

# MILITARY SYSTEMS

E T E C H N O L O G Y

## VECTRONIX

High quality laser range finders

## SPECTRA SLINGSHOT™

Enhancing tactical radio beyond  
line of sight capabilities

## STONEHAVEN ENGINEERING LTD

Engineering Excellence for the  
Harshes Environment

## ULIS

Thermal imaging, for mission-critical  
night vision in the field

## BRUNTINGTHORPE PROVING GROUND

Leading testing facility for the  
automotive and defence sectors

Image Courtesy of Bruntingthorpe Proving Ground



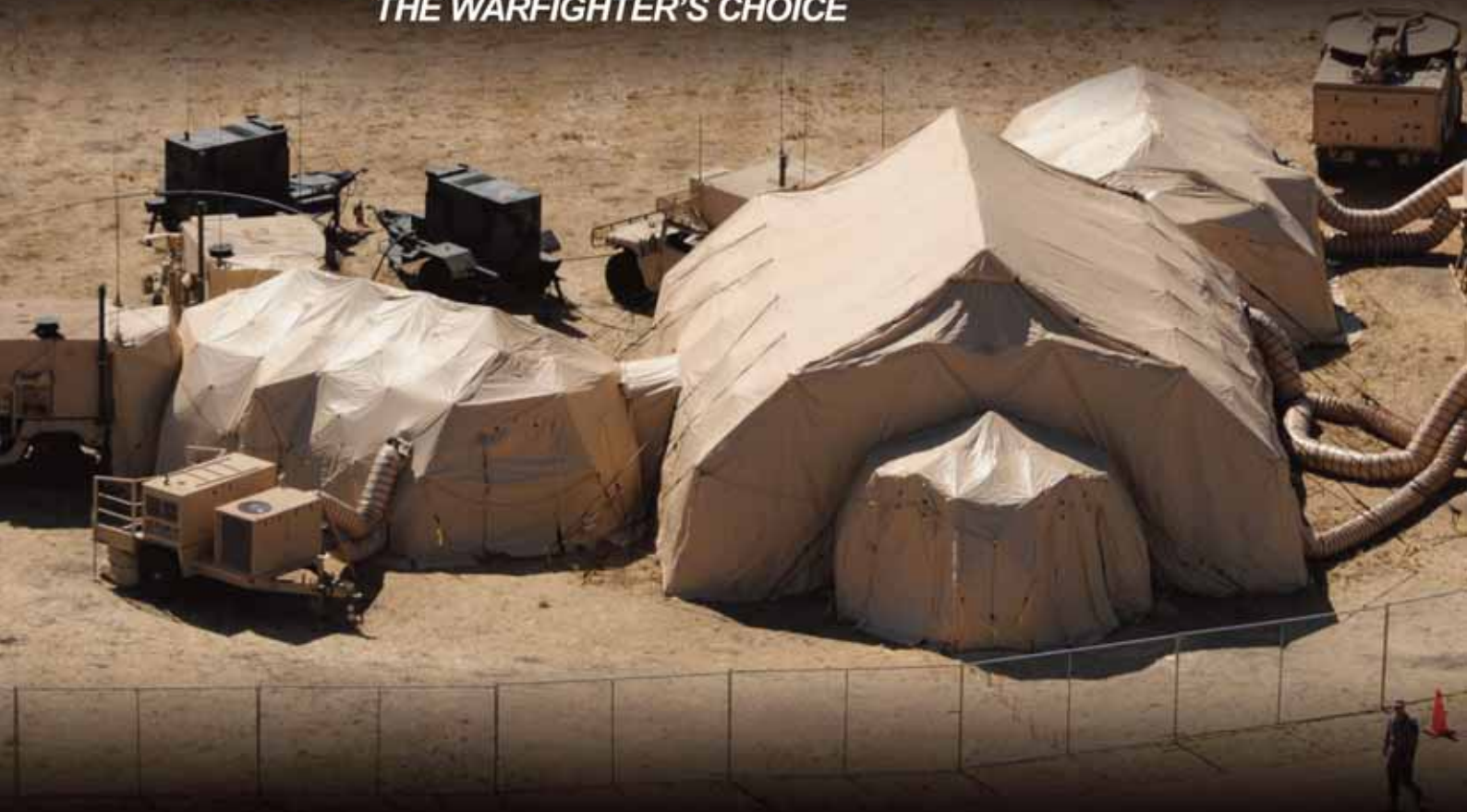
**BREAKING  
NEWS FROM...**

**BUGEYE TECHNOLOGIES**  
**CELLEBRITE**  
**DOMETIC**  
**MARSHALL**  
**NORTHROP GRUMMAN**  
**POLYAMP**  
**R. A. RODRIGUEZ**  
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## 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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# HIGH QUALITY LASER RANGE FINDERS



