

# MILITARY SYSTEMS

TECHNOLOGY

## EUROTECH

Commercial Off The Shelf products  
for Defence, Security and Aerospace

## LOSBERGER RDS

Design, development and manufacture  
of superior quality temporary shelters

## OWR GMBH

Manufacturers of outstanding  
decontamination equipment

## PROENGIN

Leading biological and chemical  
warfare agents field detectors

## OCTAGON

Protective Military Wall  
Defence Structures

PLUS...

BREAKING NEWS FROM...

ARALDO

DRASH

GUARTEL

POLYFORMES

SMITHS DETECTION

WILL-BURT

TELEDYNE

Image Courtesy of Generation Defense Systems

# ATHENA

**CAPTURE  
INTELLIGENCE  
FROM MOBILE  
PHONES, GPS  
DEVICES, SIM AND  
MEDIA CARDS**

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THEIR CONTACTS  
THEIR ROUTES**

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demanding situations**

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**RADIOTACTICS**

**Intelligently Developed Evidentially Sound**



## Welcome to this edition of the Military Systems & Technology newsletter.

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 newsletter is designed to keep you up-to-date with latest news and events within the Defence Industry's Governing Bodies, Organisations and Companies.

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# COMMERCIAL OFF THE SHELF PRODUCTS FOR DEFENCE, SECURITY AND AEROSPACE

Eurotech Commercial Off The Shelf (COTS) products for Defence, Security and Aerospace (DSA) markets include rugged board-level products and tactical sub-systems designed for airborne, shipboard, vehicle mounted and handheld applications.

Parvus Corporation, a subsidiary of the Eurotech Group specialise in the supply of rugged COTS computing and IP networking subsystems for Size, Weight, and Power (SWaP) constrained military, aerospace, and homeland defense applications. Their products provide highly reliable command, control, computing and communication (C4) capabilities for situational awareness and mobile data processing in airborne, ground vehicle, and naval installations.

Products range from highly reliable single board computers (SBC), data communications, and I/O cards to complete rugged mobile computer systems, IP networking equipment (switches, routers) and rugged flat panel displays. Deployed in command and control (C2) applications onboard planes, helicopters, armored vehicles, and ships, our products are often designed for MIL-STD-810F environmental and MIL-STD-461E EMI/EMC standards and/or other

customer-specified specifications. With decades of systems engineering expertise serving prime contractors and systems integrators, Eurotech partners with their customers to provide long-term product life-cycle engineering and production support.

mechanically designed with consideration for dust, water, EMI/EMC, corrosion resistance, mobility, and wide temperature operation.

#### Typical Features:

- Linux or Windows XPe OS
- Low-Power Intel CPU Architecture
- MIL-STD-704/1275 Power Supply
- MIL-STD-810F Environmental Compliance
- MIL-STD-461 EMI/EMC Protection
- Extended Temperature Operation
- Shock & Vibration Resistance
- PC/104(+) Board Expansion Slots

## Military Vehicle Mission Computer Systems

Eurotech offers Commercial-Off-the-Shelf (COTS) rugged vehicle processor platforms





## Rugged Military Routers and Switches

Eurotechs rugged IP networking subsystems deliver secure data, voice, and video communications to stationary and/or mobile network nodes across wired and wireless networks.

These rugged routers and switches enable a variety of situation awareness and net centric applications, including in-vehicle wireless Internet access, VoiceOverIP (VoIP), streaming video surveillance, and smart vehicle diagnostics/maintenance.

### Typical Features:

- **Cisco Systems IOS® Software w/ Enterprise-Class Features**
- **MIL-C-38999 / Hardened Connectors**
- **Lightweight and Compact Size**
- **Mobile IP Protocol Support for Transparent Router Mobility**
- **Sealed Conductively Cooled Aluminium Chassis without Fans**
- **Designed to MIL-STD-810F / 461**

## Hardened Military/Avionics-grade LCD Monitors and Tactical LCD Displays

Eurotech offers hardened military/avionics-grade LCD monitors featuring daylight readability and wide temperature operation. Designed to meet MIL-STD-810F and MIL-STD-461 environmental standards, these rugged



Commercial-off-the-Shelf (COTS) flat panels incorporate a robust mechanical design well suited for avionics, military, vehicles, and other high-reliability applications.

Ideal for presenting flight, sensor, mapping, advisory and other information in both retrofit and new aircraft designs, Eurotechs Multi-Function Displays (MFDs) integrate an internal embedded computer and front bezel push buttons designed for glove-fingered operation.

### Board Level

Eurotech offers systems integrators and OEMs a complete line of modular, open architecture embedded PC/104 cards designed for demanding mobile environments (high temp/shock/vibe/humidity). These stackable, low-power single board computers, I/O modules, and power supplies serve as ideal building blocks for rugged data acquisition, communication, and computational solutions deployed in extreme land, sea, and air environments. PC/104 is a widely accepted embedded computer board standard with a stackable bus (ISA/PCI) architecture inherently rugged and software compatible with x86 (PC) operating systems and development software. Products range from single board computers, I/O & Datacom Boards, Power Boards and Enclosures.



## Defence Wearable Computers - Zypad®

### Zypad Rugged Wearable Computers

The Zypad® BR2000 is a rugged, small-form factor wearable computer and vehicle server designed for a host of civil and military applications. With low-power and high performance together with high-speed wired and wireless network and device I/O interfaces, the BR2000 is ideal as a soldier/worker wearable computer or vehicle-mount subsystem.

The Zypad rugged WR11XX Wrist Worn Personal Computer is a powerful COTS device designed to withstand the most severe environmental conditions and to be worn comfortably on the user's wrist for hands-free operation. It has been designed to meet MIL and ATEX regulations.





# DESIGN, DEVELOPMENT AND MANUFACTURE OF SUPERIOR QUALITY TEMPORARY SHELTERS

Since decades the Losberger Group has worked on design, development and manufacturing of an extensive and comprehensive range of tents and halls for our customers in the fields of special events, business, civil defense and military operations at the highest levels of quality, service and after-sales. Losberger Rapid Deployment Systems is the result of a merger of the companies TMB, Bachmann and Autoflug Inflatable

Structures. Losberger RDS is the military subsidiary of Losberger France SAS, former Walter SAS and has been successfully supplying products for the civilian emergency, disaster control, humanitarian relief, decontamination and military markets for over 20 years.

Our expertise in these sectors is a result of bespoke patented designs and the highest standards of manufacturing, well-trained and experienced craftsmen and the use of the finest quality of materials. Most RDS structures are designed for military use and can be rapidly deployed to provide fast and effective protection to people and valuable equipment. In the event of an emergency or where there is a requirement for immediate deployment, Losberger Rapid Deployment Shelters can supply a variety of products that are suited for short or long term use. Losberger RDS offers global solutions, from an initial design proposal, to supply, installation and maintenance. Most of our products have a NATO stock number.

designed primarily to serve as maintenance shops, but perform equally well as meeting rooms or reception and conference areas. The AMD is packed on a trailer, a container platform or semi-trailer with a hydraulic self-erecting system.

The covered floor space is 60m<sup>2</sup>, 120m<sup>2</sup>, 250m<sup>2</sup> or 340m<sup>2</sup>, depending on the model. Assembling an AMD is ultra-fast: for instance, the AMD 60 is deployed in less than 10 minutes by just one person.

## Modular Shelter Systems (P16)

Modular shelters are primarily used as dry air storage, maintenance halls or serve as garages. Permanently or semi-permanently installed, they are anchored to a flat platform. They may also be installed and weighted down by steel/concrete blocks or water tanks.

Complete waterproofness makes it possible to control the interior humidity of the shelter. Access is made possible through 1 or 2 fully opening gable ends or via roll-up doors (4.50 m x 4.50 m). These shelters can be transported in 20' containers or on aircraft pallets.

## Fast Deployable Shelters (AMD)

The ultra-fast deployable AMD shelters are





## Inflatable Tents (TAG NG 42)

The TAG inflatable NG tent is ready for use in just a few minutes thanks to its inflatable frame. The speed and ease of deployment make the TAG NG ideal as medical posts, command centers and emergency shelters for example. Its weatherproof and robust construction, along with a set of accessories, ensures the TAG NG's efficient use on any type of terrain and climatic condition. All tents can be carried by hand to the place of use. One or two persons using an electric inflator install the inflatable TAG NG tent in less than 5 minutes. Thanks to their modular design, the tents can be connected to each other in any direction (gable doors and side doors). The tent is made of durable fire and UV resistant PVC coated polyester fabric, using HF welding to construct the cover and floor into one enclosure.

