: [info@runflatinternational.com](mailto:info@runflatinternational.com)

Phone: +44 (0) 1384 414 845

[www.runflatinternational.com](http://www.runflatinternational.com)









Flexzorb®  
Defence

# 75+ YEARS OF PROTECTION

## ACTIVATED CARBON INNOVATION

### ACTIVATED CARBON CLOTH FOR THE DEFENCE SECTOR

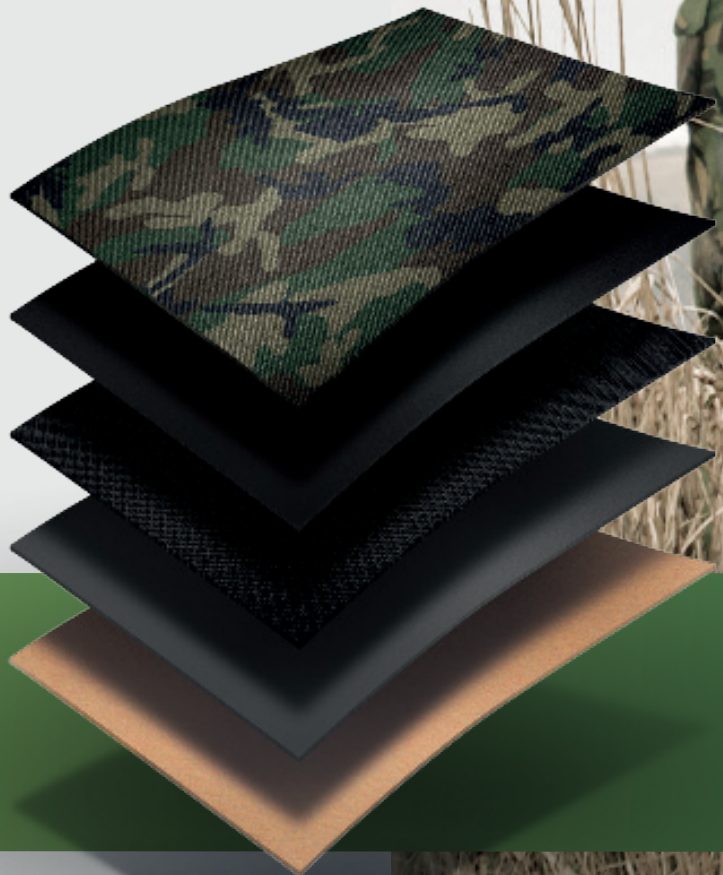
Flexzorb™ - The flexible, lightweight protective textile that is widely used by many of the world's leading defence vendors, making us the leading provider of activated carbon cloth for defence applications.

Lightweight and breathable, Flexzorb is used in a range of defence applications, including:

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

### WHEN FAILURE ISN'T AN OPTION

Chemviron, the European Operation of Calgon Carbon Corporation, has a long history of protecting and defending troops with our activated carbon products, and we remain committed to providing adsorbents to combat chemical warfare agents. In an environment where there is no room for failure, why wouldn't you rely on products that have been used and trusted for over half a century?









# OUR STRENGTH IS YOUR PROTECTION

DefenCell is a range of products that are designed and manufactured to provide protection for personnel, equipment and infrastructure against a wide selection of threats in the Security, Defence, Flood and Environmental sectors.

There are three main product groups in the DefenCell portfolio and a number of other complementary protection products available. The products are:

- **DEFENCELL BARRIERS**, non metallic cellular (Ballistic, Blast, HVM, UXO and Flood Protection),
- **DEFENCELL MAC**, welded mesh gabions (Ballistic, Blast, HVM and Flood Protection).
- **DEFENCELL PROFILE**, non metallic cellular (Hostile Vehicle Mitigation (HVM) Barriers, Berms)

## BARRIERS

The DefenCell Barrier is the result of a decade long investment in research, development and testing to create one of the most effective and versatile expeditionary protection systems available. A well-proven cellular construction combined with the strong geotextile material makes DefenCell a durable but lightweight and compact solution that is easily filled to provide protection to personnel and infrastructure from a variety of threats.

Designed by Engineers for Engineers, DefenCell is being used to provide protection to troops in harsh and often remote operational environments and is ideal for a wide range of Military and Security applications. Taking advantage of the small logistical burden of DefenCell's light weight and compact packaging, typical uses include protective walls, perimeter security, entry control points, ranges and training operations.

## PROFILE

DefenCell Profile is our cellular Hostile Vehicle Mitigation barrier, developed with advice from the UK Home Office, extensively tested in UK and USA and approved by CPNI (Centre for Protection of National Infrastructure) in UK and Dept of State in USA. It is the only CPNI approved geotextile barrier available and has been specified on many past, current and future security projects.

The increase in the threat from Vehicle Borne Improvised Explosive Devices (VBIED) and Hostile Vehicles has led to a need for effective protection systems to maintain maximum stand-off distance as well as blast mitigation in the event of an attack. DefenCell has been extensively and successfully tested against both VBIED and HVM and the cellular design dissipates energy along the length of the barrier very effectively.

DefenCell Profile is designed to provide perimeter security, from enhancing existing security systems and fences, to providing structural integrity to long perimeter barriers. DefenCell can be built to virtually any height and profiled to provide protection against specific threats. The Profile system has been successfully tested to UK PAS 68 Hostile Vehicle Protection standards and two standard versions are available to suit different threat levels. The ability of Profile to retain the suspect vehicle within the structure blocks a secondary attack.



## MAC

DefenCell MAC® is our range of protective welded mesh metal gabions lined with geotextile and supplied in several standard sizes and known in the US as the Expeditionary Barrier System (EBS). The EBS is available under long term contracts with US DOD and NATO procurement agencies and have been supplied to many other military forces, security services and NGO's. DefenCell MAC® gabions are filled with earth, sand or other locally available fill materials and provide ballistic protection, blast mitigation and HVM vehicle barriers. MAC can also be used for environmental applications and is ideal for flood protection.

DefenCell MAC® is constructed using the highest quality materials to established and tested standards by Maccaferri, the world's leading manufacturer of gabion structures, using heavily galvanised welded mesh panels combined with a heavy duty geotextile lining material created from UV resistant polymer fibre using the same advanced technology as the proven DefenCell fabrics.

## SHOOTING RANGES

Recent projects in USA, UK, France, Africa and South America for Ranges using DefenCell, emphasise the excellent value and versatility of the products.

The Africa and South America ranges were both designed by Government authorities specifying DefenCell products. DefenCell has been approved by, and appears in the range design handbooks of, the National Rifle Associations in UK and USA.

## CIVIL PROTECTION

Physical protection of critical infrastructure. The DefenCell Profile product range is ideal for both overt and discreet requirements. The products have been extensively trialled and tested to protect against specified threats including Vehicles, IED's, and holds Internationally recognised certification. (PAS68 etc).

Proven Customers include Power Stations, Fuel farms, Airports, Border and Immigration posts, Police Stations as well as oil and gas installations.

## UXO (Unexploded Ordnance)

Tested and certified for explosive containment, DefenCell has been approved by the prestigious US Dept of Defense Explosives Safety Board (DDESB). The requirements in the US for unexploded ordnance disposal are well documented as traditional ranges and training areas in US, Hawaii and other overseas locations are opened to public access and need to be cleared of old ordnance. This is usually done by certified civilian contractors.

Ongoing engagement by DefenCell experts with DDESB in USA and the NATO EOD Centre of Excellence in Slovak Republic maintain our solutions in the forefront.

## NGO'S AND CIVIL CONTRACTORS

DefenCell Barriers have been widely deployed by the various NGO in Somalia, S Sudan, Chad, Mali and DRC as well as several other global locations. The light weight and portability of the Barriers lends itself to remote and austere locations while the MAC is used consistently to build perimeter security as well as bunkers, observation posts, compartmentalisation and fuel & ammunition storage protection.

## FLOOD

DefenCell T2 Barrier and DefenCell MAC FE 3 (Flood & Emergency) have both been successfully tested by ERDC and offer a lightweight and proven solutions to flood, coastal erosion and critical infrastructure protection.

## TESTING

DefenCell products have been extensively and successfully tested during development against Ballistic Threats (Small arms to Rockets), Blast Mitigation, Speeding Vehicles, UXO (unexploded ordnance) and as Flood Barriers (both operationally and in laboratory conditions). An ongoing programme of further testing is part of the continued development of DefenCell products.

## SUPPORT

Technical & Sales Support is provided by experienced Engineers with design and on-site installation advice supported by practical training and concise construction manuals and videos.

[www.defencell.com](http://www.defencell.com)

# DEFENCELL



# DEFENCELL

## Engineered Protection

**Blast Mitigation** – Extensively Tested  
**HVM protection** – PAS 68 & K12

### Barriers

**Non-metallic** – No shrapnel  
**Durable, lightweight & easily deployed**

**Ballistic Protection** – Small Arms to RPG  
**Ranges & Shoothouses**– NRA approved

### MAC

**Weldmesh gabions, geotextile lined**  
**Rapid protection, standard sizes**





# THE ULTIMATE STORAGE FOR YOUR MOST CRITICAL DATA



**YOUR OWN SAFE & SECURE "BLACK BOX."**



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**Organize vital records and information and protect them from Fires, Floods, Tornados, Hurricanes, Earthquake, Building Collapse, Cyber Criminals...**

Your own safe & secure **"Black Box."** The ultimate storage for your most critical data.





**The DataBunker product line is a breakthrough for transportable critical data storage. Its small compact size has incredible survival capabilities. It is actually small enough to fit in a standard briefcase and is TSA approved for carryon.**

It is designed to withstand a crash event were there are high G forces followed by a horrible chain of events including a penetration attempt, 25,000 lb. crush resistance, a 1400 degrees Fahrenheit one-hour fire, a 500 degrees Fahrenheit for 10 hours, 48-hour submersion in diesel fuel, 10 min under fire fighting solution, and then a 48-hour submersion under 15 meters deep in salt water in sequence on the same unit. The DataBunker also survives a nuclear weapon EMP.

Many applications are showing themselves for the DataBunker product line from black boxes for many different types of vehicles including trains, busses, trucks, cars, self-driving cars, emergency response vehicles, cash transport vehicles, military tanks and all other military vehicles to personal home use. A DataBunker on a vehicle allows you to extract the data of an event that occurred so accurate reconstruction can occur, this is especially of interest when loss of life has occurred with a vehicle accident, or to just have your personal critical information survive most any "event".

For personal data protection in today's world where the "cloud" is hacked every day where do you put your critical personal information and data that is not going to be destroyed if an event happens. All your personal information and vital data should be protected and accounted for. Wills, financial information, and insurance policies can disappear if you don't protect them. This is poignant and everyone must do this to protect themselves and their loved ones. Whether you are a fortune 500 company or a family or an individual you need to protect your valuables. Many of our valuables in this era are now data and information.

The DataBunker is designed to protect that and organize your life at the same time. It comes already loaded with a complete file folder system that is expandable to accommodate any of your needs. Useful documents such as wills, power of attorney and many others are already on it and if you are a bitcoin or any other form of cryptocurrency holder why you would hold it on anything else. It shows up as a drive on your computer and is as easy as dragging and dropping files on to it. We also have our easy to use but very powerful encryption software BunkerCrypt.

Put your world on a DataBunker today. Organize your life on a DataBunker today. Do it for your yourself or your love one's sake.

Go to **DataBunker1.com** and order your DataBunker today! Many colors available, 8, 16, or 32 gig.



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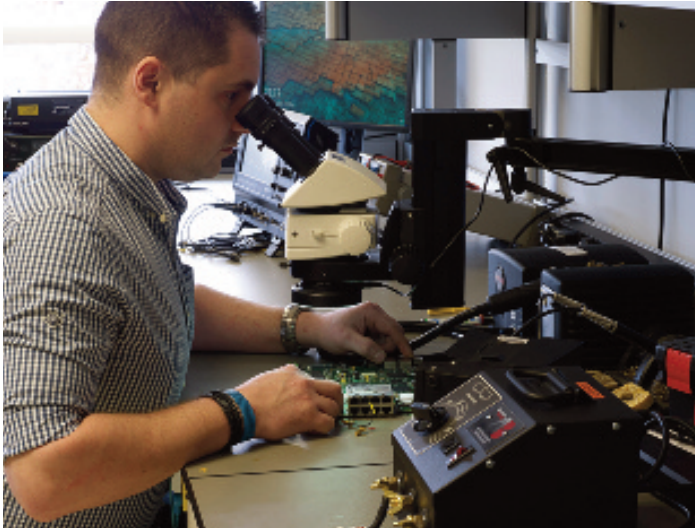


# PPM Opens 40 New UK Offices

Pulse Power and Measurement Ltd (PPM) has announced the opening of 40 new offices in the UK.







Those working from the 40 home offices continue PPM's engineering and design, sales and marketing, customer service and accounts work. They are in addition to employees already working remotely in the USA, Poland and Thailand.

Most of the company's Production team remain on-site for the manufacturing and shipment of orders, and - to ensure a completely smooth customer-experience - some customer service and accounts employees also remain. PPM has four divisions: PPM Power, ViaLite Communications, PPM Systems and PPM Test; all of



which are still taking and processing orders.

PPM's aim is to provide its customers with a "business-as-usual" experience whilst protecting its staff and the local community. It has also published a Coronavirus statement encouraging customers to ring up simply for a chat, should they be feeling isolated.

Neil Seager, CEO, said: *"I'm not at all surprised by the rapid response and adaptability of everyone at PPM to the new normal, because that is what we do so well; nevertheless it has been a heartening experience. We remain focused on you the customer, and are happy to chat anytime on Zoom, WebEx, Skype, or just by phone."*

For more information, please visit [www.ppmsystems.com](http://www.ppmsystems.com) and [www.felixfund.org.uk](http://www.felixfund.org.uk).

**ppm SYSTEMS**

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# LIGHTWEIGHT AMMUNITION CASE (LWAC®) FROM PPD (PLASTPACK DEFENCE)

LWAC® is a lightweight plastic ammunition box designed to replace the old fashioned steel versions that have been around since 1942.

PPD, founded in 2012 by its current management to bring the LWAC® to market, has steadily worked through a whole range of design and testing challenge to establish LWAC® in the ammunition and other markets.

Over the years a battery of official national and United Nations tests run by independent authorities have shown that LWAC® is comparable, but different, in performance to its steel predecessor and in some areas markedly and unexpectedly better. For instance when undergoing bonfire tests LWAC® did not contain the pressure from exploding ammunition cooking off and then itself explode showering metal fragments everywhere causing an additional hazard to life and limb.

These tests have shown that LWAC® meets all the national and international (UN and NATO) test regulations and standards for transport and storage. However merely being as good as something is not an advert. Something has to offer serious advantage to convince purchasers, especially Ministries of Defence to buy it. It is these advantages that have convinced 20 customers in 12 countries to adopt LWAC® instead of steel containers for the M2A1 ammunition box for small arms ammunition (SAA). New work for Rheinmetall Waffe und Munitions in Germany has got the same process underway for the PA-120 for 40mm ammunition and work is shortly to start on M72 liners for SAA.