There are laser range finders and then there's the Vectronix PLRF25C

It's not often that one has the opportunity to T&E a piece of military technology that is truly excellent, and there's certainly no shortage of laser range finders available to the warfighter; however, they generally involve compromising on size and weight to gain performance. I'm here to tell you those days are over! Observe, record and report are a large part of what forward observers and reconnaissance / sniper teams do. Their activities are essential to the intelligence gathering process and preplanning that goes into a successful kinetic operation. Having a lightweight, rugged, compact, fast and accurate ranging device is extremely important; unfortunately, all laser range finders are not created equal making the selection process quite often difficult. When I received a green light to T&E Vectronix's PLRF25C, I spent a considerable amount of time structuring a test scenario that would be a reliable indicator of performance; laziness steel plates at unknown ranges is simply not enough. I decide on an approach that closely resembles what a reconnaissance team or forward observer is likely to encounter in

preparation for, or during a kinetic operation. I was in Tampa, FL and I decided to conduct my testing at Tampa's seaport. This was rangefinder hell, and if you've ever ranged a target across long spans of water, in bright light, you know what I speak of! Vectronix AG, based in Switzerland, recognized a need for high performance pocket laser rangefinders and introduced a line of compact Mil-Spec rangefinders in 2001. The PLRF25C was introduced at dSEI 2011, as the most compact Mil-Spec pocket laser rangefinder. I'll comment on the "pocket" concept a little later. The PLRF25C is a professional's tool; offering snipers, forward observers, reconnaissance teams and well-heeled marksmen a powerful Mil-Spec laser range finder with range performance of up to 4,000 m and a weight of 500 g. If the only thing the PLRF25C did is measure line of sight distances it would still be worth the rather princely sum of \$8,000+; however, prospective buyers will be glad to know that it goes just a tad beyond basic range finding. Let's begin with optics. The PLRF25C offers exceptional optical, clarity and resolution from its 6x magnification - truly exceptional. The PLRF25C automatically accounts for the inclination angle and provides its user with the equivalent horizontal distance. Vectronix performs this calculation automatically, so there is no need for additional computation by the user. However, it doesn't stop here. The PLRF25C will also calculate the vertical

distance 'V' from the horizontal plane to the point of aim, as well as provide the azimuth to the aiming point using the internal electronic compass. The PLRF25C will also give the operator, the distance between two points measured on the horizontal plane. An operator will be confronted with potential targets that are extremely difficult to laze. Difficult targets include distant targets with low reflectivity. There was nothing the PLRF25C could not range in a second or two, at most, within its performance envelope – including aircraft in flight. Pretty amazing! ... ranging in the darkness of night worked equally well. Ergonomics on the PLRF25C are superb. The unit can be completely configured and operated using the push of a button and just one hand.

If that's not enough for you go for a short swim with it. The PLRF25C is water resistant up to 10 meters. Now we get down to the "pocket concept," at 131 x 88 x 56 mm the PLRF25C is not going to fit in your Armani Jeans' pocket; however, it does fit into a small MOLLE pouch and that's good enough for me. And, with over 3000 measurements on a single CR123 – your mileage may vary – the PLRF25C is well worth the \$8,500 price tag. I can tell you the PLRF25C rocks – buy it and never look back! (by: Sal Palma, © 2012, Twobirds Flying Publication).



# PLRF The Rangefinder Legacy Continues<sup>+</sup>



## PLRF25C

### Pocket Laser Range Finder

- + Smallest MIL-SPEC rangefinder available
- + Best performance/weight ratio
- + 1-Button-Operation
- + Fits into pocket
- + Rugged, waterproof, no moving parts
- + Bluetooth compatible

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**vectronix** 



# ENHANCING TACTICAL RADIO BEYOND LINE OF SIGHT CAPABILITIES

UHF tactical satellite (TacSat) capability is a scarce resource that eludes many end users due to high demand and cost. As a technology it creates a Beyond-Line-of-Sight (BLOS) Push-to-talk (PTT) network using tactical radios on land, maritime and aviation platforms.

For militaries worldwide there are many benefits TacSat access provides; extended range, minimal effects of terrain on signal quality, no ground-based repeaters required, maximum flexibility in siting and rapid network deployment.

However, cost and spectrum availability restricted the availability of TacSat to only the highest priority users such as; Special Forces and high priority tasks.

## Slingshot™ Capability Development

In November 2012 Spectra Group (UK) was approached by Inmarsat to develop a commercial L-band TacSat capability that would provide cost-effective access to a wider user base and offer a complimentary option to UHF TacSat. This decision was based upon Spectra's reputation as a leading provider of satellite communications (SATCOM) services and expertise in the

design, manufacture and delivery of satellite and radio capabilities.

Within one month Spectra had produced a working prototype, designated Slingshot™, and were able to demonstrate end-to-end connectivity of military UHF radios over the Inmarsat I-4 satellite constellation.

For maximum benefit SlingShot™ was designed to be radio-agnostic and add L-band satellite communications to the radio using the Inmarsat-4 Satellite network. The system consists of; an L-band antenna, power supply unit or battery and an appliqué connected between the radio transceiver output socket and antenna as shown in the block diagram below.

Spectra will provide a power supply unit for the vehicle and marine variants. For the Manpack variant in-service NATO codified battery packs will be used and these can be supplied by Spectra, if required.

Fully compliant to CE, FCC and C Tick standards Slingshot™ has been designed to operate in temperature ranges from -26 to +58°C. It will have an IP 67 rating and comply with MIL-STD and DEF-STAN.