## Mobile Hospital/Field Hospital (Field



## Hospital TAG NG)

A first field hospital has been supplied to the Italian Red Cross of Lombardy in 2002. This hospital was configured out of tents ranging in size from 40 to 100 m<sup>2</sup>, in compliance with the requirements of the Italian Ministry of Defense. The advantages were, above all, rapid deployment and modularity. A 42 m<sup>2</sup> tent can be erected by just 2 people in 3 to 5 minutes. The modularity of the structures allowed a suitable layout of the field wards and operation theatres depending on the circumstances of the location. The hospital has been used since for several missions and emergencies (Larino, Iraq, Sri Lanka). The cooperation with personnel of the Italian Red Cross of Lombardy who lived and worked in the structure was crucial for perfecting the product. Based



on the feedback from the various field missions, the R&D and design department has focused all efforts on improving the tents on numerous details. The result of the cooperation with the Red Cross is the New 2007 Field Hospital. The next-generation pneumatic structures are perfect in modularity, durability and ease of maintenance. We supply inflatable field



hospitals, whether or not in combination with (expendable) container for the OT, ICU and ablution for example, from a 2-bed medical post to a 150-bed and fully equipped turnkey solution.

Our inflatable field hospitals are in use by armies, emergency response units and humanitarian aid organizations around the world.

## Inflatable Military CBRN Tents

Inflatable CBRN tents for collective protection of people against NBC threats. These tents combine the rapid deployment of a TAG NG inflatable tent with a sealed NBC liner.

The living area inside the tent is over-pressured with filtered air. The entrance is fitted with an over-pressured air lock. The fabric NBC liner protects the persons inside against all toxic chemicals for a minimum of 24 hours.

## Military Dome Shelters for Protection

Domes are dedicated to the protection and cover of sensitive equipment such as radars, missiles, vehicles or helicopters under extreme climate conditions. Composed of a galvanized steel frame and a heavy-duty PVC coated fabric cover, the domes are available in standards diameters of 9, 11, 13, 16 and 20 meters. The dome shelters can open extremely fast: operated by an electric gearbox, the opening and closing of the dome takes less than 3 seconds and is fitted with a manual safety system. Our specialized technicians provide worldwide service and support for all the systems we supply.

# MANUFACTURERS OF OUTSTANDING DECONTAMINATION EQUIPMENT



As a manufacturer of decontamination equipment, OWR has been setting the standards for CBRN defence and civil protection for more than 50 years. Using modern techniques and user-friendly application systems, OWR develops and builds efficient mobile decontamination solutions for its customers, offering them a complete service from product development to training and after sales service. With a full range of products ranging from small hand-held spray applicators such as the Cobra, to the containerised multi purpose

decontamination systems such as the MPD 100i, OWR can offer a solution to fit the needs of the customer, and with a design team constantly developing new and innovative products, OWR is setting the standards for the future of decontamination and helping to provide a safer and more certain future for the world.

## Compact Decontamination Equipment COBRA Decontamination Spray Unit

The COBRA is a 0.4 ltrs decontamination spray unit used for emergency decontamination or disinfection. Giving a spray area of approximately 11m<sup>2</sup>, the COBRA can be filled with any liquid decontamination or disinfection solution and has been developed in close cooperation with both military and civil customers as part of their personal protective equipment for CBRN operations. The hand held unit contains a patented pressure pump system with

which the operator can quickly create a pressure to allow the liquid to be sprayed. The COBRA has a metal stainless steel body and chemical resistant seals and requires no special preparation before use. The COBRA comes either as a stand alone unit supplied with a carrying bag which clips to a belt, or can be incorporated into kit supplied in a robust plastic carry case. Light, Transportable Thermal Fogging System - DECOFOG

The Decofog is a light, transportable thermal fogging system designed to apply decontamination solutions as a fog. It is simple to use, has no mechanical parts and can be set up for use in seconds. Based on "jet-engine technology" it uses hot air to vaporise a solution and turn it into a fog with particles of 1 to 4 microns. The Decofog is robust and been designed to be operator friendly with large grip handles. It is supplied standard with an operators harness and metal travel case. Using chemically resistant parts it is suitable for use with aggressive chemicals and needs little maintenance. The Decofog is used by multiple NATO countries and has the NATO Stock Number NSN 4230-01-499-5612.



## Decontamination and Disinfection Fogging Device - FOGBOOSTER

The FOGBOOSTER is the new generation of decontamination and disinfection fogging devices. By using compressed air combined with an especially designed nozzle, decontamination or disinfection fluid is microscopically atomized to form particles on a micro-scale basis to produce a highly effective dry mist or fog. The FOGBOOSTER produces a micro-film mist which covers all surfaces and gets into all gaps and joints, detoxifying or decontaminating all surfaces. The Fogbooster is lightweight (approx 6 kg) quiet and highly mobile and can either use standard compressed air bottles or a compressor to run.

## Fast Response Mobile Decontamination System - SMGD RACCOON

The SMGD has been designed as a fast response mobile decontamination system. Completely self contained with its own generator, diesel and decontamination solution tanks, it is a compact decontamination unit for the application of water-free decontaminants when decontaminating vehicles, large equipment, infrastructure, roads and high-value equipment. The system is based on a low pressure spraying system and comes complete with decon spray lances and an independent high pressure cleaning unit for pre-cleaning.

The generator of the SMGD creates enough power to run the decontamination system and provide external power for the independent sprayer and lights. Designed to be transported to the decontamination site on a pick-up, once un-loaded it can be easily moved easily by one person whilst



still running. The unit is ready to use within 1 minute and needs only to be switched on. Multi Purpose Decontamination System - DEDAS

The DEDAS is a universal mixing unit which can be programmed to mix all commercially known decontamination solutions. The patented low-pressure system allows the mixing of emulsions, foam and diluted solutions for decontamination purposes, in either small or large quantities. It has a capacity of up to 200l/min and can even be used with seawater. The DEDAS can be used as a stand-alone unit but is used as the heart of the OWR MPD 100 multi purpose decontamination system.

## SURF-EX Decontamination Unit

The SURF-Ex is a decontamination unit which uses industrial vacuuming technology combined with a spray-extraction system to clean and decontaminate surfaces of CBRN, HazMat and explosive material. The SURF-Ex can be used to vacuum all types of dry hazardous dust without danger to the operator due to its comprehensive filtering and dust collection system. Its can also be used to clear up liquids and uses a spray-extraction system to decontaminate and clean surfaces of hazardous and dangerous chemicals. By using GD-6 with the spray extraction system, the surfaces of sensitive equipment can be decontaminated without risk. Using comprehensive selection of inter-changeable vacuuming and spray heads ensures that the SURF-EX can be used to tackle multiple decontamination tasks.

The SURF-EX was successfully

demonstrated in Fukushima, Japan and was successfully used to clean vehicles, equipment and external surfaces of radiation.

## Multi Purpose Decontamination Units - MPD

The Multi Purpose Decontamination Unit or MPD is a complete decontamination system Contained in a 20ft ISO container a standard unit can decontaminate 120 persons per hour, 20 light vehicles per hour, or 6000m<sup>2</sup> of terrain decontamination. Despite its large capacity, the MPD100 is a highly mobile unit containing 3000 ltrs of water and can be operated using 4 personnel.

**The MPD 100** has recently been upgraded to include the UAM (Universal Application Module). The MPD 100i can apply ready mixed decontamination solution using low pressure technology and offers an enhanced decontamination capacity.

### GD-6

The decontamination solution GD-6 is a ready to use patented decontamination solution which is used to decontaminate chemical warfare agents. It is especially effective when used with OWR low pressure application technology, but can be used with any spray unit and fogging units.



**PROENGIN**  
Chemical and biological detection systems

Proengin



# LEADING BIOLOGICAL AND CHEMICAL WARFARE AGENTS FIELD DETECTORS

Proengin has developed biological and chemical warfare agents field detectors using flame spectrophotometry. The well-known and world widely used AP2C has proven the capacity of that technology to be the most reliable on the field with the lowest false alarm rate and the simplest ease of use.