What are these serious advantages? Well the first and most beneficial is mass. An LWAC® is 780g compared to 2400 for steel. The benefits of this are huge increases in haulage capacity. When everything is considered it's 10% more ammunition on a pallet for the same mass:volume ratio. That's 10% less trucks, its 10% more ammunition on a transport aircraft, 10% less fuel. All that leads to phenomenal through life cost savings. Less drivers, less barracks, less training less everything really, it quickly adds up.

Then there are the additional major operational benefits. With the same ammunition on board helicopters fly for a longer time, armoured vehicles increase their operational range. Alternatively the combat power of the platform is increased because more ammunition can be carried.

Those of us who have tried to resupply in the field at night will notice the reduction in noise because the plastic can be handled, stacked and moved more quietly.

Other advantages accrue from this weight reduction. Vehicles even military vehicles become more environmentally friendly. Less fuel, whatever it might be, used: even more logistic savings, if its hydrocarbons less gasses and, whatever the fuel, less tyre scrub producing the real environmental pollutant rubber/plastic particulate matter.

All ammunition boxes get repurposed. They are filled with earth and used to build retaining or protecting walls for example. LWAC® is now firmly established in the rations and leisure market by providing a lightweight waterproof protective case for transporting ready access ration kits (known colloquially as brew kits). Is LWAC® the best example of thinking inside the box in a military context for some time?

Deeper though reveals other less obvious advantages. Less vehicles of whatever type; trains and boats and planes and lorries, and associated vehicle movement reduces vulnerability and thus casualties. Less noise improves security which reduces casualties. The ability to RFID chip each box by embedding the chip in the box at manufacture improves tracing of stock which reduces over supply on the battlefield and thus unnecessary movement and thus casualties. Better stocktaking enables better ordering, saving money and time and people and more money and the cycle starts again; save on this, improve on that, gain here and then make more savings. LWAC® is the catalyst in this reaction chain as well as being a major component of it.





PlastPackDefence

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4100 Ringsted | Denmark

**T:** +45 55 37 27 62 | **E:** je@ppddk.dk



[www.ppddk.dk](http://www.ppddk.dk)



# POLYAMP



# NAVAL SIGNATURE AND CONTR



## THE POLYAMP BUSINESSES

Polyamp has two main sector of operations:

- Signature Management Systems, Systems Division
- Industrial grade DC/DC Converters and Power supplies

## SIGNATURE MANAGEMENT SYSTEMS, SYSTEMS DIVISION

The Systems Division of Polyamp AB specializes in the design, manufacture and supply of Signature Management and Control Systems for Worldwide applications within the International Naval Industry.

### Polyamp supplies Military Systems such as:

- Degaussing Systems from MCMV to Carriers
- Electromagnetic Mine Sweep for USV/VOP
- Range Software; SWECADE

- UEP/ELFE Measurement Systems
- Exercise Mine Systems; POEMS
- Underwater Multi Influence Sensor Systems; UMISS

Customers include Shipyards, Navies, Governments and Prime Contractors from the International Naval Community.

## SYSTEMS DELIVERIES AND EXPERIENCE

The Company's experience in Degaussing is considerable with over more than 40 years that covers the design and supply of Digital Degaussing equipments for submarines, steel surface ships and mine countermeasure vessels (MCMVs). All Polyamp AB Degaussing systems are fully digitalized, with multiple magnetometer control, and all are of the Advanced type (ADG) and using the latest type of modern hard/software open oriented. Latest design are of the modern decentralized type.

# RE MANAGEMENT OL SYSTEMS



## They include:

- RSwN (14 platforms)
- Range Software; SWECADE.
- Singapore Navy (8 platforms)
- US Navy (12 platforms)
- Royal Danish Navy (7 platforms)

## Other Systems delivered are:

- Multi Influence Sensor Systems for France; (2 systems)
- Several UEP/ELFE sensor systems for RSwN, US, India, Germany and other International Navies

## INDUSTRIAL GRADE DC/DC CONVERTERS AND POWER SUPPLIES

Polyamp has designed, manufactured and marketed industrial grade switched mode DC/DC converters since 1970 with power ratings from 30 to 2000 W. There are more than 350 standard types in the Company's current product range and some of them are kept in stock for higher service degree.

Polyamp's DC/DC converters are used in many applications where the customers demand high reliability and accuracy performance throughout their whole life. Particularly when operating in very harsh electrical/physical environments. All Polyamp units are designed for easy installation and do not need any additional electrical or EMC protection when integrated into customer applications.

During this time Polyamp has successfully delivered and supported DC/DC converters in a wide range of applications, and in so doing has established a reputation for quality, reliability and on time deliveries.

Polyamp supplies switched mode power supply systems with high reliability and dependable performance in harsh electrical and physical environments.

## Product range covers:

- DC/DC converters 30 to 2 kW
- Inputs from 10 up to 850 Vd.c.
- Outputs from 5 to 150 Vd.c.
- AC/DC Power Supplies 1 - 15 kW where we also sell Delta Elektronika and Enedo-Powernet products.

Customers include railways, electric vehicles, the armed forces, air traffic control and the process and power industries including nuclear.

## Applications include:

- Train and Track Side
- Process Control, safety systems
- Power Plants (including Nuclear safety locations)
- Power / DC Distribution & Telecom
- Forklifts, Electrical Vehicles
- Radio applications
- Industry
- Naval and Military
- Air Traffic Control

## CONTACT:

**Nick Avelin** | President

Polyamp Inc | 1209 Orange Street | Wilmington  
19801 | Delaware | USA

Phone: **484 402-0532**

**www.polyamp.com**





# POLYAMP



**A SECURE PART OF  
YOUR SYSTEM**



## **SPECIALISTS IN POWER SUPPLIES AND NAVAL ELECTROMAGNETIC SIGNATURE SUPPRESSION**

Polyamp is specialized in power supplies. We have our own development and manufacture of DC/DC Converters. Our specialty is voltage converters with high reliability, for use in tough environments.

We are also specialized in designing and manufacturing decompression equipment for international naval forces. We manufacture sensors for measuring electric fields underwater, where there are both civilian and military applications.

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Low-risk and flexible, our 'drop and go' deployable fuel and water tank solutions are designed to support your troops and equipment wherever they deploy around the globe.

From semi-permanent base camp infrastructure with fuel, potable water and waste water removal capabilities, to agile solutions for the last tactical mile, our industry-leading and modular tank container solutions have been keeping defense and expeditionary operations fuelled and watered for more than two decades.

**Whatever the task, whatever the location, THIELMANN WEW makes your mission possible.**





# MILAN BOX CORPORATION



## A TRADITION OF EXCELLENCE SINCE 1927

Milan Box Corporation is an ISO 9001-2015 Compliant Company  
Specializing in Commercial & Military Packaging

We produce wirebound crates, pallets and nailed wood boxes  
as well as many other types of specialized crating/packaging.

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**MILAN BOX CORPORATION**
*"A Tradition of Excellence Since 1927"*

# Milan Box Corporation has manufactured boxes and crates since 1927.

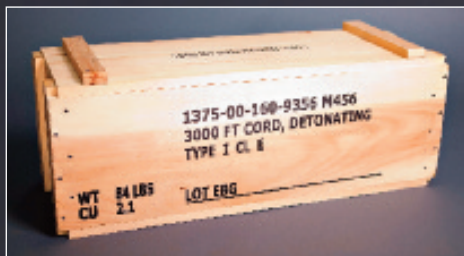
The company expanded into military ammunition boxes during the Second World War, and now provides wirebound, wooden containers and boxes for ammunition, fuzes, grenades, artillery munitions, rockets, explosives and missile components.

Our military wirebound and nailed wood boxes are made to fit BWAY ammo can dimensions.

Throughout our history, Milan Box has maintained its excellent reputation as a high quality manufacturer of plywood and wood packaging.

Our customers include Ensign Bickford, ATK, Raytheon, General Dynamics, Picatinny Arsenal, United Defense, Pine Bluff Arsenal, Olin, BT Fuze, Federal Cartridge, DZI, and many others.

Milan Box is an approved US government SBA Hub Zone Qualified small business and currently it hopes to acquire more FMS customers (involved in the Foreign Military Sales program supported by the US government).



## Main Military Box List - all made to U.S. Government Specifications:

### Wirebound Boxes:

M2A1  
M19A1  
PA108  
40mm  
60mm Mortar  
81mm Mortar  
120mm Mortar

### Wood Boxes:

GMLRS  
105mm  
Bradley Armor Tile  
Striker Armor Tile  
Hydra 70  
M67 Grenade Box

**Milan Box Corporation manufactures a  
range of military products made to the  
following United States  
Government/Mil specifications:**

MIL-DTL-2427  
MIL-B-15011  
MIL-DTL-46506  
PPP-B-585  
PPP-B-587  
PPP-B-601  
PPP-B-621

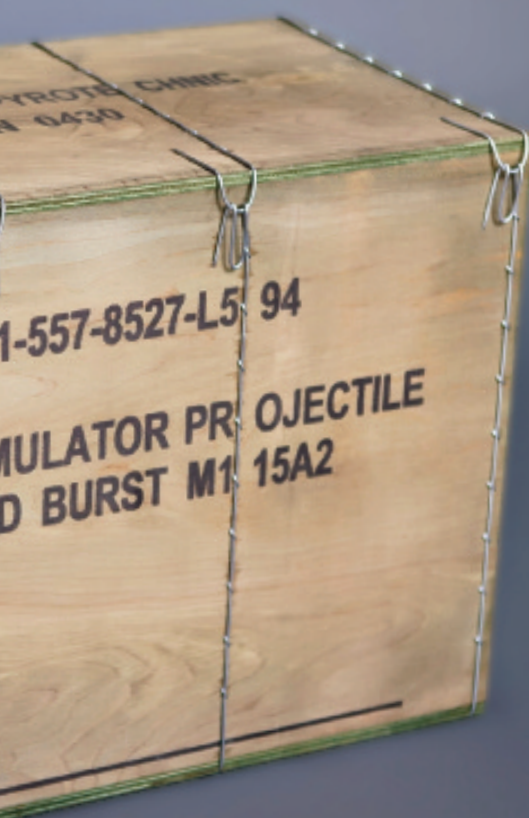


## Military Wirebound Ammunition Containers

Milan Box Corporation's wirebound containers offer maximum protection, withstand rough handling, permit high stacking, occupy less cube, have a low tare weight, and keep packaging costs low.

Our M2A1 wirebound plywood container is used for the 5.56mm, 9mm, 45cal and 7.62mm cartridges. It is manufactured according to military specification designated PPP-B-585D. It is one of the most popular types





versions, including the M3, M4, M5 and M7, all designed to package various sizes of armor tiles for the Bradley Fighting Vehicle. Similar wooden containers will be used to package armor tiles for the new Stryker Amphibious Vehicle.

These containers are built to military specification designated Mil-B-2427 per drawing number 12590330.

Our wooden fuze box container is used for mortar and artillery fuzes and plastic cord explosives. It is manufactured according to military specification designated Mil-B-2427. It is one of the most common types used by the US Army and Marines and comes in various larger sizes.

Pricing normally includes various military markings prescribed by the customer.

## Plywood Ammunition Containers

Our 120mm mortar plywood container is designed to hold two rounds, and is manufactured according to military specification designated Mil-B-46506. It is a popular type also used by international munitions manufacturers. It can be heat treated and preservative treated. It comes with two fiber-tube inner containers.

The TOW missile plywood container is manufactured according to military specification designated Mil-B-46506. This container represents an integrated packaging effort to source various components including barrier bags, separators, foam inserts and



corrugated pieces required per the military drawing.

Milan Box has also manufactured a similar missile box for the Stinger Shoulder Fired Missile.

## Integrated Military Packaging Systems

In an effort to better serve our customers, Milan Box Corporation works in conjunction with United Ammunition Container, Inc, a packaging supplier for the armed forces, to provide a one-stop source for your complete packaging needs, including inter-pack requirements.

Whether requiring fiber containers, wooden boxes, wirebound boxes, or specialty skids, this association provides for customers' requirements.

[www.milanbox.com](http://www.milanbox.com)



used by the US Army and Marines, is per military drawing 7553347, and includes a special heat treatment and a preservative treatment.

Pricing normally includes various military markings prescribed by the customer and is largely governed by the availability of materials and quantities ordered.

## Nailed Wooden Container Boxes

The M6 reactive armor tile wooden container is available in several



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worldwide

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- TRICON, BICON & QUADCON UNITS.
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- EXPANDABLE CONTAINERS.
- ACCOMODATION UNITS.
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- FUEL STORAGE.
- KITCHEN & DINING UNITS.
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## **“WE PROVIDE A SEAMLESS AND FAST SERVICE WITH THE FLEXIBILITY TO MEET ANY CLIENT REQUIREMENT.”**

Cargostore Worldwide is the UK's leading supplier of ISO shipping containers for domestic and international projects. With offices in London, Abu Dhabi, Holland and depots across the globe we provide a seamless and fast service with the flexibility to meet any client requirement.

Cargostore maintains one of the largest ranges of specialist military container types, as well as a large portfolio of ISO certified storage and shipping containers. We can also offer bespoke container conversions and modifications to many of our container types. We supply projects in defence, aid and stability, community development and general logistics, and can deliver to remote and austere locations globally.

Our standard ISO container types include but are not limited to standard dry cargo units, pallet-wide bulkers, side-access and double-door units, open tops, hazardous, flat racks, ISO tanks and temperature-controlled refrigerated (reefer) units.



## **SPECIALIST DEFENCE PRODUCT RANGE**

### **Bicon, Tricon and Quadcon Units**

These specialised containers join together to form a 20ft TEU (Twenty Foot Equivalent Unit) which are CSC plated, allowing them to be transported by standard Intermodal means and separated at their final destination.

### **Secure Storage Units**

A container with enhanced security features to keep contents safe, including internal and external doors with keypad entry, as well as a visual and audible alarm.

### **Refrigerated Containers and Gensets**

Reliable and trusted solution for temperature-controlled foodstuffs, Cargostore Refrigerated ISO Containers can be used as standalone units powered by our Clip-On Generators, our Containerised Smart Energy Systems, or can be directly connected to the grid. We can also supply dual temperature reefer containers.

The Clip-On Generator is a simple and efficient power solution for Reefer Containers when they are remote from an external power source. They are mounted to the container chassis using the corner castings.

### **Accommodation Units**

Durable and stackable with doors, windows, insulation and other interior features to house inhabitants comfortably. Easy integration between units to upsize and downsize, to cater for different amounts of people.

### **Availability and Delivery**

Cargostore has depot and office locations throughout the UK, Europe, North America, East Africa, the Middle East and South East Asia. We pride ourselves on being able to deliver globally including to remote locations.

Our aim is to provide a simple and seamless service, to achieve this we provide operational support throughout the weekend and 24/7 phone support. Customers are also able to download container certificates 24/7 from our online Client Portal.

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**Extreme Products for Extreme Conditions®**



***When Success is Vital***

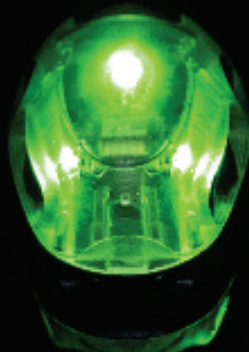
The world's most complete and trusted line of battle-tested SWIR, IR and visual beacons, illuminators and remote lighting systems.