Built for dismounted operations the small form factor Manpack appliqué will be 170 x 75 x 29 (mm) and weigh 495g. With an

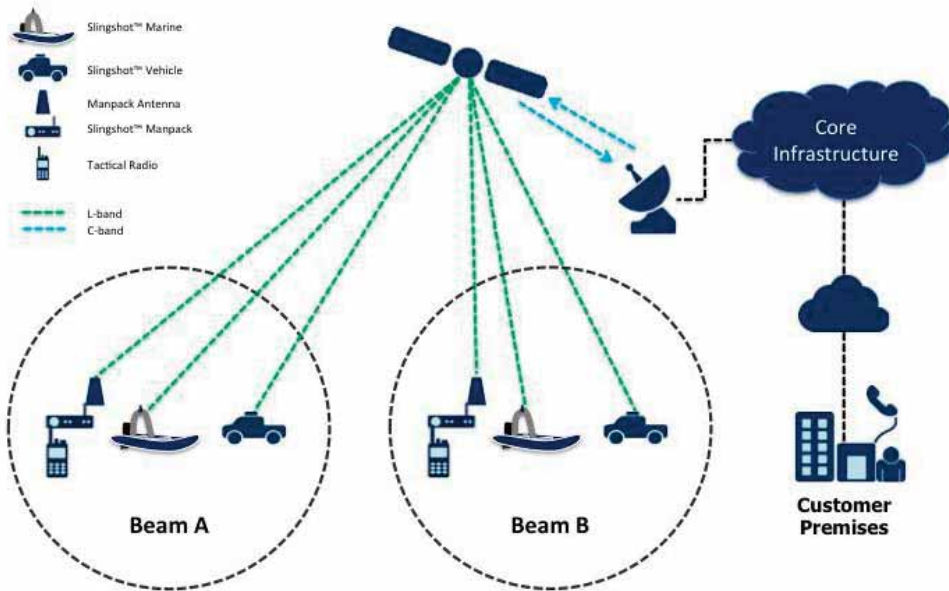
antenna weighing 260g the combined system weight will be in the region of 2kg depending on the battery pack utilised. The vehicle and marine systems will be 170 x 87 x 29 for the appliqué, 146 (diameter) x 72 (height) and 120 x 90 x 60 for the power supply with a combined weight of 1,680g

Working in partnership with Inmarsat a fully flexible airtime plan was developed, L-TAC. This is a leased service operating on the Inmarsat-4 constellation, which assures proven reliability, longevity and quality of service. The I-4 satellites are in-service until at least 2022. Users will be able to lease services for a fixed period with lease plans as short as one month.

Recognising the need for in-service support Spectra has enhanced its existing 24/7 network operating centre. It will be able to provide 3rd line support from system launch and be manned by personnel who have many years experience supporting both the Inmarsat network and military radios.

## Slingshot™ Operational Overview

Slingshot™ has been designed to provide end users with a capability that fully meets and often exceeds their requirements. From the



## Scenario 1 – Single radio net in the same beam

Users on the same UHF frequency within a single Narrow or Regional Beam can communication with each other. One user transmits on the radio and all other users on the same radio channel and encryption will receive the transmission. Transmissions go up and down in the same beam.

## Scenario 2 – Multiple radio nets in the same beam

The I-4 channel can be sub-divided into a narrowband mode (ANDVT) and provide up to five separate sub-channels. This will allow users on different UHF frequencies to operate in the same Narrow or Regional Beam as in Scenario 1.

## Scenario 3 – Single radio net in different beams

Utilising the ability to link narrow beams in the same Global footprint a single radio net can be connected across two separate narrow beams (double headed beam). Users in Beam A and Beam B on the same frequencies can communication with each other. One user transmits on the radio and all other users on the same radio channel and encryption will receive the transmission. Transmissions go up and down in both beams.

outset the system design criteria included different operational scenarios and a capability that could be used on land, sea and in the air.

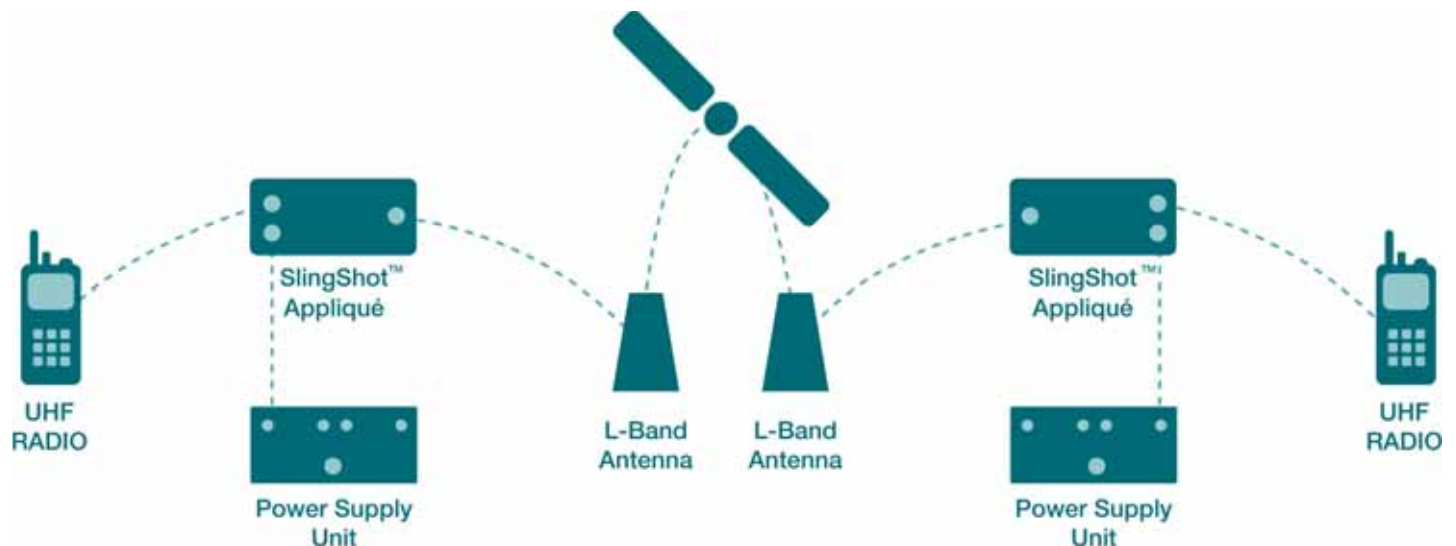
Inmarsat’s L-TAC service is available throughout the global footprint of the I-4 constellation. It will be possible to operate in both individual regional and narrow spot beams and, due to the sophisticated capabilities of the Inmarsat network, nets can be connected across more than one beam when required. In addition customised beams covering specific area of operations will be available for lease, subject to the resources being available on the constellation when ordered. Recognising that the user’s concept of operations or theatre of operations may not be constant during the period of the lease, Inmarsat will include options to change the configuration during the lease period (subject to agreed conditions).