## Chemical Detection The New Extended Range Field Handheld Chemical Detector AP4C

New developments such as the AP4C have extended the capacity of that technology to include chemical warfare agents and toxic industrial material in a simultaneous mode. There is no limitation in number of gas detected by the AP4C. All nerve agents, all blister agents and all blood agents can be detected by AP4C within the requirements of response time and sensitivity of NATO recommendations. The AP4C has extended the range of chemicals that can be detected by Proengin chemical detectors. All dangerous compounds containing Sulfur,

Phosphorous, Arsenic and/or HNO chemical bond can be detected in a simultaneous way. Of course, as for the AP2C, the AP4C has the capacity to work in very severe environmental conditions (explosive areas) and the measurements are unaffected by high humidity levels or by the presence of other organic chemical compounds such as paint.

The AP4C technology allows the simultaneous detection of an unlimited number of gas and the identification of the



chemical elements that constitute these chemicals. It is therefore possible to detect impure agents or chemicals manufactured by terrorists that would not fit into traditional libraries of other detectors. Moreover AP4C will detect without upgrade new agents that will be developed in the future, as well as still not precisely known agents like Novichok agents (or Non Traditional agents).

The response time is among the shortest on the market, but what makes the AP4C unique is the recovery time after a positive detection.

The AP4C is therefore the chemical detector that has the highest level of availability of the field.

Grateful to its remarkable performances, AP4C has been derived on other detectors, dedicated to the following uses:

- **use on reconnaissance vehicles and battle tanks**
- **use aboard naval ships**
- **use for critical buildings and areas protection**

AP4C-V For use on



AP4C, with 2 supplementary features. It produces its consumable gas by electrolysis, thus lightening daily maintenance, and more than an alarm, is able to trigger the ventilation of the vessels, thus protecting the citadel from the chemical danger. The AP4C-F is able to be operated on open deck, with the same performances.

## AP4C-F For Critical Buildings and Areas Protection

National palaces, courts and parliaments are more and more equipped with fixed chemical detectors. AP4C-F, being able to be operated on naval citadels, is of course able to provide the same detection and protection on terra firma, for this kind of critical buildings.



## Reconnaissance Vehicles and Battle Tanks

Based on the same detection technology and the same internal design, air entrance has been designed to face high wind: AP4C-V is able to take in representative sample of the outside air, even with a direct cumulated wind and speed of 100 km/h. Data are shown on easy to understand control box or directly on the control computer of the vehicle.

Sensitivity, short time to answer, low false alarm rate and short recovery time are the same as for AP4C, making AP4C-V the perfect detector for all kinds of reconnaissance missions and battle field exploration.

## AP4C-F For use Aboard Naval Ships

At sea, ANEP-57 recommendations stipulate the availability of both fixed and mobile means of chemical detection. As AP4C is the perfect mobile chemical detector for contamination control, the use of AP4C-F provides the naval ships with reliable and efficient chemical detection. This ruggedized detector shows the same detection performances as the

## BIOLOGICAL DETECTION The MAB, A New Generation of Biological Field Detector

MAB has the unique capacity of detecting and categorizing biological particles with a proven extremely low false alarm rate and the unique capacity to discriminate dangerous or suspicious biological particles such as Anthrax spores from

natural background.

The very liable MAB has been designed to be mounted on track vehicles. It is insensitive to diesel exhausts.

As all Proengin products and thanks to the flame spectrophotometry technology, MAB is running in very severe outside conditions, shows the lowest false alarm rates (negative and positive) and requires reduced maintenance. It shows such a high level of availability.



## BIOLOGICAL AND CHEMICAL DETECTION TOGETHER AP4C-FB For Critical Buildings and Areas Protection

Government premises, courts and parliaments are also more and more equipped with fixed chemical and biological detectors. AP4C-FB combines both chemical detection as for the AP4C-F, and biological alarm as for the MAB. This detector may be associated with a radiological probe, featuring the all in one full CBRN detector.



Octagon Defence Systems  
Protective Military Wall  
Defence Structures

# WHEN DEFENCE IS SO CRUCIAL THAT LIVES DEPEND ON IT, QUALITY ENGINEERING BECOMES PARAMOUNT.

When defence is so crucial that lives depend on it, quality engineering becomes paramount. You must insist on a premium product that provides not only a durable solution, but one that is able to withstand whatever it is subjected to. With a passion for innovative ideas, the engineers at Octagon Defence have designed a series of defence blocks that protect military personnel and civilians against some of the harshest conditions on the planet.

The Octagon Defence Structure, when interlocked, provides a protective wall or shelter which can be deployed during military and humanitarian operations. The defence blocks come in 3 different grades: The BDS1 for ballistic impact reduction, The FDS 2 for flood impact and the EDS3 for protection against the elements. Each Block is manufactured differently to ensure it withstands what it is being subjected to.

## Ballistic Defence System Blocks - BDS 1

Due to the binding process when producing the BDS1 (ballistic defence system), the finished block has an elasticity which removes the sting of a bullet without chipping. This makes it extremely suitable for live fire situations. The Block's

primary advantage, over other force protection, is its ability to be used countless times. Made from none biodegradable material the blocks will far outlast any other ballistic defence structure on the market today. The Blocks can be joined together either single or double skinned, providing an impenetrable wall which can be tailored to specific threats. Production of the blocks is led by a team of experienced engineers and innovators who work closely together to ensure you get the very finest quality product for the job in hand.

## BDS 1 Defence Blocks

BDS1 Defence Blocks are made with a unique polymer binder which has been buffed 100% the blocks have more elasticity than other ballistic blocks on the market today which means added longevity. They also have a unique patented interlocking system avoiding the use of messy glues to hold them in place. This means the rapid construction of an effective defensive wall with minimal manpower and resources is now possible.

We know that live ranges require unrivalled expertise together with a durable product. Whether it is live fire or simulation shoot houses, most situations require a product

over 12" thick of bound rubber to encapsulate a live bullet. At the end of the product's shelf-life a range is often faced with the cost of disposing of any bullet - impregnated items and this can be costly. With this in mind, the BDS 1 block is designed for easy removal, allowing specific areas to be targeted and renewed. At the end of the blocks life, Octagon takes them back and puts them through a recycling process where they are turned into new ones. For further technical details please see the individual BDS1 Specification Sheet.

## Military Flood Defence System

The geographical scope of floods and the physical and economic issues connected with them are difficult to predict. What is certain is that the damage they cause is on a vast scale, and there are no signs of this changing. The human effect can be devastating.

Not only are electricity, water supply and communications affected, but lives can be lost.

About two thirds of flooding includes surface water flooding - often after intense heavy rainfall overwhelms drainage



systems. The correct and timely deployment of a substantial defence system is crucial if properties and lives are to be saved in the future.

The Octagon Flood Defence System creates a substantial wall that can be deployed with less manpower than conventional sand bags, and at a fraction of the cost of plastic barriers on the market today. A flood defence wall is primarily a vertical artificial barrier designed to temporarily contain the waters of a river or waterway which may rise to unusual levels during seasonal or extreme weather events.



Flood walls are mainly used where space is scarce, such as where building levees or dikes would interfere with existing buildings or commercial exploitation of embankments. This makes the FDS 2 (Flood Defence System) a suitable solution because it can be stacked close by, deployed quickly and efficiently, and is virtually indestructible.

## FDS 2 Flood Defence System Blocks

The FDS 2 flood blocks have a polymer mix which makes them denser than water, providing a perfect solution for most flood situations. The blocks focus around providing commercially driven solutions to

flood problems in tidal, pluvial and combined flooding scenarios. This helps to: optimise risk management and investment strategies in urbanised, farming and commercial areas at risk; work alongside outside agencies to understand the frequency, magnitude and potential of flooding sites; strategically place FDS 2 blocks, reducing the risk of loss often experienced during flooding.

For further technical details please see the individual FDS 2 Specification Sheet.

You can also view the FDS 2 Flood Defence System Blocks in action here on YouTube.