All of our products are highly impact resistant and waterproof up to 330 feet.

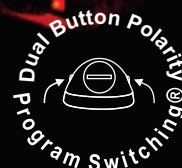
## **LEARN ABOUT THE TRILOBYTE™**

***Our Cutting Edge Series of Helmet Lights for advanced IFF and C2 Operations***

***See why we are unmatched for in-field electro optic communication***



*International Version Shown*



[www.adventuretactical.com](http://www.adventuretactical.com)

For all inquiries email [support@adventuretactical.com](mailto:support@adventuretactical.com)



# SEA. AIR. LAND.

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## The Trilobyte™

The latest line of helmet lights from Adventure Tactical brings together over two decades of experience in designing and developing solutions to the complex needs of IFF and C practices in high stress environments.

The simpler models of the Trilobyte™ offer highly reliable performance at a competitive price point, while the more premium models make full use of our award winning patented technologies, delivering cutting edge features that are only available from Adventure Tactical.

## Basic Features

The Trilobyte™ has a rounded design free of snag hazards. Its sandwiched polymer construction provides superior impact resistance. Like the majority of our product offering, it is waterproof up to 100 metres.

## User Interface

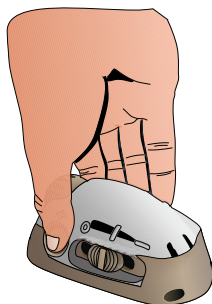
One of the great achievements of the Trilobyte™ is its intuitive design that organizes a wide range of functions in an easy to navigate system. Two control switches on the left and right sides of the light control output colour and functions, while the two side buttons can adjust output intensity within 5 levels. All positions feature unique raised position nubs that allow for positive tactile feedback, ensuring controlled operation of the light.

## Dual Polarity Program Switching®

Pressing and holding the two side buttons for specific lengths of time (varying from 1, 3 to 6 seconds) will toggle the Trilobyte™ through its various programs: IR, Visual and - in more advanced models - Programming Mode. This effectively prevents accidental overt identification and separates programming settings from in-field functions.

The various modes available in each Trilobyte™ are accessed by pressing and holding the two side buttons, labelled (+) and (-), and counting to a designated number of seconds before releasing.

Modes include IR Mode (default), Visual Mode, and Programming Mode on specific models.



## Output Colours

The majority of Trilobyte™ models feature four output colours: Red, Green, White and IR. The most affordable model, the Trilobyte™ Base, simply has White and IR. SWIR output is also available in the Trilobyte™ Gen5, one of our premium options. SWIR and IR outputs are always separated from visual outputs through our Dual Polarity Program Switching®.



US Version Shown

## AutoSync™ Technology

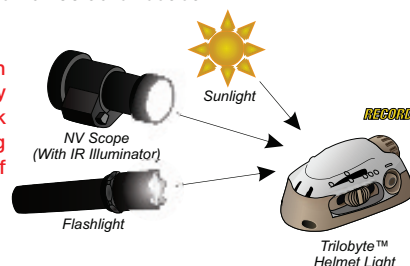
With very few exceptions, every model of the Trilobyte™ features our patented AutoSync™ Technology. This allows for synchronized group flashing using a highly encrypted RF ad hoc mesh network. This is ideal for immediate group identification, even in environments with large amounts of light pollution.

## Mockingbird® Technology

Mid to high tier models of the Trilobyte™ contain our Mockingbird® Technology, allowing for the recording and playback of custom flashing signatures which are saved into the product's internal memory until reset.

Signatures can be recorded with any external white or near IR light source, including sunlight. No external tools are needed.

Trilobyte™ models with Mockingbird® Technology can record and playback custom flashing signatures using any external white or IR source of light, including sunlight.



## Broadcast Group AutoSync™

The most advanced iterations of the Trilobyte™ combine our AutoSync™ and Mockingbird® Technologies, resulting in groundbreaking flow and precision for in-field electro optic communications.

Groups of these Trilobyte™ units can send and receive recorded signatures to each other and flash in unison. Individual, synchronized flashing groups can be set up for specialized C tactics. Unique identifiers can be easily and locally redefined if needed to relay operational status or disorient enemy intelligence.

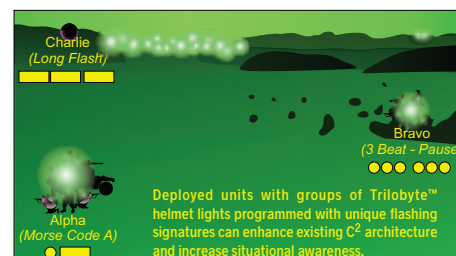
Deploying units with identifiable flashing patterns further enhances data from satellite / aerial imagery, presenting a refined Common Operating Picture that easily associates to in-field elevated and ground views.

While complimenting existing Command and Control Battle Command Systems, Trilobyte™ units that feature Broadcast Group AutoSync™ function independently from them and will continue to operate even if digital technology is compromised.

### Aerial View



### Ground View



Deployed units with groups of Trilobyte™ helmet lights programmed with unique flashing signatures can enhance existing C² architecture and increase situational awareness.

## Engineering for Specific Applications

We manufacture all of our products in house and pride ourselves on our ability to cater to the needs of our clients. We have already produced several custom mods of the Trilobyte™ to fit customer specifications.

Get in touch to learn more by emailing [info@adventurelights.com](mailto:info@adventurelights.com) or visiting our website at [www.adventuretactical.com](http://www.adventuretactical.com)



# Smiths Detection launches Ultraviolet Light Upgrade Kits for checkpoints capable of killing 99.9% of microorganisms on baggage trays





# smiths detection

Smiths Detection has announced the launch of its new ultraviolet (UVC) light kits capable of destroying up to 99.9% of microorganisms present on baggage trays at the security checkpoint.

**D**emonstrating heightened hygiene standards will be important as airports seek to restore the confidence of travellers and staff during and after the COVID-19 pandemic. UVC is one way that airports can do this, while providing longer-term protection against bacteria or viruses.

Helping to protect passengers and staff from tactile transmission of contagious disease as they pass through security checkpoints at airports, Smiths Detection UVC kits automatically disinfect trays as they are being transported

from the reclaim area back to the divest station. Thanks to its specially designed casing and other safety measures, the UVC lights pose no exposure risk to staff or passengers and can be installed quickly and easily into existing tray handling systems.

This proven technology has been successfully used for the disinfection of surfaces in industries with high hygiene requirements, such as the food and health sectors, for many years. Its application at checkpoint security will reduce the risk of contamination and therefore reassure passengers and staff about the safety of the security process.

“A trusted advisor within the industry, Smiths Detection have been working with airports globally to deliver necessary enhancements to their infrastructure that can be made in response to the pandemic,” said Global Director Aviation, Richard Thompson. “UVC lights are a practical, straight-forward way that airports can help reduce the transmission of any bacteria or virus that might be on the surface of its trays now and in the long-term.”

Trials of the solution are underway on site at airports, and it is available immediately for installation with very short lead times. If you would like to find out more, please visit <https://www.smithsdetection.com/products/ultraviolet-light-tray-disinfection/>

**www.smithsdetection.com**





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ULTIMATE PROTECTION PROVIDED  
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**LEAFIELD  
CASES**  
CUSTOM PROTECTIVE CASES





## ROTATIONAL MOULDING


Unlike injection moulding, the rotational moulding process allows cases and lids to be produced with twin walls for superior strength and rigidity. Many features can be readily moulded-in and integral fittings and fixtures can be incorporated in the design to ensure the rotationally moulded Aegis Case meets your every need.

Leaffield Cases has developed a patented 'multi-part mould' approach that enables handles, tie-down points and a wide range of beneficial features to be incorporated in the fundamental case design.\*

This unique tooling approach enables bespoke size variations to be quickly designed and tooled to meet specific requirements.

\* For patent information please see:  
[www.leaffieldcases.com/legal/patents](http://www.leaffieldcases.com/legal/patents)

## BESPOKE CASES WITH PERSONAL SERVICE



Leaffield's innovative in-house engineering design team are able to customise every aspect of the Aegis protective system in order to meet your specific protection requirements from vibration attenuation to shock and impact protection, waterproofing to dust exclusion.

Our vastly experienced project teams work closely with customers from concept, through design and

development, to delivery and installation, ensuring performance requirements are met in the appropriate timeframes.

Big or small, tall or flat, long or short, single lid, hinged lid, deep shallow lid whatever the need, you would be well advised to talk to our case experts and consider Aegis, the "Next Generation" of Custom Transit Cases.



## LEAFIELD CASES IS A LEADER IN ROTATIONAL MOULDING TECHNOLOGY, BRINGING LEVELS OF PRECISION AND DETAIL TO CASES, WHICH ARE COMPARABLE WITH INJECTION MOULDING.

### CASES PRODUCED BY ROTATIONAL MOULDING ARE:

- More resilient and durable than aluminium or wooden cases
- Have a more consistent wall thickness than blow moulded cases
- More economical to 'tool' than injection moulded cases
- Completely recyclable

# AEGIS™ CASES

[www.leaffieldcases.com](http://www.leaffieldcases.com)

e: [cases@LeaffieldEnv.com](mailto:cases@LeaffieldEnv.com) t: +44 (0) 1225 816504





# Armour Mobility®

There was a time when Commercial Armoured Vehicles (CAV) such as the Toyota LandCruiser, Nissan Patrol and Mercedes G-Wagen needed protection only against guns.

B6-armoured vehicles quickly became the standard in a rapidly developing industry.

The wars in Iraq and Afghanistan presented a new threat with the Improvised Explosive Device (IED) and called for new types of vehicles: the Mine Resistant and Ambush Protected vehicle and Armoured Personnel Carrier (MRAP and APC). Protection against IEDs also inspired the development of the V-hull, which deflects an IED blast up and sideways. However, MRAPs and APCs are not suitable for all types of mission. That is why it is not uncommon for CAVs these days to be built to military standards, such as VR9, VR10 and even STANAG 4569 level 2. The vehicles are designed to protect the occupants against blast, severe firepower and sometimes even CBRN(E) threats. In such cases, weight becomes a serious issue. After having been armoured, a

soft skin can almost triple in weight. OEM-components such as the rims and brakes are no longer strong enough and should really be replaced by high-quality heavy-duty upgrades which are specifically designed for the vehicle's new purpose.

This is why TSS International BV, an ISO-9001 certified Dutch family business just south of Rotterdam in The Netherlands, has made it its mission to make sure (Commercial) Armoured Vehicles can keep moving under the most difficult of circumstances. TSS Heavy Duty Runflat Wheels, Rodgard™ (FINABEL-compliant) Runflat inserts, MOV'IT Security™ Brakes, TSS ProtecTank® self-sealing fuel tanks, B&G Vehicle Intercoms and SKYDEX Technologies shock mitigation products are all part of a carefully selected portfolio, designed and tested to internationally recognised standards. Keep reading to learn more about what TSS calls Armour Mobility®.

TSS was the first on the market with serial production of tested and certified high-payload alloy rims. Starting with 1500kgs capacity, constant developments have enabled 2000kgs payload per rim, which can be delivered fully assembled and ready to mount on the vehicle. TSS Heavy Duty Wheels are available for most CAV platforms and are always delivered with Rodgard™ Runflats, suitable for the high payloads, including tyres suitable for the vehicle and its mission.

Installing MOV'IT Security™ Brake upgrades, means you are increasing the friction between the pads and discs; optimising ventilation; strengthening the brake calipers and reinforcing the brake lines. As the weight distribution of the vehicle has changed, this has also been incorporated into the design of the brakes, ensuring shorter stopping distance and a reliable and consistent braking performance for vehicle weights in excess of 6000kgs.







TSS ProtecTank® is the truly self-sealing fuel tank protection system, allowing for significant weight savings in the armouring process. No vehicle modifications are necessary: the production makes use of the OEM fuel tank, which is tailor-made to fit as intended by the OEM.

B&G Vehicle Intercoms allow for closed-door, 2-way communication with bystanders of your armoured vehicle. Various versions for communication between vehicle compartments and Public Address systems are available as well as configurable sirens and red-blue LED lights for in the grill.

The latest addition to TSS International's product line-up is intended to enhance the mobility of the occupants of an AV. Due to the geometry with a flat underside, most CAV's transfer a lot of kinetic energy of an under-vehicle IED blast upwards, potentially crushing any feet resting on the floor. Placing SKYDEX Convoy Deck on the floor can significantly limit the negative consequences of an under-vehicle blast. These shock mitigation mats are easily retro-fittable, but can also help reduce the weight of the vehicle if integrated in the design of the vehicle, possibly eliminating the need for an elevated floor. With new versions of the Toyota LandCruiser and Mercedes G-wagen becoming the new standard, it is a good time to think about raising the bar for personnel protection on these vehicles. TSS has already delivered SKYDEX Convoy Deck for several certified vehicles used by European Armed Forces.

TSS International products are tested and certified by institutes such as TNO, Beschussamt, IABG, TÜV, MBDA, RDW and KIWA. TSS is a registered UNGM and NAMSAs supplier and member of NIDV, ESTA and Fleet Forum. A number of TSS' products have been allocated NATO Stock Numbers.



To find out more about Armour Mobility, visit

**[www.TSSH.com](http://www.TSSH.com)**

*Copyright TSS International BV, 2020*





# Frequency Control Solutions



## New N623 series VCXO offers very low phase noise performance.

The new N623 VCXO (voltage controlled crystal oscillator), available at 100MHz, features a 9mm x 14mm SMD package, sinewave output and supply voltage of +5.0VDC.

Max Phase Noise Floor -173dBc/Hz.

Used in systems as the frequency reference where low phase noise performance is critical.

- **Operating Temperature:** -40 to +85°C
- **Storage Temperature:** -45 to +95°C
- **Vibration:** per MIL-STD-202, Meth 204, Cond A
- **Shock:** per MIL-STD-883, Meth 213, Cond C



Greenray Industries operates a Quality Management System that complies and is certified to ISO 9001:2015+ AS9100D and is a leading designer and manufacturer of high precision, quartzbased oscillators for use in wireless, wired communications, aerospace, military and satellite applications.

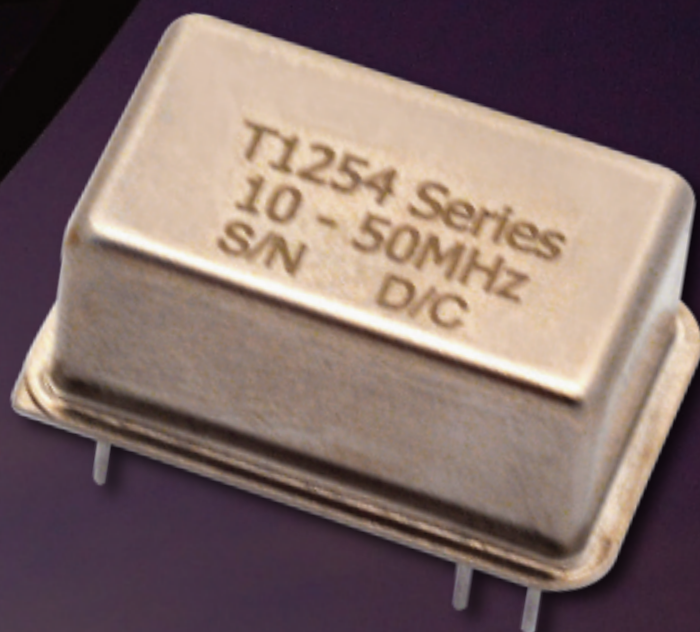


# Greenray's excellent T1254 series TCXO offers ultra-low G-Sensitivity for low orbit satellite applications.

The T1254 TCXO has been designed for low orbit satellite applications and offers reliable performance to 30Krad radiation exposure.