The Spectra capability and Inmarsat service

have combined to provide a multi-platform solution, which can be operated in a number of different scenarios which are shown below.

A significant value-added feature of this solution is the reach-back capability that can be provided via the C-band downlink from the Satellite to a C-band antenna at either a user defined site or Inmarsat’s Satellite Access Station. This is a customised option that allows any traffic transmitted on the L-band radio net to be sent via the C-band link.

In all scenarios users can establish a connection in either the Inmarsat narrow beam or regional beam. When operating in the narrow beam range is extended up to 1000 miles and in the regional beam up to 2,000 miles. In all scenarios below users on the same radio channel and encryption can communicate without changing their operational procedures. The L-band beyond-line-of-site extension is transparent.





## Scenario 4 – Separate radio nets in different beams

In the final scenario different nets can be established in different beams and separation maintained.

## End User Features and benefits

With any new capability the cost of investment requires a solid business case. With this in mind the system was designed to minimise the capital expenditure. This has been achieved by providing a platform that allows users to re-use their existing radios with national or coalition encryption, doesn't require new infrastructure and provide a familiar user experience with minimal additional training

Spectra spent a great deal of time working with both Inmarsat and the end user community to understand what features and benefits would be essential in meeting user requirements. The following table highlights the key features and benefits.

### Features

- Designed for the Inmarsat-4 global satellite constellation
- Complements existing military capacity
- Utilises Narrow Beams, Regional Beams, Customised Beams

- Lease airtime for a minimum of 1 month
- Based on 25kHz Channel
- Customised option to maintain C-band downlink
- Radio agnostic
- Reduced size, weight & power
- Omni-directional antenna

### Benefits

- Proven worldwide connectivity
- Access for land, maritime and aviation platforms
- End users can prioritise traffic access between military and commercial platforms
- Maximum flexibility in high tempo operations
- Excellent cost optimisation
- Accommodate 1 x Wideband or up to 5 x ANDVT nets
- Antenna in User HQ (out of area) can be connected to the Radio Net
- User can deploy Slingshot™ across their fleet of UHF radios
- Excellent for sustained communications on the move operations
- No need to stop and deploy an antenna

double headed narrow beams.

The partnership between Spectra and Inmarsat has a long history and provided a solid foundation for the development of the Slingshot™ capability utilising the L-TAC service.

Andy Start, President, Inmarsat Global Government, said: "We are delighted to be launching this new service in partnership with Spectra. L-TAC will enable militaries to exercise greater command and control through existing tactical radios at a realistic cost with leases available for periods as short as one month at a time. The operational benefits for soldiers on the ground are enormous, providing low risk, highly resilient and easy to use connectivity independent of local infrastructure or terrain."

Simon Davies, Managing Director, Spectra Group commented: "This service will enable governments to provide enhanced satellite and radio communications without large capital expenditure. As governments around the world review military budgets, this is a highly compelling offer."

For more information please contact: Steff Taylor at [s.taylor@spectra-group.co.uk](mailto:s.taylor@spectra-group.co.uk)

## Conclusion

Slingshot™ will change the way end users can deploy and operate their UHF radio networks.

This new and innovative capability can either be used to extend the range between individual radios by using a single hop L-L band relay on Inmarsat's L-TAC system or connect dispersed radio nets together using



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# ENGINEERING EXCELLENCE FOR THE HARSH ENVIRONMENTS

Tough conditions, from combat zones to working in the most extreme environments, demand rugged, reliable equipment which can operate at maximum efficiency – whatever the location. Stonehaven Engineering have been acknowledged leaders in this field for over two decades. We offer a range of tailor-made, custom-built products for the defence and other industries to meet the most challenging specifications – from container-built laboratories for Antarctica to rapid-deployment field camp, ablutions, laundries, medical support and accommodation for battlefield support in the desert.

Stonehaven is a flexible, progressive company. Our skills in the design, construction and fit out of rugged modular containers for the defence industry can be applied to many other projects, however large or small.