## Military Defence Shelter

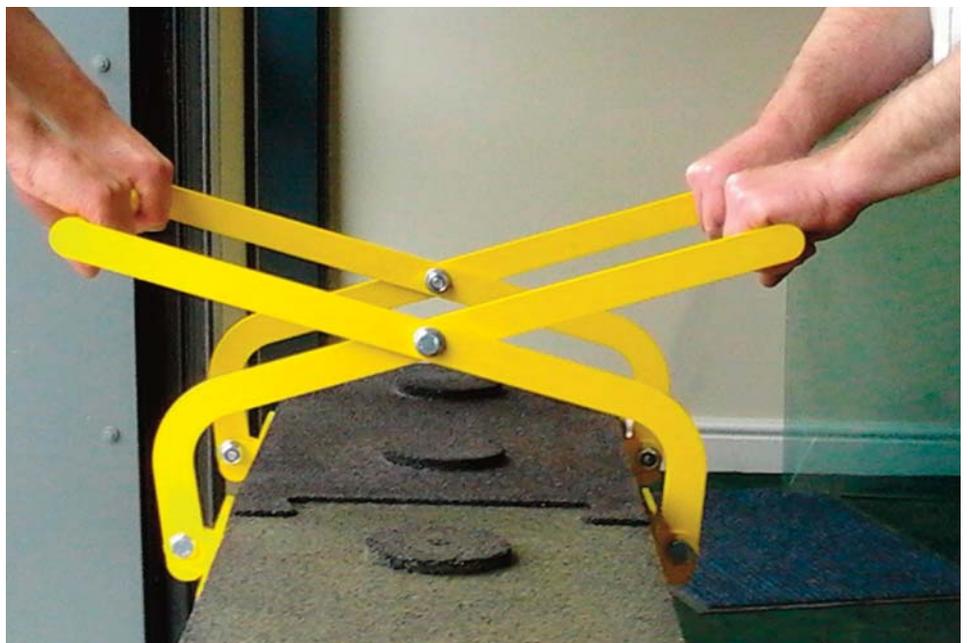
The cleverly engineered EDS 3 Defence Blocks are manufactured much lighter than their brother and sister. They are essentially a building block without the same advanced polymer engineering. Their interlocking system allows the rapid

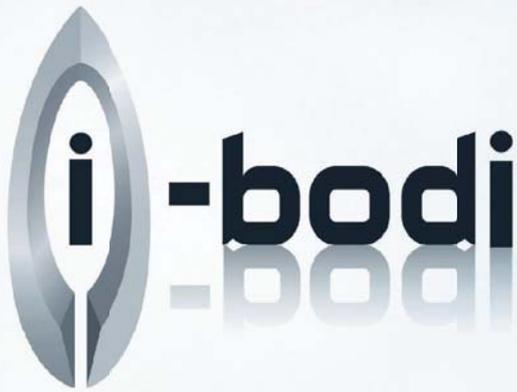
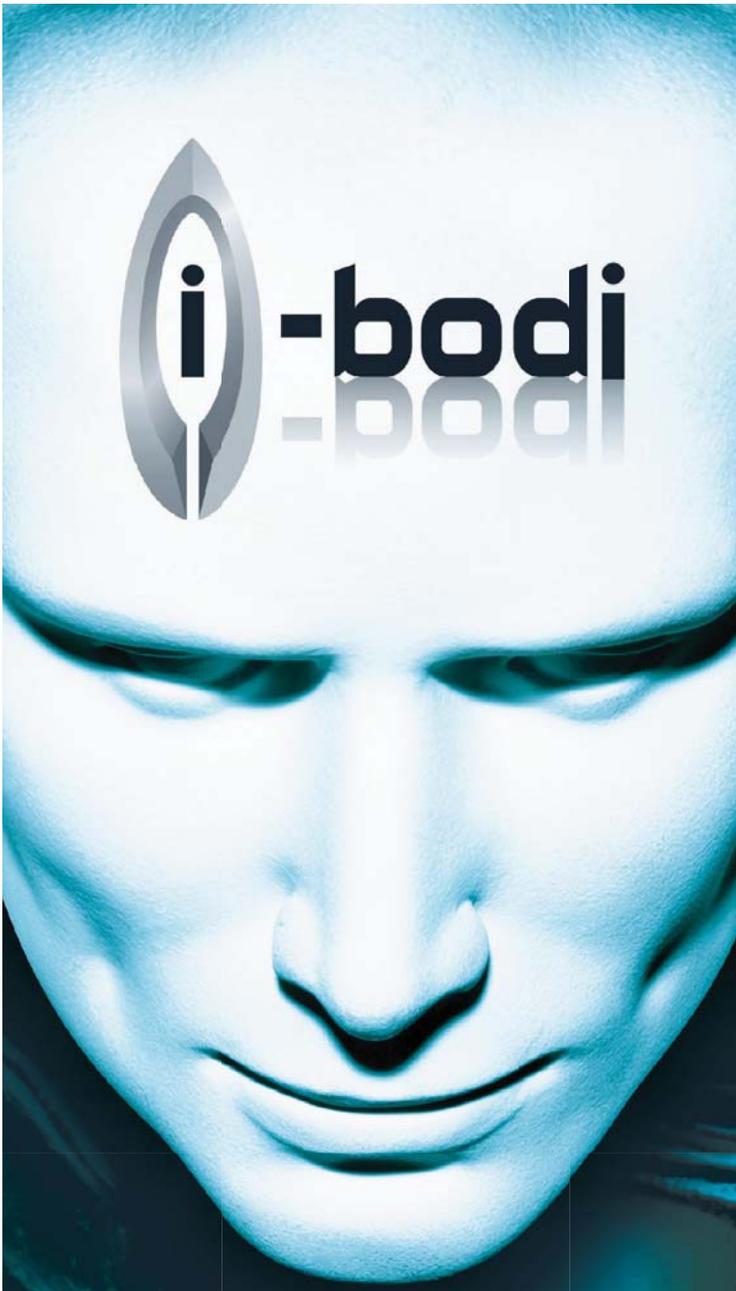
construction of an effective defensive wall with minimal manpower and resources required. Deployment is easier and quicker due to the blocks being slightly lighter in weight. Using the correct handling equipment the blocks can be stacked on and off of combat vehicles quickly and efficiently. This makes them suitable for war zones and humanitarian shelters alike. Our Promise to you:

To deliver environmentally sound products that seek to dramatically reduce the impact of whatever they are subjected to.



To be a global leader in defence innovations, and to instil confidence in organisations and communities that deploy our defence systems. To use, source and supply products that are in keeping with an environmentally sound ethic.





# INNOVATIVE

TEST PLATFORMS

- / ANTHROPOMETRIC, ARTICULATED TEST PLATFORMS /
- / BREATHING, SWEATING, MOVING HEAD FORMS /
- / SOFT POLYMER SKIN-LIKE SURFACE / RUNNING MANNEQUINS /

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[www.i-bodi.com](http://www.i-bodi.com)

## A Handy Innovation

i-bodi Technology has recently designed and developed a Heat Controlled Hand for SATRA Technology, the world's leading research and technology centre of its kind based in the UK. The hand is capable of heating up to 50°C and is used for testing the thermal insulation of gloves to meet the EN511 European Standard. Applying their 'heating and sweating simulation' technology which is used in some of their mannequin systems, the Heat Controlled Hand can also be used for testing gloves in CBRN environments with a suitable wash down chamber.