Available from 10 to 100MHz, features an extremely rugged, 20.3mm x 12.7mm DIP package, CMOS output and supply voltage of +5.0VDC. Acceleration sensitivity is  $<7 \times 10^{-10}/g$  (std) or  $<7 \times 10^{-11}/g$  (LG option).

- **Vibration:** per MIL-STD-883, Meth 207, Cond A
- **Shock:** per MIL-STD-883, Meth 2002, Cond B
- **Operating Temperature:** -40 to +105°C
- **Storage Temperature:** -65 to +125°C



# The YH1300 OCXO offers Superior stability, shock & vibration Performance for demanding applications

The YH1300 has been designed to deliver consistent, reliable frequency control performance in high shock and vibration environments and features a compact 20.32 x 12.70 x 9.40 mm (0.80 x 0.50 x 0.37 in.) hermetic, DIP package. Reduced acceleration sensitivity down to  $<7 \times 10^{-11}/g$  is available with improved phase noise performance during vibration and acceleration.





Specialists in hazardous area and electrical installs, we have a team of VAREC and NICEIC approved, as well as DNV and CompEx accredited electrical engineers

# Market leading fuel infrastructure services

## Specialist solutions to reduce risk, cost and operational downtime

### Design and build

- Fabrication of bespoke-build steel oil tanks
- Installation of oil tanks and pipework
- Bulk Fuel Installations (BFI's)
- Motor Transport Fuel Installations (MTFI's)

### Maintain and refurbish

- 24/7 365 planned preventative maintenance (PPM)
- POL services
- Interceptor / Separator installation and maintenance
- Oil storage surveys and maintenance
- Fuel compliance testing
- Fuel uplifts and transfers
- Tank testing including EEMUA accredited non-destructive testing (NDT)
- Automatic pump, gauge, valve, bulk meter and alarm servicing

- Fuel filtration systems
- Extend asset life with AdlerCoat™ polyurea coating
- Cathodic corrosion protection

### Respond

- 24/7 365 emergency fuel deliveries
- Containment and clean-up of fuel, oil and chemicals spills on land and in the marine environment
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- Pollution prevention / spill control risk assessments
- Accredited spill response training and exercises
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# confidence under pressure

JFD is the world leading underwater capability provider, serving the commercial and defence markets with innovative diving, submarine and hyperbaric rescue, technical solutions and services.

## Submarine Escape and Rescue

Boasting more than three decades of safely delivering submarine abandonment, escape and rescue capabilities, including escape training, to navies worldwide, JFD provides its customers with unrivalled experience and expertise of the challenging subsea environment.

JFD provides fast, safe and reliable subsea rescue services, solutions products, engineering services and training to 80 countries and 33 of the world's navies including the Royal Navy, Australian, Singapore, and Korean Navies, as well as providing the NATO Submarine Rescue System.

JFD operates at the forefront of innovation in submarine operations. With its pedigree, market knowledge and understanding - in conjunction with the unrivalled expertise and skills of its engineering staff - JFD has invested heavily in the development of its 3rd Generation submarine rescue systems, ensuring the highest standards in safety and quality to protect life at sea.

JFD's 3rd Generation rescue system incorporates an innovative new system design and tightly integrated components to ensure

time-to-first-rescue (TTFR) – the time measured between system deployment and commencement of the rescue - is minimised. In the event of an accident, this maximises the chances of a successful rescue, which is crucial in protecting the lives of submariners.

JFD's 3rd Generation submarine rescue systems bring a renewed focus on efficient design and optimising Time to First Rescue. For conventional Navies and those with modest air-lift capability, they offer a significant step-change in real-world capability.

All of the technologies utilised in JFD's 3rd Generation system are proven in service. Whilst innovative in arrangement, the methodology is built on tried and tested approaches and therefore requires little shift in operating doctrine, existing procedures, training and crewing competencies.

As an integral part of JFD's 3rd Generation system, the submarine rescue vehicles have been specifically designed to operate at the leading edge of capability whilst also being optimised to be easily transported by as many different aircraft types as possible. This greatly increases the number of available aircraft to transport the system, minimising the time required for mobilisation.

## Swimmer Delivery Vehicles

The JFD range of swimmer delivery vehicles primarily exists to facilitate the insertion and extraction of Special Operations forces and equipment.

The vehicles are surface or subsurface crafts, each optimised for a particular deployment method or mission profile.

The vehicles have been developed by leading marine engineers from Sweden and the United Kingdom.





## Torpedo SEAL

The Torpedo Seal's hydro dynamic shape and internal space enables 2 divers with combat gear and mission essential equipment to be transported inside the hull protected from the streaming water. It is then able to transport 2 divers and equipment, fully submerged, over a range of 10nm. Torpedo SEAL may also be easily stowed within the multi-purpose tubes being designed into future submarine designs, or beneath the outer casing of the submarine. Torpedo SEAL is controlled by a single pilot. It also accommodates 1 passenger and equipment.

## SEAL Carrier

SEAL Carrier is an 8-man swimmer delivery vehicle designed for the covert insertion and extraction of combat diver units. It operates in three modes; surface, semi-submerged and submerged. SEAL Carrier vehicles transit at speeds of up to 30kts on the surface before switching to submerged mode for a covert final approach. On board sensors and navigation systems work together to provide safe transit and accurate positioning day and night, above or below the surface of the water, regardless of vehicle speed or environmental conditions.

In addition to divers and their personal equipment, SEAL Carrier can accommodate additional mission equipment such as sensor and radio equipment, ammunition and explosives, survival equipment and supplies. For operations requiring extended range, the craft can carry additional fuel stored in a separate fuel tank or additional battery packs.

## Sub SEAL

Sub SEAL vehicles are primarily launched from a hangar attached to the casing of a submarine and are released whilst fully submerged, at depths up to 30msw. Sub SEAL vehicles may also be deployed by surface craft or rotary-wing aircraft. Once launched, Sub SEAL remains submerged for the entire mission. Typically, Sub SEAL carries 8 personnel. The vehicles may approach, or break the surface for communication or reconnaissance purposes. Power is provided by lithium polymer batteries and a vectored-thruster arrangement, affording sprint speeds of greater than 7kts and a range of 50nm.

## Underwater Life Support Systems

JFD provides a range of innovative and highly capable underwater life support systems that offer the highest levels of safety and

operational efficiency to meet the evolving demands of today's defence divers.

JFD has a long and well established history in the development of rebreather systems across the defence and commercial markets. Continual design evolution in response to customer specific requirements ensures our rebreathers continue to offer unparalleled levels of safety, performance and capability across a broad mission spectrum and remain the underwater life support system choice for Special Operations and MCM divers around the world.

## Special Operations

JFD offers two highly capable underwater life support systems to meet the full mission profile of today's Special Operations diver. A modular approach enables customisation of the life support system in response to demands across the full operational spectrum.

## Shadow

The solution for extended duration and deeper diving mission profiles.

## Enforcer

The lightweight solution for short duration mission profiles.

## MCM-EOD

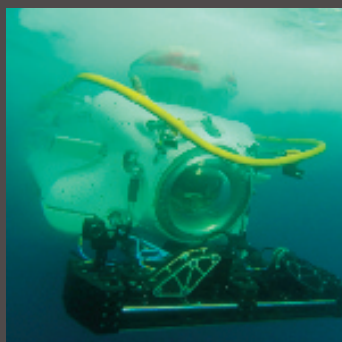
JFD delivers an extensive range of MCM-EOD (Mine Countermeasures Explosive Ordnance Disposal) underwater life support and equipment. The equipment includes non-magnetic and low acoustic closed and semi-closed circuit mixed gas underwater breathing apparatus (UBA) plus an integrated suite of low magnetic ancillary items.

## Stealth CDLSE

Stealth Clearance Divers' Life Support Equipment (CDLSE) is a multi-mission underwater life support system based upon a common platform to meet a range of operational roles throughout the water column.

## Stealth SC

Stealth Semi Closed (SC) rebreather is a mixed gas, underwater breathing apparatus (UBA) ideally suited for mine countermeasures and explosive ordnance disposal operations



[jfdglobal.com](http://jfdglobal.com)





World leader in the development and manufacture of invasive technology

# Aardvark & Mamba

Welcome to Valent Application's latest additions in cutting edge invasive systems

## AARDVARK

Lightweight CW Access System

The Aardvark system offers an easy to use, safe way to investigate & dispose of CW hazards, in sealed containers and munitions.

### Safety:

The Aardvark system puts operator safety first and foremost.

- Can handle elevated target pressures
- Seal testing prior to drilling to minimise risk
- System stays sealed through all operations

### Simple:

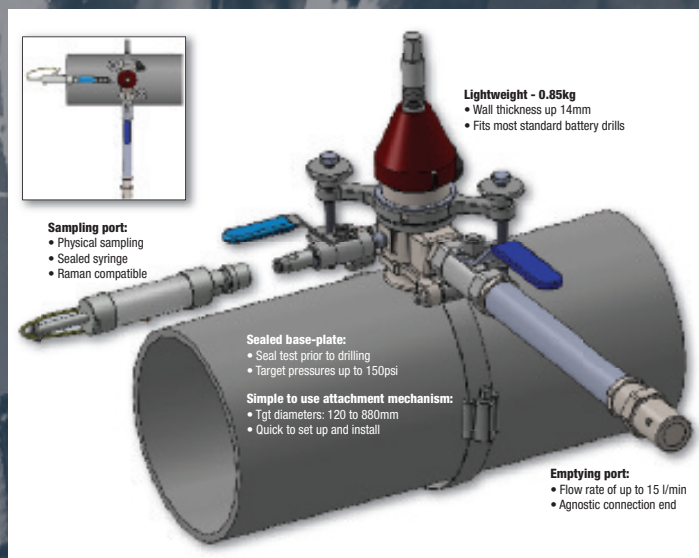
CB operations are complex enough without having to think about the equipment.

- Very lightweight - easy to carry & set up in PPE
- Uses standard battery tools for operation
- Training can be completed in less than an hour

### Versatile:

Sample and empty the target through the same penetration.

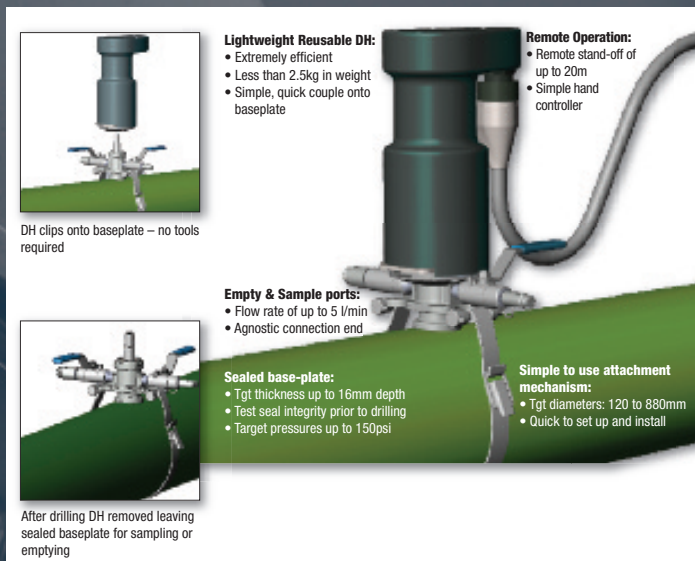
- Can access a large range of target sizes
- Agnostic - can integrate with multiple CW pumps, destruction or storage systems.





# MAMBA

## Remote CW Access System



The Challenge – to build a single system that could:

- Remotely access CWAs in sealed containers safely
- Offer complete system solution - access, sample, neutralise
- Be small & light enough to be carried in a small rucksack
- Offer a cost effective solution

The Valent Mamba product range offers the world's first lightweight, remotely controlled system for the investigation and disposal of CBRN hazards.

After 18 months R&D effort Valent has squeezed a huge amount of capability into a very small device. 20 years of experience and knowledge has gone into incorporating the best ideas from previous work into a single system.

The system has been designed to offer the user:

- **Reusability** - to keep costs down reusable components are utilised as much as possible.
- **Safe Operation** - the access and all subsequent operations are completely sealed at all times.
- **Remote Operation** - the system can be operated from up to 20m away from the target
- **Multi-role** - targets can be sampled then emptied or backflushed through the same access point.
- **Modularity** - different baseplates allow the maximum number of targets to be attacked.

**User Configured.** Users are able to configure the Mamba system depending on their requirements and budget.

### Valent Applications Current Invasive Systems

**Monica Remote Case Entry System.** Flagship system, field proven with extensive capabilities for the sampling and neutralisation of CBRN threats

Remote Ops: up to 500m	Tgt size - 90mm Ø to flat
Wall thickness - up to 20mm	Max pressure - 100psi
Max empty rate - 15l/min	System Weight - 40kg

**Mamba Remote Case Entry System.** Lightweight, modular stand-off system for sampling, emptying and neutralising CBRN threats

Remote Ops: up to 20m	Tgt size - 120mm to 880mm diameter
Wall thickness - up to 16mm	Max pressure - 150psi
Max empty rate - 5l/min	System Weight - under 5kg

**Aardvark Case Entry System.** Simple system designed to fit in a standard rucksack but still offer sampling and emptying capability

Remote Ops: None	Tgt size - 120mm to 880mm diameter
Wall thickness - up to 14mm	Max pressure - 150psi
Max empty rate - 15l/min	

**Midas Sampling System.** Hand held tool for the sampling of hazardous containers

Remote Ops: None	Tgt size - 90mm Ø to flat
Wall thickness - up to 8mm	Max pressure - 30 psi
Max empty rate - N/A	

## About Valent Applications

### Drilling Chemical Weapons for a living since 2000...

Valent is the world leader in the development and deployment of invasive technology for the investigation and disposal of wide range of targets in the CBRN, Hazmat and decommissioning environments. Our experience is built on nearly two decades of inventing, manufacturing, supplying and training some the leading organisations involved in the investigation and removal of hazardous materials. Invasive technology offers the ability to drill through the outer wall of a target without allowing the hazardous internal contents to escape. The technology allows for investigative and disposal procedures to be carried out whilst preventing any leakage.

Valent first developed equipment in this area in 2000. Since then our systems have been used by the military globally and with international organisations such as OPCW, UNMOVIC and UNOPS in the investigation and disposal of CW hazards. In addition Valent has developed bespoke solutions for other organisations for hazmat and toxic industrial chemical (TIC) operations.

Valent is also very experienced in the integration of its equipment in systems for defence and civilian markets. Projects have included remote access systems for civil nuclear decommissioning; disposing of missile fuel systems and working with industry partners to solve to hazardous challenges worldwide. Over 60% of Valent's work in R&D, creating bespoke engineering solution. Although only a small company we are experienced in the execution of innovative projects from concept, through to field deployment and operator training.