Our success has grown from our ability to produce the highest quality products at competitive prices. Our reputation is further enhanced by our ability to deliver to schedule, with rapid reaction times. With many projects, we measure design, production and delivery times in hours and days – not weeks and months.

Every project we handle is tackled with the same high degree of efficiency, innovation and flexibility. Every client receives the support they seek in finding the right solutions. This is the hallmark of our leadership in our field of engineering.

## About Stonehaven Engineering Limited

Stonehaven Engineering Limited was founded in 1991. The Scottish Registered, private limited company was created to meet the requirements for a flexible, specialist service to the defence and other industries. One of our very first projects was to design and construct refrigerated containers for use at the British Army camp at Belize airport in Central America.

These were specifically designed and built as a temporary freezer/chill store to meet the extremes of temperature found in Central America. It is a measure of the unit's robustness that the stores are still in use today – almost twenty years after it was delivered and installed as a temporary stop-gap.

This led to the British Antarctic Survey's choice of Stonehaven Engineering as the best company to provide custom-built laboratories which could be easily shipped





and installed at their site in some of the most extreme conditions to be found anywhere in the world.

We have built on these early successes, tackling a very wide range of projects and successfully achieving some of the most demanding specifications and design, build and fit out delivery schedules.

Stonehaven Military Modular Containers Our acknowledged expertise in the design and construction of tailor-made military modular containers has made Stonehaven Engineering the first choice for a range of clients including the Ministry of Defence. These containers are designed in close co-operation with both our clients and component suppliers, working as a team to meet the highest specifications across a very wide number of applications in both hazardous and safe areas.

These highly versatile, easily deployable ISO and varied size containers can be fitted out for the widest possible spectrum of uses across the globe.

**Typical applications include:**

## Military Accommodation Units, Containers and Shelters

Accommodation shelter with on board power generation, mapping area, sleeping and eating facilities.

## Temperature Controlled Refrigeration / Freezer Containers

Temperature controlled dual function refrigeration / freezer containers with multi-use adaptable stowage racking and pallet lashing, rugged military use, operable via on-board plant engine or alternative electric operation as deployment demands.

## Modular Linked Containerised Complex

Modular linked containerised complex of crew room, command post briefing area with kitchen, toilet facilities and changing area.



## Temperature Controlled Hazardous Goods Storage

Hazardous goods storage area with temperature controlled conditioning and monitoring / charting system, within a 20ft ISO footprint with ramp access, internal bunding and chemical resistant materials.

Other Typical applications include:

- Laboratories
- Medical units
- Showers and toilets
- Kitchens
- Refrigeration units, chill and freeze
- Ambient units
- Laundries
- Locker rooms
- Sleeping accommodation
- Battery charging facilities
- Transportable parts stores
- Plant rooms
- Safe shelters
- Radar and communications offices
- Command posts
- Recreation and mess rooms

These are just some examples – it is not an exhaustive list. We are constantly called in to design and build containers and other assemblies like tented, rapid erection ablution facilities for temporary deployment for different uses and our design team are always on hand to face fresh challenges – and always find the right solution. At the right price and on time.

“We engineer to suit every individual application, meet each client’s specifications and provide solutions for each project’s requirements – however demanding.”

## Engineering Skills in Field Camp and Temporary Deployable Accommodation – TDA.

The Stonehaven Engineering team has all the necessary engineering and project management skills to see complex camp infrastructure contracts through from start to finish – down to the smallest detail. Our TDA products are currently in service in many regions across the world, including Bosnia and Kosova, Iraq and other Middle East countries and Afghanistan.

**Products & Applications Include:**

- Purpose-built ISO containers
- Military shelters
- Integrated hook-lift container systems
- Expeditionary camp infrastructure
- High specification mobile units

**Fully built-in services available to provide:**

- Ablutions
- Catering
- Laundry
- Washing
- Ambient storage
- Frozen storage
- Water and power distribution

## On site testing

The rough-and-tumble of action in the defence field and extreme environments leaves no room for weaknesses in equipment. We know that from years of experience and carry out the most rigorous testing programmes and procedures to ensure that our equipment



can be installed rapidly and works efficiently and effectively – whatever the location and whatever the scenario.

Every component and unit we produce undergoes the fullest range of tests at Stonehaven before commissioning, despatch and delivery.

And, for peace of mind, a full test manual is provided with every one of our products so that the customer can carry out their own tests following identical procedures to ensure that the unit will do its job as and when it is needed.

## Military Rapid Deployment Shelter Design Expertise

Our design team use the latest CAD systems at the design stage to ensure that

every product will meet its individual requirements. It's a completely flexible service which can tackle projects ranging from rapid deployment shelters for desert conditions to converting a surplus fuel tanker into a mobile police command post. The designs take into account a very wide range of factors governing the unit's use including ambience, temperature, humidity, weather conditions, air conditioning, heating, internal drainage and the storage with recycling of water.

Containers can be designed for transport by sea, land or air, with the option of fixed, mobile or re-locatable usage. Versatility is built into many of our product designs so that the same unit can be re-located from high temperature environments like the Middle East to the Falkland Islands with no modification.

Designs also take into account local power

sources to ensure that once the unit is set up on location, it can interface with the defined power source immediately.

Defence is a dynamic, rapidly changing industry, and our innovative approach makes it possible for us to respond to these changes swiftly. For example, we have met the growing demand for DROPS – Demountable Rack Off-loading Pick-up Systems products - and produced containers for this application.