## A Breath of Fresh Air

New and improved software has recently been developed for the highly regarded DBM-01, a chemical proof breathing machine designed and built by i-bodi Technology. Produced for Canada's Royal Military College in Kingston, the new software is capable of performing sinusoidal, trapezoidal and triangular breathing profiles which can be highly customised. A user friendly and intuitive Wizard allows the operator to alter the amplitude, breathing rate and peak flow rate with maximum flexibility. For further information visit

[www.i-bodi.com](http://www.i-bodi.com)





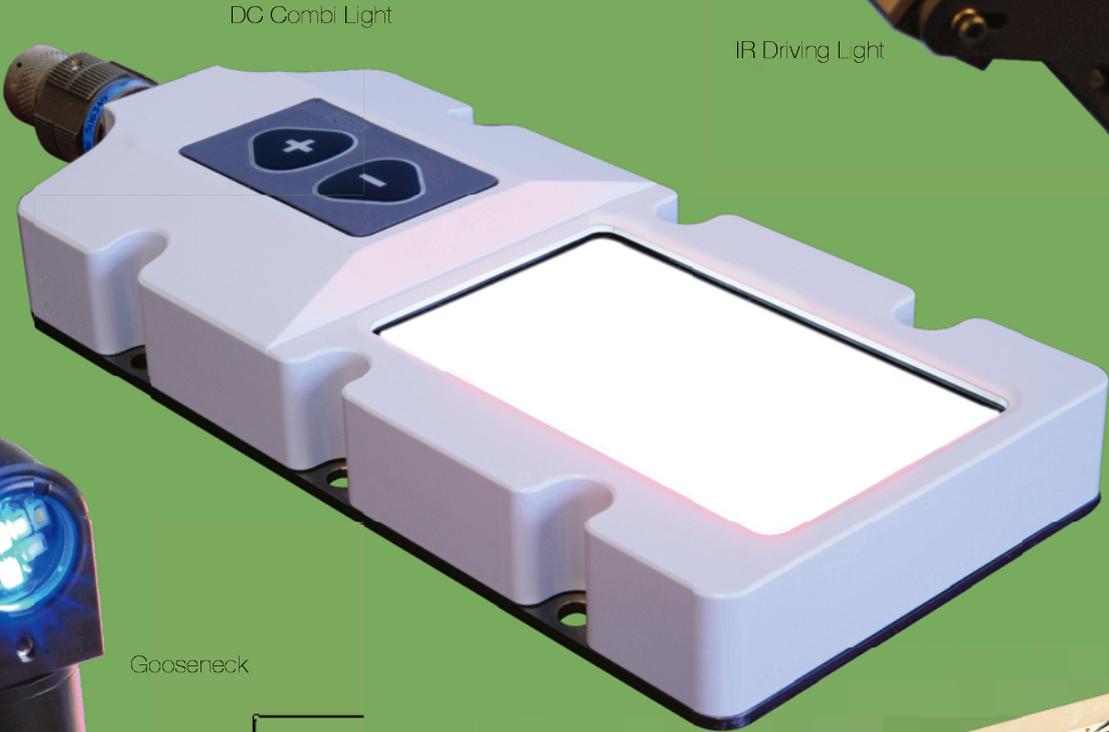
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# Survivability in High-Intensity Counter Insurgency Operations Enduring Lessons from the UK Experience

For the UK forces, operations in Iraq and Afghanistan have brought home the importance of physical protection to those deployed. Preparation for the wrong war, training for conventional tactics, a highly innovative enemy, lack of experience in high intensity counter-insurgency and the cumulative impact of squeezed funding on the land programme conspired to expose the frailties of the British Army's armoured vehicles and individual protection equipment.

Since 2005 there has been an incredible deployment of new capability which has significantly enhanced the survivability of UK forces and saved the lives of many soldiers as a result. Delivery of this capability has seen great advancement in armour technology and the design of armoured vehicles. Whilst technology will continue to advance, there are some enduring lessons which are relevant to all armies faced with the counter-insurgency challenge.

## The Threat is Omni-Present

The well rehearsed principles described in the Survivability Onion remain true whatever the context but the nature of counter insurgency and the specifics of the mission, threat, terrain and enemy tactics in particular mean that they must be applied in a very different way. Soldiers and security forces must operate amongst the population in which the enemy resides and so not being seen is often impossible and not being acquired or hit is a real challenge. Capability planners must therefore think carefully from first principles and take sound advice before

specifying requirements. Conventional armoured vehicles designed for symmetric warfare are typically protected most heavily in the frontal (Whittaker) arc but in counter-insurgency, the threat is omni-present and the enemy is free to attack from the sides and under-belly as well.

The principles of the Survivability Onion are sound but must be applied differently.

## Understanding the Threat

On counter-insurgency operations the threat is real and understanding it is foremost in determining the right approach to survivability. This sounds obvious but platforms procured in peacetime benefit from capability trades based on theory and assumption and are tested only against the system specification document. However, if the specification is not appropriate for the operational deployment then even the most sophisticated platforms can be overmatched by a relatively unsophisticated threat. For the UK, the roadside bombs in Iraq and the buried IEDs in Afghanistan have consigned conventional armoured fighting vehicles to the tank park and resulted in the procurement of over 2,000 new protected mobility platforms.

## Response to the Evolving Threat

Counter-Insurgency operations are generally protracted affairs and this gives the enemy time to evolve his weapons and tactics. The force must be capable of adapting too and this includes its approach to survivability, its vehicles, their protection systems and their concept of employment. Emerging threats

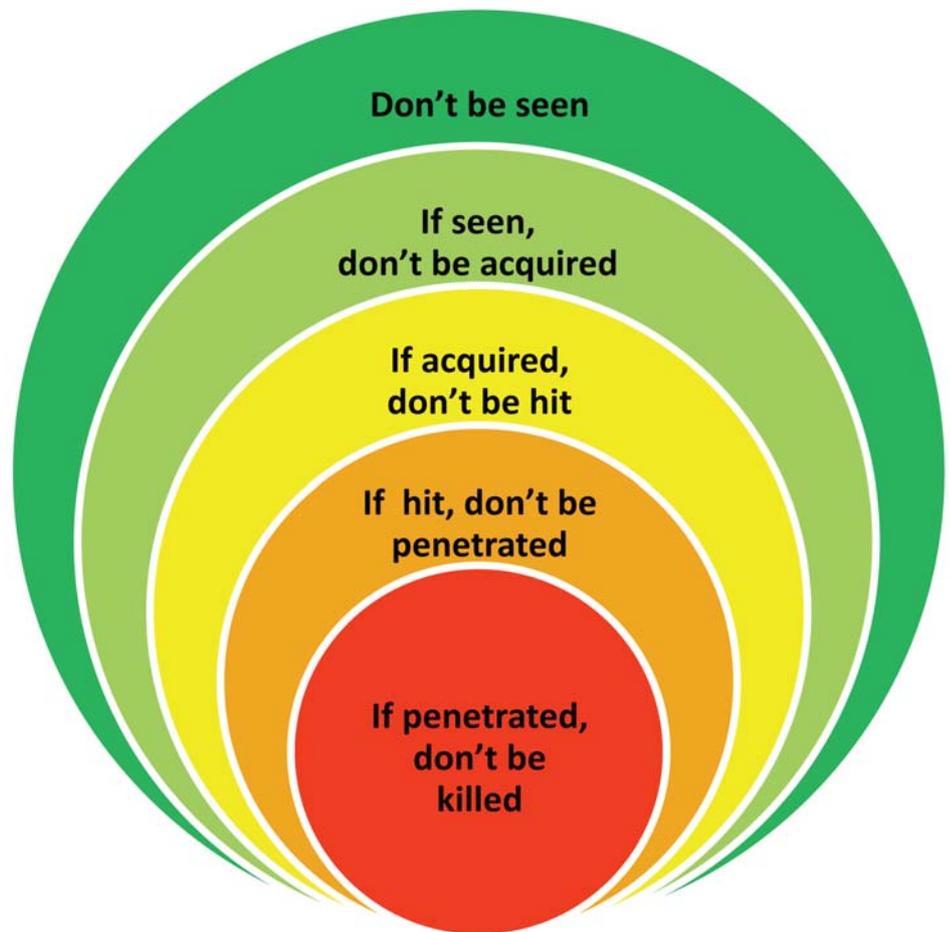
usually result in the addition of armour and electronic systems and hence adaptation requires platforms that can accommodate them. Notwithstanding any fundamental design constraint or flaw, the capacity to deliver this capability growth is determined by weight budgets and power (both automotive and electrical). The most successful platforms have had both in abundance and this should be noted for all future procurements. It is too easy to make over-detailed specifications which force engineers to design to technical limits – the result is that the platform becomes redundant with the first change in circumstance. Both Mastiff and Jackal were designed with plenty of headroom which is a very significant factor in their current success, and this will serve them and the British Army well in the coming years.

## One Size does not fit All

Whilst Mastiff and Jackal have both been successful, they offer very different capabilities. At 25 tonnes plus, Mastiff is a heavily protected troop carrier which excels in transporting soldiers in areas of the highest threat and despite several hundred IED strikes, the survivability record of both the vehicles and the soldiers within has been outstanding. Jackal on the other hand (at 6.6 tonnes) carries far less armour but its class-leading cross-country mobility and terrain accessibility mean that soldiers have been able to avoid the threat. Initially deployed for long range and extended duration patrolling, tactics have developed and it is now used in a number of other roles which exploit its superior mobility.