Our work has been recognised with a number of awards including the Queens Award for Innovation in 2006 and the UK HMG Chief Scientific Advisers Award for exceptional service in 2016.

# valentapps.co.uk



# THE KESTREL

**‘Delivering outstanding comfort without compromise to safety’**

---

## OPEC CBRNe

has been working for years on lighter CBRN suit systems to lower thermal burden.

In the Kestrel, we believe we have exceeded the challenge of finding a reassuringly high protection factor combined with great comfort in one solution.

Our customers tell us they choose the Kestrel because it achieves the ideal balance between comfort and protection.

## How does it do this?

By combining the latest carbon and fabric technology with system design innovation.

This combination reduces overall system weight by 30%.

## Why is it important?

Both users, military and civil, inform us that they suffer severe

heat stress in traditional CBRN suit systems. This has been consistently reported to be a risk to all end users.

Many were looking for a system that had a similar thermal impact on the user as their standard uniform.

## Who is OPEC CBRNe?

A British based designer and manufacturer of level C CBRN suits with a strong appetite to innovate.

OPEC CBRNe has the advantage of a manufacturing presence on three continents, but retains the flexibility to service a range of MOQ's.

If any of these problems are familiar to you, please get in touch and speak to one of our advisors.

Email: [info@opeccbrne.com](mailto:info@opeccbrne.com)  
Tel: +44 (0) 192 555 2929  
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## Contact us...

For more information on the Kestrel, or any of our other systems contact us at:

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+44 (0) 192 555 2929  
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**PELI**  
BioThermal™

# Peli BioThermal's patented Golden Hour™ technology

There's good reason Peli BioThermal's patented Golden Hour™ technology received the U.S. Army's Greatest Invention Award in 2003.

**P**rior to this, there was no effective container to safely transport critical blood to troops fighting in far forward combat areas away from fixed medical facilities. That fundamentally changed when we invented Golden Hour technology — aptly named because it provides troops access to the whole blood, platelets or plasma they need to save lives during the critical first hour after injury.

This innovative thermal transport container protects the products you need no matter the location or extreme conditions on the battlefield. For the last 17 years, military personnel have trusted our technology to securely, reliably and safely transport pharmaceuticals, tissues, biologics, diagnostics, vaccines, blood supplies and more from anywhere in the world — to where they need it most.

The award-winning Original Golden Hour™ technology was developed to protect troops' lives on the base and on the front line in the harshest of environments and climates. Today, Peli BioThermal's packaging solutions provide the most reliable, longest temperature control duration on the market — 96 hours of thermal

protection. Life-saving materials are housed in smaller, lighter weight, rugged and durable temperature controlled Crêdo™ shipping containers without the need for dry ice or water / gel packs.

## PELI BIOTHERMAL PROVIDES:

- *A full range of single use and reusable temperature-controlled packaging options that cover the full range of the military's needs — chilled, frozen, controlled room temperature (CRT).*
- *Optimised payload ratio that reduces distribution costs by minimising outer dimensions and maximising interior payload capacity with 100% available for product.*
- *One hundred percent recyclable components that reduce your impact on the environment.*
- *A web-based asset management software solution (Crêdo ProEnvision) to track individual shipments around the globe, set up automatic maintenance, next shipments alerts and produce customisable reports.*





## OUR PRODUCTS:-

### Golden Hour™ Mobile

Also known as the Original Golden Hour™, this product is the foundation stone of our business and the Winner of the 2003 "US Army's Greatest Invention Award".

#### WHY SELECT GOLDEN HOUR™ MOBILE?

- *Ease of use – modular design for quick assembly and efficient inventory storage*
- *Nimble and tactical for delivery of whole blood to the point of injury within a crucial window of time*
- *Designed and tested to last in the harshest conditions.*
- *Quality, durable construction*

**Temperature ranges** - +2C to +8C, +15C to +25C

**Volume** -2L

**Duration** – 48 to 72 hours

### Golden Hour™ Medic

A recent addition to our range, the Golden Hour™ Medic is a nimble and tactical option for delivery of whole blood to the point of injury within a crucial window of time and can be easily transported to the front line. Golden Hour™ Medic replaces traditional cumbersome containers and can keep 2 units of blood cool for up to 24 hours in extreme conditions, 3 days in optimal conditions.

### CreDo™ Cube

Superior thermal protection in a convenient mid-size container. The Crêdo Cube™ is a passive and reusable shipper qualified to hold chilled medical materials at a safe temperature for up to five days. This system is ideal for reducing shipping costs or for circumstances in which unexpected delays may occur. Available for volumes from 2L to 96L, frozen, chilled and ambient

temperature profiles. Also available with a hard, impact-resistant outer shell – CreDo™ Duracube HD

### CreDo™ Duracube HD

The Crêdo Duracube™ product line offers a selection of superior thermal protection in a comprehensive range of lightweight and heavy duty hard shell outer containers (between 2L and 96L) designed to strike an optimal balance between case weight, durability and duration of transit capabilities while providing a 10-15% increase in thermal performance over outer corrugated material. Available in frozen, chilled and ambient temperature profiles

### CreDo™ ProMed

Designed specifically for the dynamic needs of emergency first responders, the Crêdo ProMed™ product line currently consists of three different sized temperature-controlled portable medical transport bags that thermally protect the integrity of valuable pharmaceuticals and medical supply payloads for 72 - 96 hours. The outer bag is constructed of highly durable ballistic nylon fabric and the patented TICTM panels with phase change material and VIP components contained within, are qualified to consistently protect medical materials such as blood, platelets, bio-pharma product samples within two ranges, chilled and ambient

### CreDo™ Xtreme

This high performance, extremely durable and reusable passive temperature controlled pallet shipper is offered in two sizes (371L and 807L) and is ideal for consolidating large domestic and international cargo shipments. Peli BioThermal's Crêdo™ patented technology provides a revolutionary cost effective temperature-controlled pallet shipper that ensures secure transport of bulk pharmaceutical products – qualified to maintain the required temperature range for 120 - 144 hours. Easy removal and installation of the TIC™ (PCM) system, greater volumetric payload size and a reduced risk of product compromise.







## ABOUT US:-

Pharmaceutical companies — and other organisations looking to make significant cost and quality improvements in their cold chains — are switching to Peli BioThermal for single-use and reusable temperature-controlled packaging. Our innovative, patented technologies and consultative services ensure product quality, mitigate excursion rates, reduce packaging costs and drive Total Cost of Ownership across your entire supply chain. Our global network of consultative cold chain experts provides our customers with consistent packaging and logistics experiences wherever they do business. Our temperature-controlled packaging solutions meet the complex needs of the world's healthcare organisations and comply with the strictest GDP, quality assurance and health and safety standards.

Peli BioThermal is a division of Pelican Products, Inc., which is a portfolio company of Behrman Capital, a private equity investment firm based in New York and San Francisco.

## CONTACT DETAILS

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+44 (0) 1525 243770

## SOCIAL MEDIA

**Twitter** - @PeliBioThermal

**LinkedIn** – Peli BioThermal

**Youtube** – Peli BioThermal Official





# SAME PROTECTION WITH 30% LESS WEIGHT



## PELI-HARDIGG™ LIGHT LIFT™ SERIES ROTATIONALLY MOULDED CASES

The advanced material used to build Peli-Hardigg Light Lift series cases makes them **up to 30% lighter** than traditional rotationally moulded cases. This results in considerable logistics cost savings due to less manpower and fewer resources required. This also provides a substantial benefit for the health and safety of professionals working in the field.

The new Light Lift case family is geared toward two- or four-man carry operations with a **maximum 136 kgs.** gross payload. These new cases offer the same protection, passing the same rigorous **MIL-SPEC testing**, as traditional Peli-Hardigg rotationally moulded cases.

MADE IN  
USA



# LUTRA'S REFLECTIONS ON EIGHT YEARS TRADING AS AN SME.

“No plan survives reality”, (alternatively contact with the enemy). Asked to discuss why the then UK Prime Minister Harold MacMillan is reputed to have replied “Events dear boy, Events”.

Lutra set out to break the business mould in defence and security by adopting a different way of working and relating to customers and clients.

The model called for a virtual company where trusted, knowledgeable associates formed a team, tackled a problem, disbanded and moved on to a new problem with a different team. We aimed to use our network, knowledge and experience to find and advise SMEs on defence and security business by plain spoken advice based on that experience and knowledge. Work could be continuing or “one off”.

Target areas were market access (Into and from UK), winning business, business improvement and best practice. The Chief Executive's history suggested CBRN, EOD, Counter Terrorism, Vehicles, ISTAR, Sports/ Major Event Security and Training/Simulation would be focus areas. We were not going to manufacture anything.

How did the plan and reality match? The first contract we won was manufacturing! Events dictated the manufacturer we were helping's withdrawal from the project for personal reasons. Having passed the PQQ and won the competition we were not going to surrender the opportunity; rapid change of plan, happy customer. SME's are more able and freer to quickly swivel strategy and tactics and do the unorthodox.

It's a fair bet that when that original equipment was specified 7 years ago no one thought about its current use. Lutra thought about it in the design phase and could launch straight into modification and delivery. SMEs have the luxury to think differently. It's not just about the contract.



The manufacturing concept adopted was a springboard for other contracts not a fixed template. It is constantly re-thought for other contracts for us or those Lutra helps. UK Industry is full of SMEs run by people who have left big companies because the culture and structure does not suit them. Often they are innovators or have traditional skills and capabilities not now available in big companies. By networking Lutra brings skills and new technologies to projects that many trade associations, major companies and ministries have neither the culture nor the organization to access or deliver.

Two theories expounded by business schools are minimum manning and short narrow supply chains with the fewest possible suppliers. Major companies have shed skills and suppliers as a result. SMEs operate on a different network to big companies. Concurrently SMEs find ministries and bigger companies treat smaller entities, 1-199 people, as some sort of irritant, disrupting short, narrow supply chains and increasing their number of suppliers. History shows that in a crisis companies modelled on SME's always respond more effectively and much quicker than larger ones. Better several SMEs than a few big companies.

Too frequently big companies are stretched to meet the skills requirements of a manufacturing contract. The SME network can step in. Lutra can help the big company by using its SME network to take up the slack. SME's rely on cooperating as teams not working by the terms of a contract in constant competition with other contractors and their customer, usually big companies or ministries where point scoring is more important than progress. For an SME a project is about skills, technology and teaming with the customer and end user. Falling back on a contract means all of you failed.

The idea behind assisting market entry was provision of marketing and business development advice and help for new entrant SMEs. Lutra still does that. It is a major work generator but we now help large companies who for different reasons are often as bereft of ideas and know how as new entrants. Writing bids and proposals for all of them is a major activity as is market and competitor assessment. We find command of the English language in industry is poor. Writing clear, concise English seems to be missing from those, even graduates, coming through the education system.

Most vehicle work has involved sourcing esoteric equipment, e.g., CBRN and designing it into the final design. Preventing this being an afterthought is a constant struggle. The downstream issues e.g., training, maintenance and logistics are where Lutra is constantly advised clients. The prime's focus is always the vehicle, or other equipment's, basic capability. Many forget that if the vehicle or equipment can't get to the battlespace it is as much a casualty as if it had been hit by the enemy. Lutra's worry is that too much attention is focused on "the platform", not enough on whole life, the esoterica and the unsexy bits of equipment supply.

UK industry is brilliant at these areas but too often Business School trained executives spend so much time focusing on the platform they miss the elements crucial to operations. It might not be how far it shoots but how well it travels, can you, (yes it's a person not a "resource"), operate it with ease and mend it quickly? Procurement specialists pay less attention to training, spares, maintenance, or decontamination and ..... Without organizational constraints and orthodoxy SMEs can think more freely and comprehensively.

The French may have invented bureaucracy in response to events but the British adopted it, changed it and embedded it in governmental culture. Every form and contract clause is a response to an event and is then kept on long after the event or reason for it had been forgotten about. SME's waste time and effort dealing with government and large company bureaucracy. They are not innovating and being agile as a result. It frightens them away from government contracts. As a rule 50% of the forms are not necessary and the rest are 50% too long and complex.

Events do shape and change business. Who would have thought that CBRN experience would have been brought to bear on pandemics? Who would have thought that right wing terrorism

might become as worrying as Islamist threats or that cyber would be the threat it is? Watching the world, thinking about events and responding nimbly is what SMEs are able to do quickly and without fuss.

It has been good to work with 40+ clients, big and small, in 6 continents in teams of all sizes for short and long projects on; Market Entry, Winning Business, Business Improvement and best practice, CBRN, Counter Terrorism, EOD, Vehicles, ISTAR, Sports/ Major Event Security and Training/Simulation. Not as we envisaged, events saw to that, but we still hate form filling.



[www.lutra-associates.com](http://www.lutra-associates.com)



# Aqua Lung Military & Professional

A close-up photograph of a diver in military camouflage gear. The diver is wearing a helmet with a camouflage pattern, a diving mask, and a wetsuit. They are holding a handgun in their right hand, which is gloved. The diver is also wearing a watch on their left wrist. The background is a blurred view of water and a shoreline.

The Aqua Lung Military & Professional (M&P) division focuses on key user groups: Military, Public Safety & Commercial divers, Water Safety Rescue & SAR personnel and Aviation.



**O**ur product categories include military rebreathers, open circuit regulators, BC's drywear, diving helmets and a complete range of dive accessories including instruments, knives and fins. Aqua Lung has a trusted name and a global reputation for reliability and performance. Apeks Marine Equipment Ltd has been part of the Aqua Lung family since 1997.

## History/Background

Apeks Marine Equipment Ltd (Apeks) was first founded in 1973 to manufacture scuba diving equipment. By the Mid 1990's Apeks had developed the first cold water regulator to pass EN250 tests, the TX range. This range is still in use today and is looked at as a solid working regulator, currently in use by military's around the world, including the British MOD. Since then Apeks has continued to develop regulators that are world class and a leading brand for technical and commercial diving. In 1997, Apeks was acquired by Aqua Lung Int, founded by Jacques Cousteau, who is considered the founder of SCUBA diving. Apeks has, throughout its time been the leading brand in SCUBA diving equipment, both for recreational, technical and professional use.

## Capability

Apeks has its design and manufacturing centre in Blackburn so the design, developing, testing and manufacturing of its own equipment is UK based and under one roof. This enables Apeks to tightly control the quality and design of its products. This also gives Apeks an almost unique ability to customise its designs to the end users technical requirements. In 2018 Apeks sold over 60,000 regulators worldwide. This manufacturing plant has been quality accredited ISO9001 for over 19 years and is accredited to ISO14000 environmental standard.

Apeks now currently manufactures some of the highest specification regulators on the market, including its MTX range of extreme cold-water regulators and Low Magnetic Regulators conforming to STANAG 2897.

Apeks not only produces equipment for the diving industry, but using its specialised knowledge of compressed air reduction and control systems it also specialises in Compressed Air Emergency Breathing Systems (CA-EBS), used for aviation and its products are used throughout many other industries that use compressed air products.