These are specifically designed for rapid deployment so they can be loaded and unloaded in a matter of minutes and put into service immediately. A number of Stonehaven DROPS units have seen service worldwide.

## The Best Components

We source the best available components with a proven record of reliability. These range from major items like refrigeration units and heavy-duty washing machines to the smallest details – down to the best taps and showerheads for use in shower facilities for combat conditions. Tenders include comprehensive spares packages. By choosing and working with the best suppliers, we ensure that clients benefit from our suppliers' worldwide product support networks.

## Meeting the Specification

Our containers and other assemblies can be designed to meet the highest specification standards of fire ratings, acoustic levels, radio frequency interference (RFI), and pressurised for protection against nuclear, biological and chemical contaminations (NBC).

## On Site Construction

Each container or assembly is constructed and fitted out at our Stonehaven facility. The construction techniques and materials used for the main 'outer shell' of our containers can vary from mild steel, stainless steel, aluminium skin, armour plating, glass reinforced plastic, composite or sandwich panels. All units are generally constructed to withstand the varying climatic and environmental conditions which can occur in multi-location operations.





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# Thermal imaging, for mission-critical night vision in the field

In today's conflicts, field conditions are increasingly unpredictable and threats can appear out of nowhere. This constantly-shifting landscape is further complicated by hostile mission environments like deserts, mountains, dense forests, and urban areas. Add to this new types of enemies—insurgents, terrorists, militias, gangs, and hooligans—and the capacity to rapidly assess the environment becomes a life-and-death matter for your military, paramilitary, and security troops.

Mission safety and security depend on fast, reliable information about the terrain for fast, targeted responses during the day and—especially—at night.

In these sometimes-extreme mission conditions, thermal imaging can help make sure your troops come home safely.

Unlike other technologies like image intensifiers and near infrared imaging, which require outside light sources, thermal imaging—a passive technology—gives your troops a clear tactical advantage over their adversaries, in all conditions.



## Benefits

- Excellent image quality day and night and in all weather conditions
- Faster, better decision-making for safer, more accurate responses in the field

## Military and paramilitary applications

- Field reconnaissance
- Mission security
- Mission surveillance
- Border control
- Target acquisition
- Driver assistance

## The silicon microbolometer for clear, crisp images in all conditions

First developed over twenty years ago for civilian applications, silicon microbolometers have significantly matured and today offer outstanding levels of performance. They are used in commercial products and strategic applications like thermal imaging cameras used for night vision and temperature measurement; fire, search, and rescue missions; and home energy audits.

Widespread mass-production for commercial applications has brought microbolometer costs down to levels that are compatible with common military applications, enabling you to equip each and every soldier for surveillance, situation awareness, and driver vision enhancement.



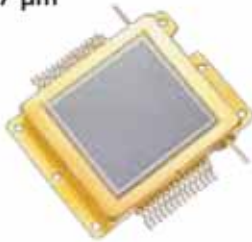


# elite series

## Pico1024E™

UL 05 25 1

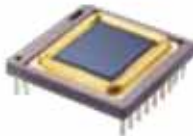
1024 x 768 - 17  $\mu\text{m}$



## Pico640E™

UL 04 32 2

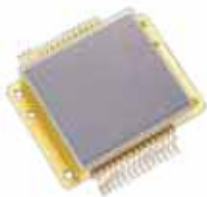
640 x 480 - 17  $\mu\text{m}$



## Nano384E™

UL 03 19 1

384 x 288 - 25  $\mu\text{m}$



### ULIS infrared imaging sensor performance specifications

- High sensitivity (< 50 mK thermal resolution)
- Fast response time (frame rate of >50 Hz)
- Small pixel size (17 $\mu\text{m}$  pitch for compactness and resolution)
- Several array sizes available up to XGA (1024x768 pixels)
- Approved for use in harsh environments (MIL-STD-810/883, TWS)

## ULIS, your partner for night vision enhancement

Since its inception in 2002, ULIS has been developing silicon microbolometers for use in a wide range of applications. As a result of ongoing product development work, ULIS offers high-performance solutions for strategic applications, backed by the guarantee of mutually-beneficial long-term partnerships with Original Equipment Manufacturers (OEMs).

As a component provider, ULIS today is uniquely positioned to meet the needs of the most demanding military and paramilitary applications by delivering comprehensive night vision enhancement solutions.

ULIS customers retain total control over the information transmitted by their systems—crucial in times of conflict.

### Robust, high-performance solutions

- Crisp, high resolution (up to XGA) images at night and in fog or rain
- Field-tested robustness in harsh mechanical environments (MIL-STD-883/810, TWS qualified)
- Sun-resistant
- Meet military SWaP reduction requirements

### Access to state-of-the-art technology

- Benefit from the latest technologies on the market (17 $\mu\text{m}$  pitch)
- Retain total control over system design
- Get proven technology based on established semiconductor manufacturing processes

### A unique business model

- Infrared sensor provider to OEMs
- The guarantee of long-term partnerships with infrared system manufacturers

### Best-in-class customer support

- Dedicated customer support from development to production
- Solid experience working with technology business units

### Guaranteed long-term product availability

- Product lifetime compatible with military programs
- Independent supplier located in Europe
- Non-ITAR products

## Performance you can count on for critical missions

ULIS is the world's leading provider of infrared imaging sensors using amorphous silicon microbolometer technology. MEMS-based amorphous silicon microbolometers deliver all the advantages of silicon processing, including low cost and high yield. In addition, because they are highly

sensitive to infrared radiation, they are ideal for use in thermal imaging cameras. Designed in a high-reliability package approved for use in harsh environments, amorphous silicon offers the performance and robustness that military and paramilitary applications demand.