### Effective Requirement Trades

It is clear from a cursory glance that Jackal and Mastiff are very different and those with even a limited knowledge of military vehicle design will understand that it is not possible to build a vehicle that has the mobility and size of a Jackal and the protection of a Mastiff. This is a stark example but it illustrates a very important point – that there is no sense striving to procure that which is technically unfeasible. But this is a trap that all too often leads to the failure of long term planned procurement programmes. The lack of clear mission or threat definition, the promise of technical advancement, the desire to simplify support arrangements and the ability to trade theoretical requirements can allow bureaucratic process and overindulgence in technical analysis to defeat the case for common sense. For the UK, the operational imperatives of Iraq and Afghanistan have allowed pragmatism to prevail and whilst the complex mix of variants in the UK fleet is untidy, it has delivered the capability necessary for the most demanding operations.



### Technical Expertise in Government

The rapid procurement of new armoured vehicles and protection systems was enabled by a small team in government. Capability managers worked closely with survivability experts in the Defence Science and Technology Laboratories (DSTL), procurement staff, the user and industry. The experience and multi-disciplined expertise in DSTL was of paramount importance and the advice provided ensured that the debate was short and focussed solely on that which mattered. As a result, timely and effective decisions were made as soon as the best (or most pragmatic) course of action was identified. The sort of knowledge that resides in an organisation like DSTL can only be amassed in a government and that is where it should remain. Any nation that is serious about survivability of its armed forces should invest in a similar government organisation and listen to those who know best.

### Close Cooperation between Government and Industry

With close cooperation between capability managers, government experts, procurement staff and industry, it is possible to move at great pace and deliver highly effective results. Sadly, it has been enemy action that has provided the impetus for this to happen

in the UK. The challenge for any government (including the UK) is to achieve the right working relationships all of the time and not just during the heat of conflict. Clearly the political drivers are different during peacetime but with effective capability management and collective endeavour it is still possible to undertake effective procurement action. And all stakeholders would do well to remind themselves that the results of their action will be fully tested when soldiers next deploy in harm's way.

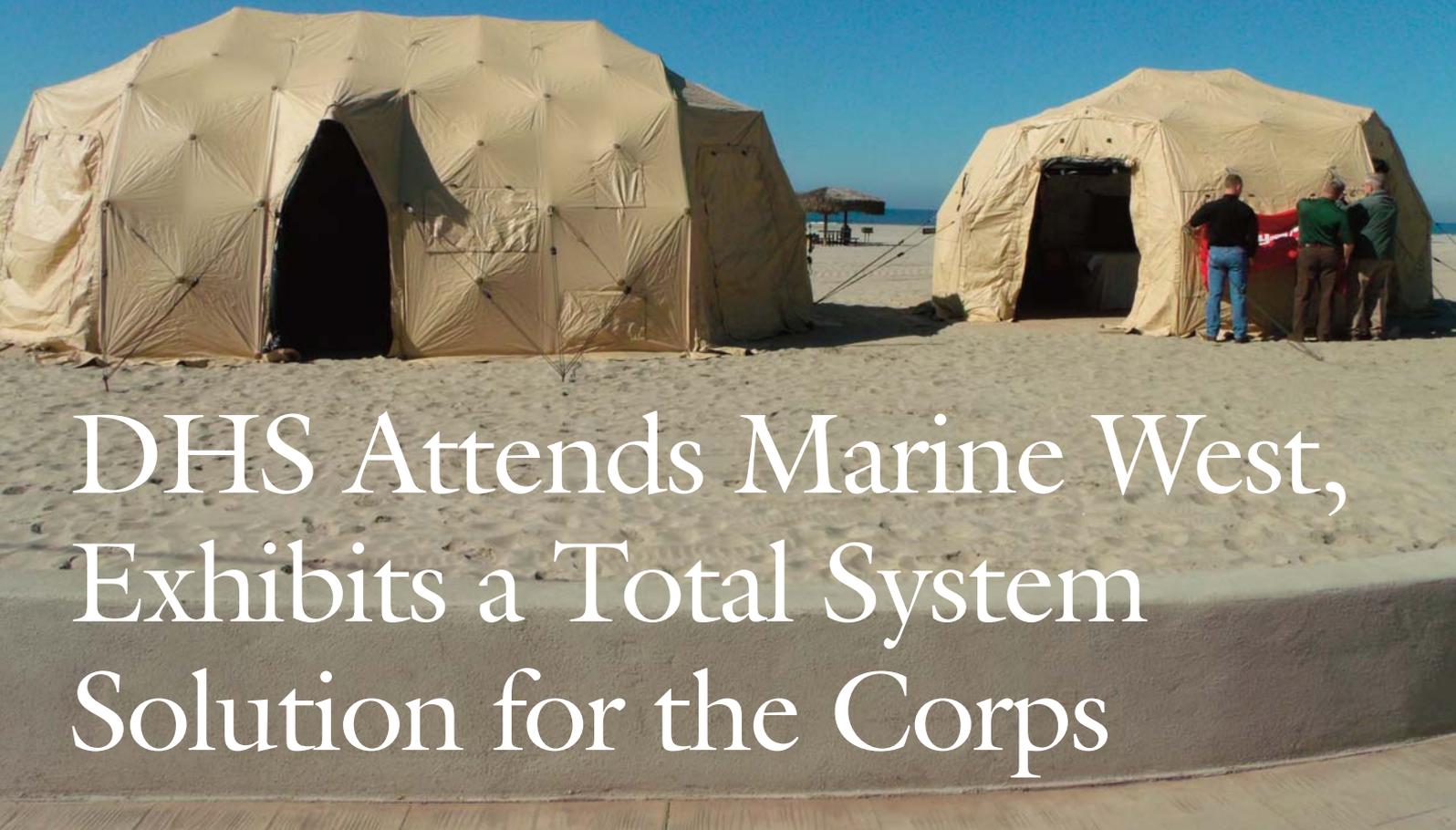
### Importance of Individual Protection

For the deployed soldier (and his family at home), his individual protection equipment (combat helmet and body armour) is of huge importance when he is faced daily with a real threat from small arms, blast and fragment. The British Army was caught flat-footed when it deployed to Iraq and subsequently to Afghanistan. To their credit, the UK government and industry moved at pace to rectify the situation developing and fielding highly effective new solutions in unprecedented time-scales. Thankfully, the mindset has changed and this equipment is now given the most serious consideration at

all levels and every soldier is properly equipped. During peacetime training it is easy to gloss over this aspect of force protection but any army which is serious about operating in a high threat environment must make provision to equip itself and train for the realities of the task.

### Conclusion

UK Forces have experienced counter-insurgency operations in two highly demanding theatres and faced a significant array of the most lethal threats. Many soldiers have lost their lives but many more have been saved through a concerted effort to rapidly field the right equipment for the task. Not every theatre will be like Iraq and Afghanistan but the lessons that they have highlighted will be relevant all the same. Any army which is faced with the challenge of counter-insurgency operations should seek to learn these lessons and invest in the right capabilities before they are required to deploy.



# DHS Attends Marine West, Exhibits a Total System Solution for the Corps

Every year the Marine West Expo hosts the latest in war fighting technology to benefit the current and future Marine Corps. This year's Expo was held on February 13-14, at Del Mar Beach in Camp Pendleton, California. DHS Systems, known for its Deployable Rapid Assembly Shelters (DRASH) has been diligent in supplying the Marine Corps with the most advanced technology to help them overcome challenges and meet demands.

## Intelligent Power Technology Systems Deployable Command and Control Equipment (DC2E)

At the Marine West Expo, DRASH shelters powered by an Intelligent Power Technology System, and outfitted with Deployable Command and Control Equipment (DC2E), formed an energy efficient command operations center.

DHS' command operations center comprised a DRASH MX Shelter and a 2XB Shelter. The MX Shelter offers 442 square feet of useable area and is most recognized as part of the Trailer Mounted Support System (TMSS) for the Army's Standard Integrated Command Post System (SICPS). The 195 square foot 2XB shelter can stand-alone or connect to other shelters, and is known for establishing command and control, life support, medical or surge facilities anywhere quickly and efficiently. An integral part of the command operations center was the DC2E equipment. DC2E demonstrated how a lightweight, portable communications integration system simplifies information management by fusing multiple feeds of information onto a single display.