The design departments technical capabilities include, working within all ISO9001 requirements, utilizing Finite Element Analysis (FEA), using FMEA assessment and documentation techniques, underwater breathing testing facilities, has on site Rapid Prototyping Machine and Engineering Machining capabilities

Apeks has been involved in several tenders for the MOD including its current open circuit diving system, providing Passenger Short Term Air Supply System (PSTASS) units for aviation and providing PSTASS spares and support. Throughout these contracts Apeks has become known for its friendly approach to the contracts and when needed provided quick design services to meet the operational changes required by the MOD.

[www.aqualung.com/militaryandprofessional](http://www.aqualung.com/militaryandprofessional)



**AQUA LUNG**  
Military & Professional





# THE BLAST GAUGE<sup>®</sup> SYSTEM

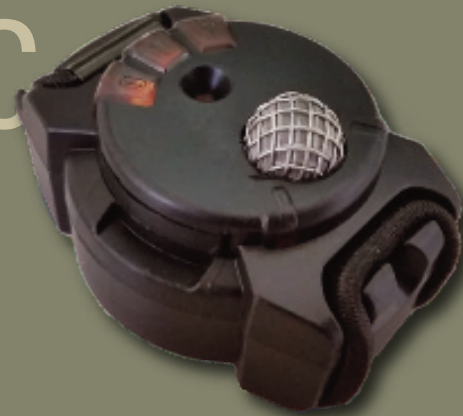


BLAST EXPOSURE.... EXPOSED

[www.blastgauge.com](http://www.blastgauge.com)



# PRESSURE THRESHOLDS: WHAT YOUR MEDIC NEEDS TO KNOW

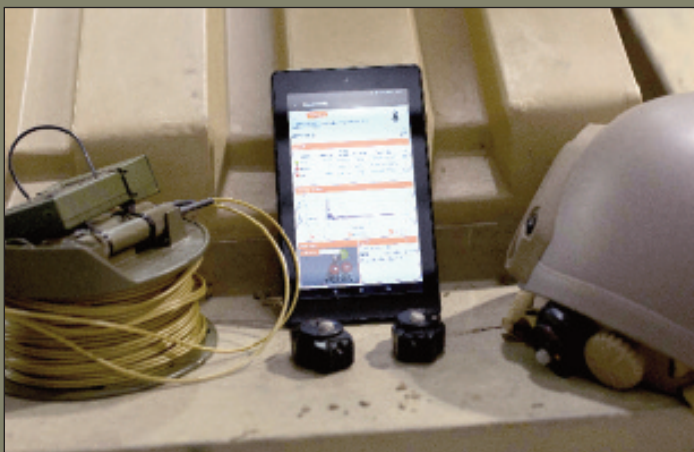


[c-s-i.com/the-blast-gauge-system](http://c-s-i.com/the-blast-gauge-system)

## Numerous studies point out the dangers of overpressure in very real terms

The United States Department of Defense has reported more than 250,000 Service members have suffered from a traumatic brain injury (TBI) between the years 2000 and 2012.<sup>1</sup> For this reason, it's not surprising that TBI has become synonymous with the term "signature injury of modern war."

The main culprit of injury in blast TBI is peak overpressure caused by shockwaves from an explosion. The shockwave is undetectable to the human-eye, but can create lasting damage to the brain and body.



Soldiers and Tactical Officers are often exposed to harmful levels of peak overpressure both in training and in the field. To counteract this threat, measuring an individual's exposure level is key.

Overpressure from an explosive event is measured in pounds per square inch (psi), and like any form of measurement, understanding what this metric means is key. So what are the thresholds for bodily exposure to overpressure?

When talking about minimum safe distance, it's common to hear law enforcement agencies and military operators cite 4 psi as a "safe" baseline threshold. This is consistent with the assumptions underlying the safe standoff curves currently used by most military and law enforcement breachers. However, research indicates this may be an oversimplification, as multiple low level exposures can still be damaging. In addition to the damaging effects of a single event, recent and ongoing studies of repeated blast exposures have revealed that there is a cumulative effect associated with chronic low-level blast (LLB) exposures. These findings indicate that—like concussive TBI injuries common in contact sports— even small, cumulative exposures can be damaging.





Furthermore, factors other than frequency of exposure can contribute to injury severity. Variability of factors such as blast duration, reflections, bodily condition, and dehydration<sup>2</sup> can greatly affect degree of injury. For all these reasons, measuring exposure level provides critical information to the health care provider aiding in triage and treatment of this complex injury.

This leads us to the original question: what are the thresholds for bodily exposure to blast overpressure? Simply put, a single exposure of 0 – 4 psi is typically safe, though it's critical to seek medical attention if you're not feeling well with symptoms such as headaches or nausea. This is because it only takes 3 blast exposures at 3 psi to cause gastrointestinal and pulmonary injury.<sup>3</sup> 5 psi is enough to rupture an eardrum, and as exposure levels climb further towards a peak overpressure of 16, the likelihood of injury grows.<sup>4</sup>

Two recent studies have shed new light on the neurological impacts of blast overpressure exposure: the Quantico Breacher Injury Study (QBIS) and the Preventing Violent Explosive Neurological Trauma (PREVENT) study. The QBIS study found that a single blast overpressure exposure of 13 psi showed no changes in neurobehavioral testing or imaging of the brain.

However, the PREVENT study using non-human primates identified neurological changes post-mortem



as low as 12 psi in the absence of any symptoms.<sup>5</sup> Additionally, the PREVENT study using swine found biomarkers for brain injury and inflammation for blast overpressure exposures above 24 psi.<sup>6</sup> As the peak overpressure increases, the effects are more devastating: 30-40 psi is the threshold for lung injury and at 100 psi there is possibility of death.<sup>7</sup>

As mentioned earlier, it is not uncommon for a Soldier or Tactical Officer to be subjected to multiple blast events while performing his or her job. Multiple studies, including one recently published in the Journal of Neurotrauma,<sup>8</sup> suggest that LLB causes a measurable degree of brain agitation known to cause cognitive impairment and depression. In order to protect our heroes, we need to be able to detect, record, and monitor repeated exposures.

This is where the Blast Gauge® System comes in. Weighing less than an ounce, the Blast Gauge is a powerful, easy-to-use overpressure sensor that automatically records an operator's exposure to an explosive event. With the push of a button, the gauge emits a discreet visual cue with green, yellow and red status LEDs providing instant feedback on overpressure exposure.

The system's ability to capture and record detailed signatures from events provides invaluable information that can be downloaded via a micro-USB connection and used by medical personnel to aid in the triage and treatment of TBI. In-depth reports can be used to track cumulative exposure and create a permanent health record for correlation to long-term effects. Exposure can be measured and recorded in both training and combat scenarios such as from improvised explosive devices (IEDs), shoulder fired weapons, and artillery live fire training.

The life-preserving aspects of the Blast Gauge System are recognized by military and law enforcement communities across the world. Militaries, Bomb Squads, SWAT Teams, and other Tactical Officers are often exposed to overpressure from explosive breaching, flashbangs and IEDs, thus the need for adopting an advanced sensor that can measure exposure levels.

You may be wondering what more can be done to protect your operators from this threat. Knowledge of overpressure exposure is essential and can be achieved by wearing advanced overpressure sensors in both training and operations. Without them, you have no way of knowing the magnitude of blasts and could be guessing at the extent of possible injury.



# THE BLAST GAUGE<sup>®</sup> SYSTEM



## General information:

The Blast Gauge System is a set of three wearable overpressure sensors for the head, shoulder, and chest that captures the wearer's blast exposure. The system software tracks each user's exposure data to guide triage, improve tactics, monitor safe training habits, and trace blast overpressure exposure to symptoms.

## Physical characteristics:

- Reliable one-year battery: geared to last for a typical 12-month deployment
- Tool-free mounting: attaches to gear, helmets, structures, or vehicles
- Battle-tested: currently fielded by US military
- Durable: MIL-STD-810G compliant design withstands weather and blast



## System Features:

- High memory capacity
- Real-time LED blast indicator
- Wireless data transfer
- PC software application for in-depth data analysis



## User-friendly mobile app:

- Can be used with any android-based tablet
- Wireless scanning can receive multiple systems at once
- "Quick-scan" and "full-scan" features for efficient post-blast triage
- Exportable log files for medical records



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HEAD  
SHOULDER  
CHEST





# Packaging Dynamic Limited

Established in 1989, Dynamic Packaging is a designer and manufacturer of transit and storage packaging solutions to UK industry. Our team have a reputation built on many years of experience of being able to interpret customer requirements and incorporate them into our design and manufacturing processes.





**We are happy to complete on-site visits to discuss or review any packaging requirements and can offer a prototype services for review of new concepts or designs.**

We offer a full range of materials and styles to meet the needs of different environmental conditions.

These include but are not limited to ESD, Shock Mounted, UN Hazardous, specifications.

Are customers include companies within the Defence, Aerospace and Oil and Gas sectors, as well as a wide range of other varied industries.

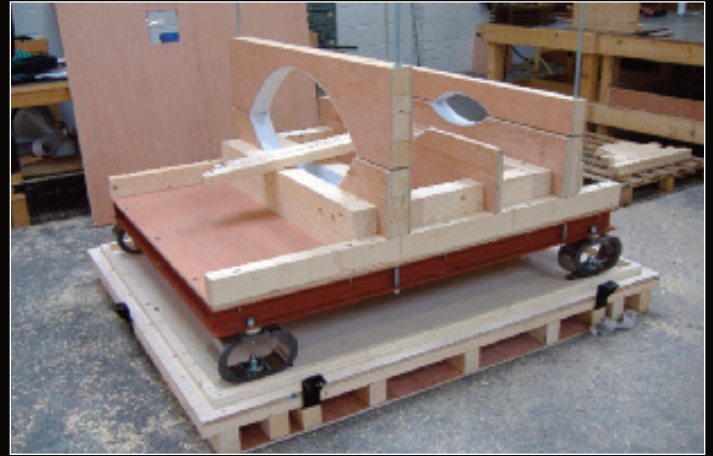
We aim to provide the most cost-effective solution whilst meeting or exceeding our customers desired expectations. To this end we continue to invest in new plant and review new manufacturing methods and materials.

Occupying a 20,000 square feet manufacturing facility our business has developed to meet ever changing customer requirements and focus with the ability to provide all your packaging requirements, including offering a on and offsite packaging service, kitting and tooling solutions, storage and transportation.

Located in Bristol close, to major motorways and road links and utilising our own transport we are able to cover the whole of the UK for product delivery and on-site packing.

Accredited to ISO9001 and MPAS (Military Packaging Approval Scheme) IATA DG for both design and manufacture. We are also registered as compliant with the UKWMP ISPM15 timber export certification scheme.

We hold numerous company quality accreditations including Cyber Essential and are also a member of the JOSCAR Defence Industry Community.



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## RAK – Water & Ration Heater

The **RAK15** is the only unit available which has been designed in compliance with MIL-PRF-44466A



# Electrothermal

AN ARMY  
MARCHES  
ON ITS  
STOMACH



# SUSTENANCE ON THE MOVE

**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

## 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).

For more information or to receive a quotation, contact: Antony Wozniak, Category Manager on **+44 (0)7770 014607** or via email at **antony.wozniak@coleparmer.com**

**[www.electrothermal.com](http://www.electrothermal.com)**





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# 4GD are redefining the future of immersive CQB/CQC training.

We specialise in using the most cutting-edge technologies to close the gap between operational reality and user experience during training.

Our technology drives operator performance by increasing levels of realism and providing scalable complexity, all whilst being more intuitive for the user.

From our combined experience in the Royal Marines and UK's Airborne Forces, we recognise the effect technology has had making the battlefield more complex than ever. At the same time, we have directly seen how it has increased the impact of decisions made at the tactical level.

Our mission, therefore, is to deliver high quality systems that allow you to make targeted improvement to your team and individual performance, enhance your ability to respond to varying complex situation, and build battle winning performance. We do this whilst ensuring that training is as true to operations as possible and that you are able to train how you fight.

We are already achieving this mission and optimising performance in elite units in both the USA & UK.



**“We shape our buildings, afterwards our buildings shape us.”**

**— Winston Churchill**





SMARTFACILITY™

## 4GD SmartFacility™

The 4GD SmartFacility™ is the world's most technically advanced CQB/CQC house. It delivers a high-tech, immersive and adaptable close combat simulation solution. An aggregation of four core products, each element has been specifically selected and optimised to deliver the ultimate user experience. Combined, these systems comprise a realistic, reconfigurable SmartFacility™ that delivers positive feedback to the user.

Moreover, although all levels are designed to be delivered together, we recognise that often a user's requirements differ. As such, we will work with the user to meet their exact requirement at the point of need.

- **Level 1 - SimWall™.** The core of our facilities is SimWall™, a rapidly reconfigurable, non-ballistic modular panel system. Easily repurposed for a specific mission or training objective, this capability trains mental agility by providing an ever-changing CQB/CQC training environment.
- **Level 2 - 4GAV™.** Using a combination of smoke, light (White/Colour/IR), sound and smell, the user is immersed in a high-fidelity combat simulation. This interactive special-effects system, controlled by our intuitive user interface, delivers either sensor-activated & reactive, or, instructor-initiated effects. This greatly increases realism and pressure to enhance a soldier's



management of cognitive overload. In addition, 4GD's video monitoring system facilitates real-time, and after-action, review. Viewed and controlled through our intuitive dual tablet display, it removes instructor burden and allows units to train collectively.

- **Level 3 - ProTarget.** 4GD's ProTarget is wirelessly linked to 4GAV™, can be placed anywhere in a facility and automatically reacts to a user's actions. Alternately the ProTarget's responses can be controlled by an instructor. This offers unprecedented feedback and facilitates demanding judgemental training.
- **Level 4 - eXtended Reality (XR).** At Level 4 the 4GD SmartFacility™ blends virtual and physical reality to enhance complexity and further challenge commanders. We use this blended approach to simulate complex combined arms operations in the 4GD SmartFacility™.

## 4GD Deployable SmartFacility™

At Level 1, the 4GD SmartFacility™ can be containerised for deployment. This gives operators the ability to conduct intelligence-led mission rehearsal in theatre, maintain readiness while deployed, or deliver high quality CQB/CQC partner force training.



**4gd.co.uk**



# Case security at its best!



rose  plastic<sup>®</sup>  
innovations in plastic packaging

The durability and versatility of the products in the ProSecure range make them the perfect transportation and protective cases for valuable monitoring and test equipment. RoseCase ProSecure shock-resistant cases are certified to IP67 offering maximum

protection from the elements. For added protection, all ProSecure cases are available with a range of standard or custom-machined foam inserts, as well as a choice of corporate branding options.



*Tested mobility  
solutions for  
up protection  
up to VR10*



# YOUR MOBILITY SPECIALIST FOR ARMoured VEHICLES

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- Punctured fuel tank? **No leakage**
- Enclosed in armour? **Barrier free communication**
- Heavy armouring? **Extra braking power**
- Blast threat? **Shock mitigation**

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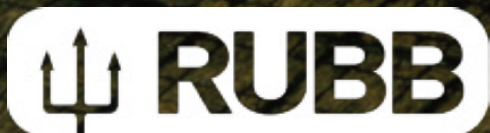


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# THE RUBB RAP DEPLOYMENT SHELTER

Designed for quick, flexible and easy construction using a small workforce, without the aid of mechanical handling equipment.