# LEADING TESTING FACILITY FOR THE AUTOMOTIVE AND DEFENCE SECTORS

Bruntingthorpe Proving Ground is a leading testing facility for the automotive and defence sectors. The high-security site offers 670 acres of specialist facilities including comprehensive asphalt and off-road tracks, a climatic chamber and EMC test facilities.

## Automotive and Defence Vehicle Testing Grounds

The site is ideal for accommodating various battlefield missions as well as general military vehicle test and development activity, and lends itself to other activities including secure vehicle storage and driver training.

The ex-World War II airfield and US air force base is currently the largest privately owned vehicle test track facility in the UK, centrally located and close to the M1/M6 motorways in Leicestershire. The company prides itself on its responsiveness and flexibility towards providing customer solutions.

Site security is high, with the features including 24/7 manned security, 2m high perimeter fencing, ditches and thermal imaging cameras around perimeter, extensive close circuit tv coverage across site, nightly guard dog patrols, extensive tree planting around perimeter to reduce visual security risk and double security barrier and 'stinger' upon exit.

As an operational airfield, the site also offers

the opportunity for clients to fly into the site or even have vehicles delivered by air. Both aircraft and helicopters can be accommodated.

## Test Tracks for Military Vehicles

Bruntingthorpe has a number of test track facilities, making it an ideal location for vehicle trials. At the heart of the 670 acre site is an impressive 6.5km circuit, including a 60m wide, 3.2km long straight – one of the longest in the country – which offers many flexible testing options. This is supplemented by a variety of other track facilities including demanding off-road facilities, a steering pad, and a variety of small dynamic platforms.





The latest track facility to be constructed offers durability testing for large platforms and construction vehicles.

Typical applications include braking system development, vehicle handling, suspension development, lane-change manoeuvres, vehicle shake down, customer acceptance tests, engine mapping, on-vehicle system development, mobility trials, driver training and durability assessments.

Both wheeled and tracked vehicles can be accommodated on most of the tracks.

## Off-road Vehicle Testing Facilities

Bruntingthorpe Proving Ground has two off-road facilities for small to medium platforms. One facility includes a cross country track and represents a very flexible circuit with many routes of different complexities.

Features include hills, deep and shallow water, swamps and adverse cambers and are ideal for applications including suspension system development, anti-stall tests, vehicle handling and water ingress assessment as well as driver training.

The second facility is located in a segregated 11 acre part of the site. Features include a 2



acre open trials area suitable for digging and general manoeuvres, a sand road, a stone moving area, high lift facilities and large vehicle workshops.

## Driver Training Service

Bruntingthorpe offers a comprehensive driver training service that covers many different types of driver training requirements. Bespoke training courses are also available covering a range of courses from evasive driving techniques through to heavy vehicles driving.

There is a fleet of different vehicles available to support the training programmes allowing exposure to various types of vehicles including skid control cars and a tanker with out-riggers.



## Environmental Vehicle Testing

There is a large climatic chamber capable of accommodating vehicles up to approx 40t.

This is capable of temperatures ranging from ambient to 85°C and is ideal for elements of Defence Standard 0035.

## Electrical Engineering and EMC Testing

Electrical engineering and EMC test and development activity can be accommodated via our on-site partner company, Cre8 Associates.

Capabilities include specialist electrical installations, EMC filter design and manufacture, antenna and RF communications fit, electrical harness design and ECM system evaluation.

Facilities include an EMC test laboratory (6.3m x 3.5m x 3m) and an open area test site.

## Unmanned Vehicle Testing

The extensive land test tracks and land envelope on the site lend themselves ideally to all types of unmanned vehicles trials including both unmanned ground vehicles (UGV's) and unmanned air vehicles (UAV'S).

Bespoke features can often be made to accommodate specific trials requirements.



## Night-vision Equipment Evaluation

The site is set in rural location with very little light pollution. With a 3.2km field of view on a secure site, the facilities are excellent for night-vision equipment evaluation.

## Secure Vehicle Storage

There are 100 acres of secure allocated vehicle storage, capable of accommodating over 20,000 vehicles. The fully managed, computer controlled compound is backed up with one of the most modern vehicle refurbishment centers in the UK.

# Bugeye Technologies Releases Cockpit for Environmental Chamber

Multi-purpose Reconfigurable Cockpit (MRC) designed for fixed wing and rotorcraft research in harsh environments.

## Multi-purpose Reconfigurable Cockpit (MRC)

Bugeye Technologies today released MRC to meet the challenges of pilot testing conducted in an Environmental Chamber. The cockpit was specially outfitted to withstand extreme environments with high and low temperatures and variable humidity. Bugeye used specially designed displays for Out The Window (OTW) viewing from Skyline and a simulated main instrument panel display touch screen from Barco to deliver bright, crisp graphics and video in the chamber.