DHS' participation in Marine West is directly

related to its association with the Marine Corps. In describing this relationship Eddie Hughes, Director of Field Operations commented, "The U.S. Marines Corps have a history of turning to DHS for reliable and battlefield proven solutions to help them conduct numerous operations around the world. Marine West is another platform for DHS to demonstrate how our products are designed to improve their missions."

DRASH Shelter Systems have been used extensively by Marines Corps personnel, including the 13th Marine Expeditionary Unit (13 MEU), 3rd Intelligence Battalion (3 INTEL) and Marine Aircraft Group 31 (MAG 31) to support numerous missions across the globe.

**DRASH**<sup>®</sup>  
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# Instant build inflatable structures



## DESIGN, PLAN, BUILD AND TRAIN IN MINUTES, ANYWHERE

**The military grade inflatable structures offer a unique and cost-effective solution for creating real life active CQB scenarios. Quick to assemble the inflatable walls can be used on almost any terrain, even on rough surfaces and are available in a variety of skin colours. Tough, durable, totally transportable and weatherproof. The urban inflatable system comes with its own design software so you can recreate existing building floors or create your own training areas.**

Some recent examples of training areas seen created include: Kill house, office floor, prison wing cell block, emergency medic station, unarmed combat/PT training area, Settlements and villages, factory floor, school, street patrol scene, ghetto and even barracks.

- Unique patent protected simplicity
- Built to withstand FX Simunition
- Rugged military grade, real rubber internal bladder
- Tough interchangeable vinyl skin in any wall design
- Quick assembly - clip together
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- Totally transportable and weatherproof

# High Performance Passive Command Wire Detectors - WD10



High Performance Passive Command Wire Detectors - WD10

WD10 is a high performance passive command wire detector for use by CIED Search teams and IEDD operators. The detector is easy to use, having simple controls for power and pin-pointing a target. Target detection is indicated by a clear audible alert, via the integral sounder or an optional earphone.

## Command Wire Detector - WD10

The detector is supplied in two parts that are easily assembled for use and split apart for transport using a simple hand-tightened collar fixing. Total time to make operational from packed transit case is less than 3 minutes.



The detector uses sophisticated digital detection and performs automatic calibration to ensure that sensitivity is always optimal. The advanced microcontroller design also performs power management functions and continual background diagnostics.

WD10 is powered by three standard alkaline D cells giving more than 12 hours of typical search use.

The detector features a unique ergonomically designed handle allowing prolonged search periods without strain. The advanced electronics are protected by a lightweight, high strength metal enclosure.

### WD10 Command Wire Detector Key Features

- Detection of surface and buried command wires
- Passive detection method - no radiating elements
- Target detection indicated by variable tone
- Pin-point mode for precise target location
- Automatic calibration for ease of use and optimum sensitivity
- Low power drain for long battery life
- Controls Power / sensitivity control
- Pin-point mode
- Alert volume control
- Indicators Instrument on / function / battery low warning
- Field strength warning if ambient field is outside normal operating limits
- Confidence click indicates correct operation
- Integral loudspeaker for alert tone
- Earphone socket - automatically suppresses loudspeaker

### Battery

Type: 3 off D (IEC-LR20) alkaline manganese cell

Operating time: 40 hours using professional

alkaline battery (typical use)

Option: Rechargeable battery pack

Housing: No tools required for fitting

### Dimensions

Assembled detector: 1380mm long x 45mm diameter

Widest dimension: 200mm to peak of handle

Mass: 2.2kg with batteries fitted

Construction: Aluminium alloy extrusion, GRP probe

### Environmental

Material finish: green-grey drab

Temperature Range: -15.C to +60.C

Submersion: probe submersible up to junction with control housing

Shock: Survives 0.75 meter drop onto concrete.

Typical Performance Target Detection Distance Detection Position

50m wire 225mm centre of wire

50m wire 50mm within 2m of wire end

Performance depends on wire length, buried depth, orientation of wire to ambient radio field, ground conditions and other factors.



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Modern armoured vehicles mount an ever increasing array of electrically powered tactical equipment and systems to provide a military advantage.

To maximise the investment in this equipment there is an increasing demand for reliable power systems that improve operation time and minimise servicing.

**KEEPING YOUR ARMY ON THE MOVE**



EnerSys supplies the trusted and theatre proven **Armasafe Plus** series of lead acid batteries to meet these needs. With over 2 million batteries installed in tactical and combat vehicles throughout the world, **Armasafe Plus** has delivered unparalleled levels of power performance and reliability in the harshest environments.

Critical to optimising the power delivered from the batteries for operational performance is a knowledge of their status. This can now be provided across the full **Armasafe Plus** range of batteries through the complementary **Datacell II** battery monitoring system.

A single **Datacell II** unit is able to monitor up to four battery banks simultaneously to determine and display a number of key parameters. This information allows vehicle operators to maximise energy utilisation, optimising silent watch activities and engine run time to re-charge batteries.

This functionality provides crews with essential information on the State of Charge and State of Health, maximising operational efficiency in mission critical environments, and presents the opportunity to make significant financial savings on re-charging and replacement.

- All **Armasafe Plus** VRLA batteries feature:
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  - Excellent shock and vibration resistance
  - High performance long life
  - Maintenance free



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# MPAS Defence Packaging Award for Polyformes



The Bedfordshire based Polyformes foam and packaging group have been awarded the new Ministry of Defence MPAS Packaging Designer Certificate.

The holder of the Certificate is authorised to certify and approve SPIS Designs for Military Level Packaging supplied to the MOD under Defence Standards 81-41, DEFCON 129 and JSP 886 Vol. 7 8.02. The MPAS Cert will replace the existing Defence Pkg DR/14 requirements for packaging design to the defence industries.

## Ministry of Defence MPAS Packaging Designer Certificate Award

As a direct supplier to the MOD and to many other defence and aerospace related industries, Polyformes high level of packaging knowledge and experience is continually advanced with each new contract and design project. Engineered protective cushioning foams, transit cases, timber crates and composite packaging protection is assured at the highest levels and in keeping with MOD best practice and value procurement procedures.

By purchasing and maintaining high levels of raw materials, coupled with design experience and capability, Polyformes has complete control over stock, traceability and lead times. Benefits are therefore not solely financial but highly

advantageous for production orders as well as initial sampling and development.

## Equipment and Weapons Cases, Foam Materials for Military Applications

NATO Stock Numbered waterproof cases, supplied by Polyformes to UK Defence companies, house all forms of military equipment including rifles, medical kits, radios, communication apparatus and night-vision imagers. These cases meet DEF-STAN 81-41 Level J and STANAG 4280. Cases can be supplied with bespoke protective Plastazote foam inserts, also to DEF-STAN (81-116) for the ultimate in protection. We also make lightweight aluminium cases to order for rapid deployment in NATO green or desert sand colours, empty or with customised foam inserts.

Polyformes closed cell foam is used in a myriad of applications within the defence industry - protective covers, missile cradles and aircraft components, seals and gaskets, filler packs, flotation blocks, tool control inserts, army helmet trauma liners, RIBS stabilisers, pouch and rucksack inserts, sleeping mats, ammunition containers fittings etc.

The Plastazote foam that we generally use for

military components and protective cushioning inserts is advanced packaging material that is stable, non-corrosive and offers long term stability where stocked items can be stored for long periods. Plastazote is oil and fuel resistant. Special explosive compatible grades can be supplied.

## Composite Transit Packs and Pack Design

Within the Polyformes Group, our sister company PSP (UK) Ltd (Performance Solutions Packaging) manufacture timber and ply crates, corrugated transit packs and solidboard cartons. With full DR14 approved MOD accreditation, (and with Polyformes also awarded the MPAS Certificate of Approval for Military Level Packaging Design in February 2013), they can design your packaging requirement from start to finish including the creation of the SPIS's (Services Packaging Instruction Sheets). PSP Polyformes have full testing facilities for drop and transport simulation offering a full reporting system and prototyping service. Inner furniture can be a mix of materials as determined by the requirement -foam, ply, board. Whether for missiles, gearboxes, actuators, anti-tank systems, PSP can pack it!