# R



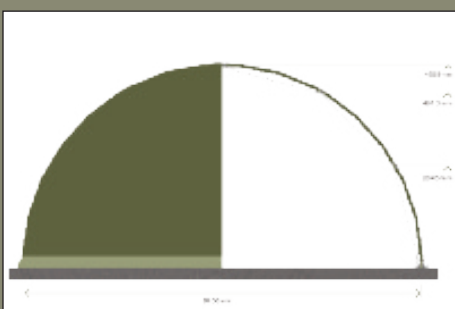
The RDS can be easily connected together using access links. These can also be incorporated into the gable ends and sidewalls of larger Rubb structures.

Further protection to the Rapid Deployment Shelter can be included by means of a sun screen cover. This protects these rapid deployment shelters, containment centres and tents from the rays of the sun so that the structure does not overheat. Windows can be provided along with blackout covers if required.

Full lighting and electrical systems are available with this Rubb shelter. There is capability for power points to be distributed within these relocatable buildings to meet the demands of the user. Access ports can be provided into the shelter to accommodate the ducting for any externally sited Environmental Control Units (ECU), power supplies and signal cables.

## Specifications

- **Framework:** Shelter framework is manufactured from steel box sections, which are hot dip galvanized to provide protection from corrosion
- **Fabric covers:** Double skinned covering membrane is fabricated from high tenacity PVC polyester fabric which is flame retardant
- **Foundation:** The RDS shelter range is supplied with its own foundation arrangement to be securely anchored to the ground
- **Packing:** The RDS range has been designed with packing in mind. The shelter is methodically packed to comply with specific transport requirements
- **Containers:** All RDS shelters can be packed into 20ft ISO shipping containers, so the product can be quickly delivered anywhere in the world



Rubb Buildings Ltd, Dukesway, T.V.T.E.  
Gateshead, Tyne and Wear, UK

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Rubb's Expeditionary Forces Aircraft Shelter System is uniquely suitable for the military and aviation services, designed to be rapidly deployed and erected anywhere in the world. With unmatched relocatable buildings in action across the globe, Rubb has the ideal solution for storage and maintenance requirements.



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**EXSEL**  
GROUP

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The Exsel group is a leading independent defence technology solutions company. We provide integrated blast and ballistic engineering solutions, electronic and mechanical systems and support services to Defence and Industry where protection, reliability and safety are paramount.

Our core products cover ECM, secure data handling, specialist containers, vehicle engineering and innovative power distribution solutions – all designed and deployed in the world's most extreme, hostile and remote environments.

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- **Integrating complex mechanical, electrical and software systems**
- **High-fidelity, robust training systems**
- **Lightweight, modular armour solutions**
- **Vehicle engineering**

## EXSEL DESIGN & INTEGRATION



Across Air, Land and Sea Exsel Design & Integration products and services have proven their high quality with years of continuous service. Our precision engineering capability includes the innovative design, build, certification and installation of electromechanical, electronic and communications systems, mobile platforms and container-based solutions for rapid deployment and severe environment applications.

Many projects are supplied on a 'turn-key' basis against initial concepts or drawings.

## EXSEL ELECTRONICS

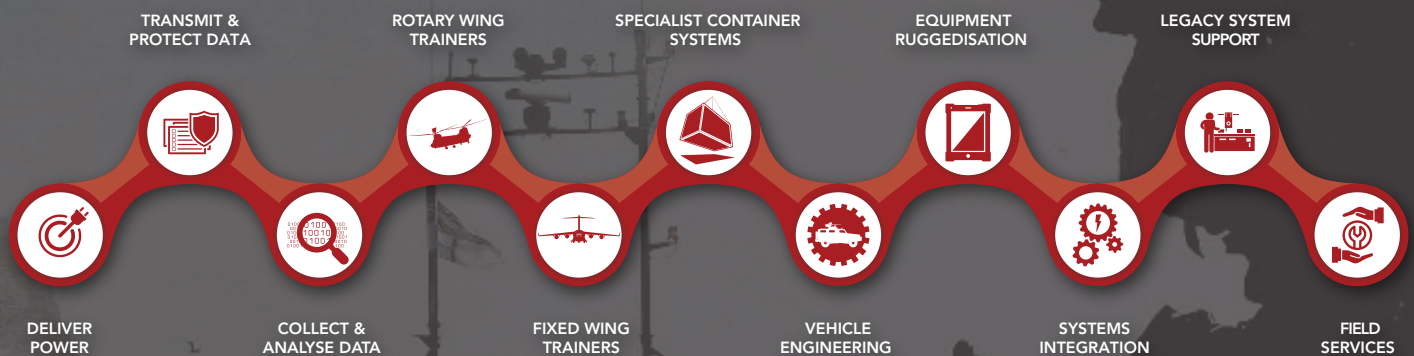


Exsel Electronics designs and produces fully engineered, documented and supportable electronic defence systems to meet customers' project specific requirements with a multi-disciplinary team of systems, software and electronic engineers.

The Exsel Electronics facility is the group centre of excellence for design, manufacture and testing of software and electronic systems.

Encompassing all stages of projects from requirements capture, through design and development to manufacture, test and certification, Exsel Electronics provides customers with a low risk high quality approach to software and electronic engineering.





## EXSEL FIELD SERVICES



Exsel Field Services offers rapid deployment to severe environments, on-location support and services for force and asset protection in some of the world's most hostile locations.

We ensure that product and service contracts are completed to a high quality and assist with end-user certification, product installation and on-going in life support and maintenance services.

## DYNA ARMOUR



With proven capability in designing bespoke personnel protection for customers in Defence, Government and Civilian Industry, DynaArmour works closely with a number of partners to design, develop and install a variety of protection solutions; including Portable Armour Protections systems, Personal Amphibious Armour and our Maritime protected weapon station for GPMG, and Minigun deployed with the Royal Navy around the world.

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## EXSEL TRAINING & SIMULATION



Exsel Training & Simulation provides simulators, part task trainers and emergency egress trainers. Our hardware mirror the form and function of the subject equipment and are much more robust for continuous use in training environments. Our simulators facilitate training in high fidelity, representative and realistic environments across Fixed & Rotary Wing Aircraft, Wheeled & Tracked Vehicles & Marine applications. Recent examples have included fuselage trainers, fast jet maintenance training devices, troop trainers and emergency exit procedure systems.



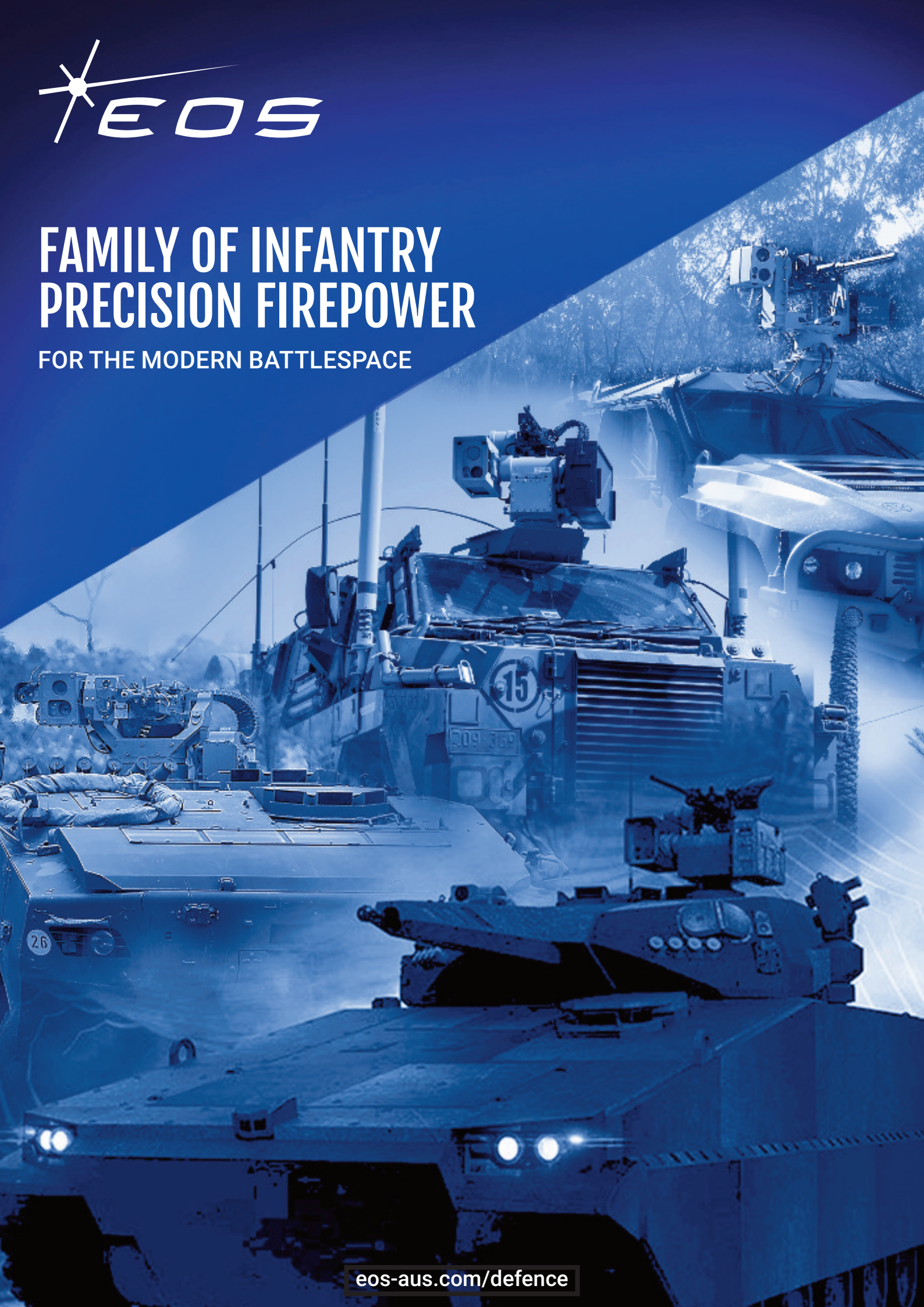
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## **Lincad wins new contract from Team Leidos to supply a range of cells and batteries for ultimate use by British armed forces.**

"We're pleased to have won an additional contract from Team Leidos. We have been supplying products to military customers, including the UK MOD, for more than 30 years. This win highlights the confidence that defence customers have in Lincad to supply high performance product, often in very large volumes, at a competitive price."

***Peter Slade***

*Joint Managing Director*



**[www.lincad.co.uk](http://www.lincad.co.uk)**



# RUNFLATS FOR MILITARY AND OFF ROAD VEHICLES

It is now common practice to fit runflats to military vehicles and the discussion has moved on to why rubber and not the cheaper composite solution.

## Rubber has three particularly significant advantages.

Firstly, rubber absorbs shock from impact resulting from curb strikes, potholes and operating in hostile environments. Rubber drastically reduces the vibration and stresses transmitted through the runflat to the wheels, axles, and drive shafts with little change to the handling of the vehicle whilst retaining a degree of comfort for the driver and passengers.

Rubber is a compliant material and prevents the damage

caused to the tyre from impingement between the runflat and the inside of the tyre.

The third less obvious reason for using rubber rather than composite and probably the most important is the need for 'Beadlock'.

Without adequate compression of the tyre beads against the flanges of the wheels (Beadlock) the vehicles are going nowhere. With only the 'drag' from the deflated tyres, the wheels will slip inside the tyres and that is on level ground, let alone trying to negotiate any obstacles or hills to complete its mission.

So why not use composite or hard material for Beadlock?

The answer is in the manufacturing tolerances of the wheels and tyres. Each of these components has a manufacturing tolerance which, when stacked to a maximum combined value, could be a difference of 20mm in the inside measurement between the tyre beads.

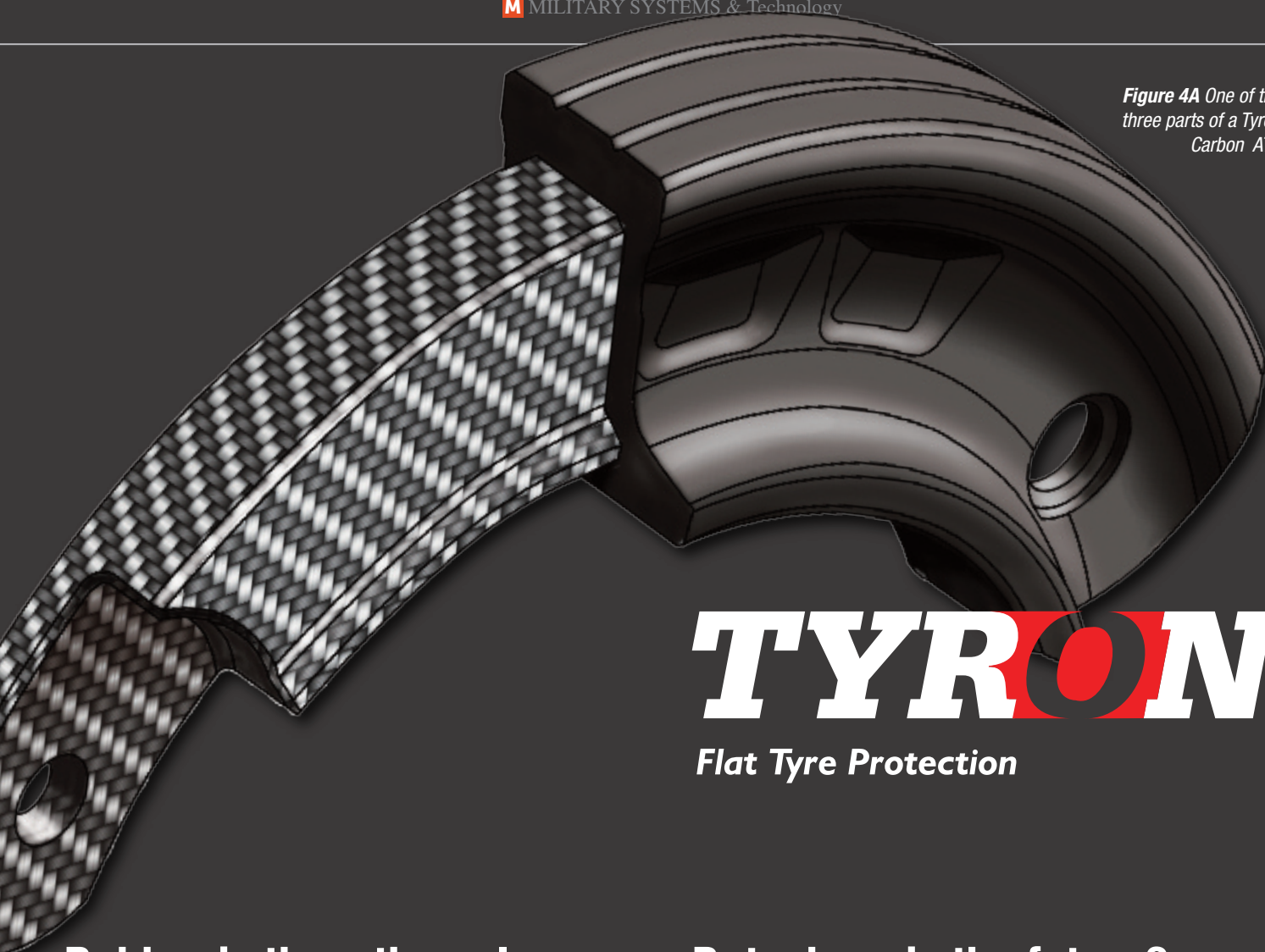
Composite or Plastic runflats are manufactured by machining solid moulded blanks. They must be machined to the minimum anticipated measurement between the tyre beads for them to be able to fit, therefore they do not give consistent tyre bead compression and cannot guarantee beadlock. Consequently, the wheels in the deflated tyres may spin freely incapacitating the vehicle, even on a flat surface.