Where equipment needs security clearance or is still a work in progress, it is no problem for PSP to arrange a team to visit your site to design and package equipment. With a skilled and experienced workforce, they can deal with almost any packaging situation. In addition to on and off-site packaging, PSP offers a full kitting out and managed-inventory service.

The Polyformes Group has been working with NATO armed forces and the UK MoD for over 30 years in which time our manufacturing capabilities have not just kept in line with defence packaging and component requirements, but generally exceeded them. With a full processing facility which includes routing, water-jet cutting, lasering, profiling and thermoforming, the most demanding of foam packaging pieces or components can be achieved.



Think Foam. Think...  
**Polyformes**

# Smiths Detection Starts Supplying Mobile Medical Shelters to U.S. Army

## Edgewood Facility to Deliver More than 100 Dual-Use Systems under \$40m contract



## Chemical Biological Protective Shelters (CBPS)

Smiths Detection has delivered the first Chemical Biological Protective Shelters (CBPS) to the U.S. Army as part of a \$40 million award from the Department of Defense's Joint Program Executive Office for Chemical and Biological Defense.

The self-contained, mobile shelters with 400 square feet of working space will be used for preventative and emergency care to troops in the field. Three CBPS M8E1 units have now been delivered, the first of 111 systems due over the next two years.

Bob Bohn, Vice President - Sales, Smiths Detection, said: "These CBPS units offer the U.S. Army a critical dual-use capability -- a highly

mobile, protected environment for soldiers operating under threat of chemical and biological agents or the harsh conditions of a natural disaster response."

The CBPS protects against potential chemical and biological threats, allowing surgeons to operate in a sterile environment without having to wear protective clothing. CBPS is a dual-use system designed to military specifications but with homeland mission capability to support events such as in the aftermath of a natural disaster. The systems are manufactured at Smiths Detection's recently expanded U.S. headquarters in Edgewood, Maryland.

For technical specifications and more information about CBPS, please click [here](#).

Smiths Detection designs and makes advanced solutions to detect and identify threats including explosives, chemical agents, biohazards, nuclear, radiation, narcotics,

weapons and contraband. A market leader worldwide in providing layered security technologies, Smiths Detection has major plants in three U.S. states. It partners federal and state government agencies and first responders to strengthen homeland security and safeguard the military. Major customers include the Department of Defense (DoD) and Department of Homeland Security (DHS). It is part of Smiths Group, a global leader in the practical application of advanced technologies. Smiths Group employs around 23,000 people, including more than 9,000 in the U.S. where it operates around 100 sites in 40 states.

**smiths  
detection**  
bringing technology to life

# Will-Burt Pneumatic Masts Fulfill Critical Component of Iron Dome

## Pneumatic mast is only one of many that Will-Burt produces for Departments of Defense around the globe

**February 22, 2013**

The Will-Burt Company, the world's premier manufacturer of telescoping mast and tower elevation solutions for surveillance, communication antenna and scene lighting systems supplies the critical antenna elevation mast system that is a critical component for Iron Dome. Iron Dome is a mobile air defense missile system deployed to protect against rocket attack along Israel's northern and southern borders.

The Will-Burt mast system integrated into Iron Dome is the company's Heavy Duty Locking Pneumatic Mast. Will-Burt's pneumatic masts are rugged, stable and proven over many years of use as ground or vehicle mounted elevation systems for antenna or surveillance sensors, including in harsh environments like Iraq and Afghanistan. Will-Burt's locking pneumatic masts have also been used as the antenna elevation system for the Patriot Missile Defense system.

"Will-Burt is proud to serve such a vital role in the performance of the Iron Dome Missile Defense System", said Jeffrey O. Evans, Will-Burt's President, CEO and Chairman. "Will-Burt mast performance and reliability is proven in many applications and in the fulfillment of many solutions, from Military and other government uses in fire and law enforcement to private sector uses in the television broadcast and cellular telecommunications industries." John Stroia, Chief Operating Officer for Will-Burt added "Customers seek out Will-Burt mast and tower elevation solutions when they require a higher level of capability, performance and reliability. Our products ensure optimal performance of surveillance sensors and antenna systems for critical military and non-military operations."

Beyond its pneumatic masts, Will-Burt produces a wide array of high-performance masts that are used by Defense Departments across the globe. Included in its portfolio are its range of lighter weight, high strength carbon fiber masts – from

its low deflection Stiletto mast and its VelociRaptor mast which enables on-the-move surveillance and elevation of Remote Weapons Stations to its Quick Erecting Antenna Mast family of field masts and man-portable Expedition Series field masts.

In addition to Will-Burt's US mast operations, Will-Burt's wholly-owned subsidiary in Waischenfeld, Germany, produces high-performance spindle drive and cable drive mast systems for Departments of Defense in Europe and beyond. Will-Burt also has a wholly-owned subsidiary in Tulsa, OK which manufactures telescoping lattice towers for military, telecommunications, oil & gas, and other industry segments. With all its global operations, Will-Burt is the clear leader in telescoping elevation systems.

.....  
The Will-Burt Company, located in Orrville, Ohio, is the world's premier manufacturer of telescoping mast and tower elevation solutions – the world's one stop shop offering virtually every payload elevation solution from one source – for military, fire, cellular, broadcast, entertainment and other applications. Will-Burt also designs and manufactures military and other shelters made of all-composite materials that deliver higher performance at lower life cycle cost than metal or partial composite shelters. Will-Burt is employee-owned and has a strong commitment to the continuous improvement process set forth by its ISO 9001:2008 certified quality system.



# Teledyne Lighting and Display Products:

**Teledyne Aerospace and Defence Electronics specialises in the development and manufacture of LED based lighting for high reliability applications.**



The ALPHABEAM® product line includes a range of LED (Light Emitting Diode) Aviation lights that replace the traditional PAR (Parabolic Aluminized Reflector) used on aircraft today.

FAA-PMA approval has been granted on most General Aviation aircraft as well as Taxi and Runway Turnoff lights for commercial aircraft. Additional FAA-PMA approvals are pending for a range of other part numbers and applications.

ALPHABEAM® LED light was the first LED Taxi/Landing light approved for General Aviation, with FAA-PMA certifications on over 400 make/model General Aviation aircraft. The ALPHABEAM® also operates on most helicopter models, with FAA-PMA certifications expected in 2014. Additionally the ALPHABEAM® has potential for use on vehicle and ship applications.

The LED light meets all the applicable environmental requirements of RTCA-DO-160E, operates on 12VDC to 28VDC and is not polarity sensitive. It is a drop in replacement for existing incandescent halogen lamps, incorporates screw terminals and requires no aircraft modifications for installation. The ALPHABEAM® LED technology gives equivalent

or better brightness than existing lamps, uses less energy and has a calculated MTBF of 30,000 hours flight time.

ALPHABEAM® II is FAA-PMA certified to replace PAR46 lamps used in Commercial and Business Aviation. This configuration is used for Taxi/Runway Turn-off Lights (Part Number 2307335-1) and Landing Lights (Part Number 2307490-1).

These lamps operate from either a 28VDC or 28V, 400Hz supply, and are direct replacements for existing incandescent and halogen lamps, incorporate screw terminals and require no aircraft modification for installation. The ALPHABEAM® II incorporates power factor correction, an intelligent anti-icing lens and thermal protection from overheating. The lamp meets all the applicable environmental requirements of RTCA-DO-160G. The calculated MTBF is 30,000 hours flight time, significantly increasing reliability of aircraft lighting, and reducing power needed for these essential lamps.

The fourth variant is designed to replace PAR36 lamps (ALPHABEAM® Part Number 2307385-1)

for tail and fuselage operator logo illumination and wing scanning applications.

This LED light directly replaces Q4631 halogen lamps used on commercial aircraft. The benefit is the durability and long life of the light for these difficult areas to maintenance, as well as reduced power consumption for these applications used for longer period than those used in landing, taxi and turn-off applications. FAA-PMA certifications for this part number are expected in Q4-2013.

The two major advantages of LED technology is the operating life of the lamp and the power savings. Coupling these features with the superb design and manufacturing capabilities of Teledyne Lighting and Display, these lamps are a significant advance for aircraft and many other lighting applications.

[www.teledyne-europe.com](http://www.teledyne-europe.com)



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