**Figure 3** Hungarian BMP running with a flat tyre





**Figure 4A** One of the three parts of a Tyron Carbon ATR



# TYRON

## Flat Tyre Protection

### Rubber is then, the only logical option.

The width of the rubber runflat however is over manufactured to allow for these tolerances and during the installation, the rubber will flex and compress the tyre beads against the flanges of the wheels guaranteeing the beadlock, as in figure 2.

In 2008 Tyron invented the world's first ever multi piece rubber All Terrain Rubber (ATR) Runflat insert which can be fitted in the field, without special tools, giving excellent off road capabilities. The Tyron ATR Runflat systems have been ballistically and endurance tested to demonstrate that the vehicle can keep moving for more than 100km at speed and achieve Finabel standards.

Why Multi Piece? Multi Piece runflats make handling much easier for maintenance and engineering crews in the field or workshop. Even large tyres, such as 14.00R20 and 16.00R20 can be done by two people easily.

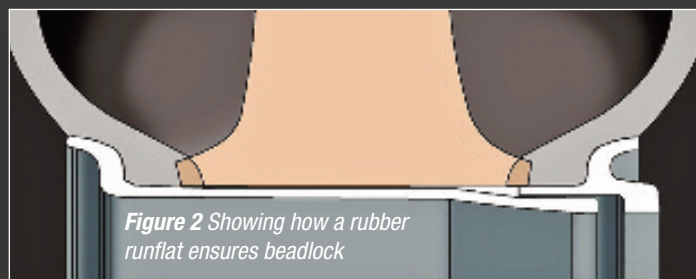
Critical cost saving? With constant pressure on budgets the Tyron ATR runflats enable the vehicle engineers to replace or repair the tyre without special tools in the field. Not only does this minimise vehicle down time, it offers massive savings in logistics costs as they negate the need for the return of the wheels and tyres, or whole vehicle to a rear workshop or even by air back to a home base, saving many thousands of Pounds.

### But where is the future?

A critical element of the design of 8x8s is a need to reduce the unsprung weight on an axle. At the heart of the patented Tyron ATR runflat is a core which gives the system its strength. Historically this has been steel, however Tyron have developed a carbon core which reduces unsprung weight on an 8x8 fitted with 16.00r20 tyre by around 40kg per runflat, or 240kg per vehicle.

Why Carbon? Carbon's properties give it the strength of steel but at considerably reduced weight. For AFVs any opportunity to reduce weight is a real benefit, especially if it is unsprung, and gives the user or vehicle designer the opportunity to add to the carrying capacity, armouring, protection or firepower.

Contact [peter@tyron.com](mailto:peter@tyron.com)  
or [info@tyron.com](mailto:info@tyron.com) for further information.



**Figure 2** Showing how a rubber runflat ensures beadlock



# ***The Tyron Rubber runflat range... ... NEW systems for maximum performance***



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**ALWAYS ON**



# 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.



# SCHROTH®

## 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

- Quick release, wall-mounted interface
- Modular construction
- Spring Loaded Self-Folding, storable seat pan

## 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:

Mr. Julian Schulte

Tel: +49 2932 97420

E-Mail: [Julian.Schulte@eu.schroth.com](mailto:Julian.Schulte@eu.schroth.com)





# WILL-BURT

## REMOTE LOCKING SYSTEM

Will-Burt's patent pending Remote Locking System for pneumatic masts allows an operator to lock and unlock the mast from an assured distance. No manual interaction is required to raise or lower the mast. Operation of the system is intuitive, requiring less training and reducing the risk of operator error.

The Remote Locking System is available on any Heavy-Duty pneumatic mast system or larger. Contact The Will-Burt Company for heights above 80 ft. / 24m.

### ESSENTIAL FEATURES

- Ability to stand clear from payload during deployment and retraction
- Easy to understand and operate controls
- Super pins for longer lock life and increased wind survival speed in guyed applications
- Close azimuth design and two full-length keys on every mast section reduce mast movement and twist
- No routine maintenance required
- Pneumatic operation requires no fluids



Available on any Heavy-Duty pneumatic mast system or larger. System includes locks and control system. Available for mast tube sizes from 13.5 in. (343 mm) to 3 in. (76 mm). Contact The Will-Burt Company for heights above 80 ft. (24m).



**Available on any Heavy-Duty pneumatic mast system or larger**



**Unlocked Pneumatic Actuator**



**Locked Pneumatic Actuator**



**Control Box Included**



**Optional Handheld Controller**





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# TEXELIS

## Texelis' production re-starts to support the French Army and other key customers

The company recommences production at its Limoges facility in close cooperation with official government guidelines

Production has re-started at the Texelis production facility in Limoges, France in support of key customers, such as the French Army which is heavily committed to ongoing operations such as Operation Resilience in France and Operation Barkhane in the Sahel.

As a strategic supplier to the DGA, Texelis has ensured the continuous supply, throughout the Covid-19 emergency, of critical spare parts for the French Army's operational vehicles and also maintained the Nexter Serval® 4x4 programme schedule. In addition, Texelis was able to re-start general serial production on 6th April and has now added a second shift at the company's Limoges site.

Production for other priority customer programmes, including new axles for ARQUUS and Alstom, and deliveries for key export customers, is well underway.

All work at Texelis facilities complies with official French Government guidelines and is being undertaken in full consultation with the Staff Committee in order to keep all staff and customers safe. This includes adherence to all safety measures, the use of masks, gloves, social distancing, sanitisers and rearranged work flows to minimise risk. Processes have also been put in place to enable remote working where possible across the Texelis business structure.





***"Despite the current serious and unprecedented circumstances, our customers, such as the French Army and the DGA, rely on us to remain operational and are in need of the critical equipment we produce here at our Limoges facility," Jean Vandel, Managing Director at Texelis Defence, said. "We are working to continue production to support them in line with government guidelines, while prioritising the safety of all Texelis staff and customers."***

***"We will continue to monitor the situation closely and adapt our processes to suit the evolving situation."***

Texelis remains on track for its new T750/700 production line, opened in February, to reach full rate production in 2021. The production line will be capable of producing 2,000+ axle units per year as part of its work providing the full vehicle driveline - including T750, powerpack, suspension, steering, cooling, exhaust and electrical systems - for the Serval® 4x4 expeditionary combat vehicle selected to fulfil the Véhicule Blindé Multi-Rôle-Léger (VBMR-L) portion of the French DGA's SCORPION programme.

**[www.texelis.com](http://www.texelis.com)**





# AllanWebb

Allan Webb (AWL) has been a leading provider of Supportability Services to UK MOD and Industry for 60 years.

Our vital support services can be found embedded in our clients' and end users' equipment and capabilities, ensuring they remain operational to the highest standards.

Helping you take control of, and better understand, your data can reduce cost, improve productivity and ensures the right equipment and parts are there exactly when and where you need them. Through tailored requirements, we create a single source of truth, which can be relied upon to make informed decisions.

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Our ISO9001 certified operational procedures are constantly

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Technical documentation is key to implementing processes while ensuring safe operation and continuity when it comes to use, maintenance and repairs. We offer a comprehensive range of services, from creating individual elements of documentation to managing and delivering entire support packages.

We work in a way that suits you—either spending time on site with your engineers to produce technical manuals that capture





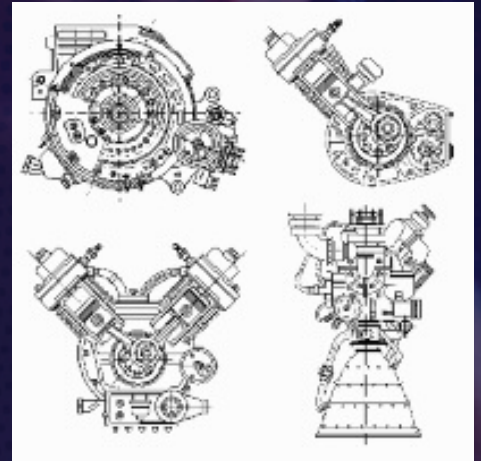
your processes and procedures, or by obtaining information from OEM sources to develop publications remotely. We can create documentation in a range of formats, from simple PDF books to interactive electronic technical publications.

With experience ranging from Maritime, Defence and Aerospace, to Power Generation and Manufacturing, our team is ready to support you regardless of your industry background.

Our authors are well versed in operation and maintenance task analysis and break down of complex systems using various engineering methodologies to produce safe and fit-for-purpose technical documentation.

Over the years, we have worked with a range of documentation including, but not limited to:

- **User Manuals**
- **Aide Memoirs**
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- **Quick Start Guides**
- **Interactive Electronic Technical Documentation**
- **Data Modules**



These have all been produced in accordance with International and Industry Specific Standards when required.

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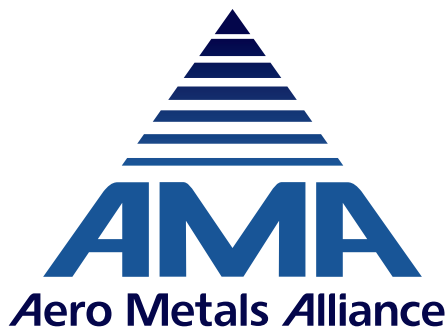
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## In an uncertain world some things never change **Five world class metal suppliers,**



Aero Metals Alliance (AMA) is an organisation established specifically to provide a dedicated offering to the global defence and aerospace manufacturing industries.

AMA comprises 5 of the world's leading suppliers of metals - 2 UK-based distribution businesses: Gould Alloys and Wilsons Metals, together with 3 overseas businesses; Service Centres Aero (SCA), Progressive Alloy Steels Unlimited (PASU) and Sunshine Metals. All 5 have established their own reputations for industry experience, knowledge and expertise.

Whilst each of the businesses has particular strengths which have developed over the years to match the needs of its 'local' customers, the Alliance provides a structure enabling a pooling of resources and technical knowledge covering the entire range of customer requirements through a coordinated effort with worldwide reach. AMA's proposition is to bring a global supply chain to the industry via a network of strategically located service centres to supply required alloys and near net shaping to national and international customers.

The value of a metals alliance to the OEMs is a comprehensive offering of aviation and aerospace, defence and industrial alloys with value-added processing, along with the ability to be agile in investing in people, plant and technology to develop collective business platforms in a lean fashion supported by superior quality and delivery.

The extended range of products offered through AMA is also reflected in the range of services provided.

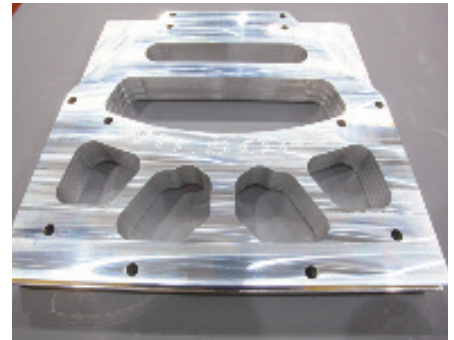




## offering unique capabilities and services



*AMA companies carry large inventory of high-performance metals*



*Machining parts to near net shape can be offered.*



*Complete processing service including plate and bar sawing.*

Each company has its own processing capabilities, which collectively offer: cutting, shape cutting, milling, surfacing, sawing, drilling, guillotining, waterjet cutting, USI testing, heat treating or re-tempering, forgings and machining to near net shape.

As well as managing a supply chain that can provide a whole host of other added value services specific to its customers' requirements.



*All AMA Service Centres are staffed by experienced metals specialists.*

Customers are increasingly looking to optimise their production processes. This is primarily driven by the need to maximise value-added in-house spindle time for core business activities leaving AMA to undertake some of the machining processes. This can take many forms, from simple cutting to more intricate processing in which near net shape pieces are supplied. In addition to freeing up time for customers and OEMs to focus on more profitable final processing, near net shape processes can improve product quality, reduce variability and enhance component design functionality.

AMA provides an easier route through which OEMs and sub-contractors in defence and aerospace manufacturing can source their metals, their processing requirements and services, through just one point of contact.



***Jane Bradshaw is the MD at Gould Alloys, UK based distributor of high integrity ferrous and non-ferrous metals:***

*"Manufacturers are searching for the ultimate peace of mind in materials supply. Materials stockholding, first stage machining and supply contracts, designed around our customers' needs, enable Gould to offer the complete package. We can hold stock for our customers' material, processed to the correct stage, in bespoke areas of our warehouse, ensuring confidence in material availability and supply, even on a just-in-time or DLF basis. This enables customers to free up storage space to concentrate and develop core activities to grow their own business."*



# Peli-Hardigg™ Light Lift™ Series Rotationally Moulded Cases Same Protection with 30% less Weight



To ease the burden of logistics professionals everywhere, Peli Products, the global leader in the design and manufacture of high-performance protective cases, has introduced the Peli-Hardigg™ Light Lift™ Series rotationally moulded cases.





The advanced material used to build Peli-Hardigg Light Lift series cases makes them up to 30% lighter than traditional rotationally moulded cases, which means considerable logistics savings with less manpower and resources required. This brings a substantial benefit for the Health and Safety of professionals working in the field. The new Light Lift case family is geared toward two or four man carry applications with a maximum 136 kgs. gross payload, offers the same protection and pass the same rigorous MIL-SPEC testing as traditional Peli-Hardigg rotationally moulded cases. This line includes 28 of the most popular Peli-Hardigg single-lid case sizes with additional 122 more sizes scheduled to be introduced throughout 2020.

The cases feature popular catch & strike hardware to tightly secure the lid and recessed handles to prevent shearing or snagging from outside forces. Additional available configurable hardware options



include plastic or metal handles, airtight construction using PRV valves, edge casters, locking hardware and humidity indicators.

***“As with all great products, Peli-Hardigg cases are continually evolving to meet the needs of our customers in a meaningful way,”*** said Pavel Levshin, Product Marketing Manager EMEA. ***“The Peli-Hardigg Light Lift Series is a revolutionary step forward in materials, science and design that will ease the ever-***

***present logistics burden by being easier to carry and less expensive to ship.”***

For over 40 years, Peli-Hardigg products have provided a high level of cushioning and protection. Solutions include everything from layered foam cushions to extremely complex metal work, to g-force-rated shock mount systems and fabricated frame systems. These systems are designed to not only protect the equipment in all types of transport situations but to assure that it operates as designed when failure is not an option in the field.

For more information about Light Lift Series cases, please visit

**[www.peli.com/lightlift](http://www.peli.com/lightlift)**





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## For further information and friendly advice...

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