The program called for cockpits representative of a 4th generation fixed-wing fighter and a current rotorcraft cockpit. Bugeye supplied simulated mid-fidelity controls for an F-18 like aircraft and another cockpit outfitted with simulated UH-60M type controls to meet these requirements.



### About Bugeye Technologies

Bugeye Technologies established business in 2004 as part of the "Boeing Chairman's Innovation Initiative – Project # 619". Bugeye supplies flight simulation professionals the most accurate, realistic, serviceable and affordable simulated display and control products in the

industry. Bugeye Technologies is ISO9001 Certified.

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

Contact: Tom Radcliff, +01 615 879 9737

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## Bugeye Technologies

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Pacific, MO 63069

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# Supporting Armed Personnel on the Ground with Mobile Forensics



As any member of the armed forces knows, speed of action is key to any successful military campaign. Slow response times or miscommunications can not only be detrimental to campaigns, but can actually put lives at risk.

Providing technological assistance to ground forces has become one of the most critically important weapons of the modern day army. It can change the outcome of conflicts and even save lives by providing invaluable intelligence about enemy troop movements and planned attacks.

War zones like Afghanistan are hot-beds for military activity and can involve anything from improvised explosive devices (IEDs) to high target terrorist leaders. They are conflict

areas that require extreme caution, speed and pin-point accuracy when dealing with what's involved at the site.

Under these conditions, rapid and effective site exploitation (SE) is critical. This involves the systematic search for, collection and analysis of information that can support operations or criminal prosecution.

It's important to recognise that most of the current military theatres are 'mixed' military and civilians, so the most dangerous enemy can be those that act as civilians but operate as military personnel. The most common communication device used by civilians is a mobile phone, which is why the military is increasingly recognising that retrieved mobiles from such environments are of an extremely high priority to effectively combat terrorism and counter-espionage.

Investigative tools like mobile forensics not only help military leaders to plan campaigns and thwart terrorism, but can also provide crucial evidence that can be extracted and analysed for use in prosecuting war criminals. The ability to establish a pattern or a link between communications in war zones, quickly and reliably, helps to pull the pieces of the puzzle together.

UFED (Universal Forensic Extraction Device) Series, Cellebrite's range of mobile forensic products, enables military personnel to recover intelligence from retrieved mobile devices as quickly and comprehensively as possible, and can help provide a wider picture of the activity that is being conducted or planned against troops. The UFED device enables military leaders to conduct rapid and effective site exploitation, and the initial analysis of secured mobile devices can be conducted in the field. Field

commanders are then able to send the data off for further data retrieval and in-depth analysis. This provides commanders with the ability to change strategy where necessary to accommodate the retrieved intelligence in as short a space of time as possible.

The most common sort of mobile phones used in modern military environments are 'low end devices'. These are likely to be very cheap and lacking in the standards or legal processes related to mobile device manufacture. The UFED CHINEX, part of Cellebrite's UFED Series, includes a component that scans and identifies new hardware to better extract the data from the device, enabling military personnel to extract high quality data no matter what device they encounter.

Fighting against civilians executing operations of a military nature can seem impossible to plan for. Using forensic technology as a tool for supporting military operations can help provide commanders with invaluable data that can be used to organise future operations, adapt current campaigns and help to bring war criminals to justice.



**cellebrite**  
delivering mobile expertise

# Dometic Medical Systems – Technology for life

The “Medical Systems” division of Dometic S.à r.l. specialises in research, development and the manufacture of professional refrigerators & deep freezers, storage & transport concepts, high quality instruments & equipment for laboratories, medicine, research, biotechnology and Life Science.

Dometic places its expertise in medical refrigeration and its excellent knowledge of user needs at the service of humanity. The results is the concept “Technology for life” which has determined the development of the “Medical Systems” product range.

Our expertise in this area goes back to the year 1979, when the product range “Cold Chain” was selected by the international health organisation to ensure the effectiveness of the cold chain for vaccines worldwide.

Since then Dometic Medical Systems has established a worldwide distribution network and is nowadays recognized as a reliable and professional partner in the medical world. It has a history of close

co-operation with prestigious international organizations, institutions and companies.

Dometic focuses on the client’s absolute right to precision, reliability, durability, functionality and design, with easy access to support, service and training.

We are committed to high quality, safety, compliance to standards and are environmentally responsible.

**Biomedical  
Refrigeration:  
Innovative and  
reliable  
refrigeration  
solutions**

Dometic’s Biomedical Refrigeration product range is the solution for safe storage, transport & handling of temperature sensitive preparations in the appropriate optimum conditions without any risks.

The products cover the spectrum of the specific and exacting needs of the market: hospitals, laboratories, pharmacies, blood banks, research centres, universities and industry.

**COLD  
CHAIN:  
Solutions for  
safe vaccination**

The Cold Chain line of products selected by the responsible international health organizations as part of the E.P.I. (Expanded Program on Immunisation) comprises an entire series of transport boxes, refrigerators and freezers adapted to various stages of the Cold Chain and taking into account climatic and technical constraints.

The Solar Direct Drive solution consists of two large capacity vaccine refrigerators and freezers working straight from solar panels with no batteries and no regulator.

This solution provides a reliable cold chain for vitally important vaccines even in the most remoted areas. The Solar Direct Drive solution uses the energy source that never runs dry: our sun!

[www.dometic.lu](http://www.dometic.lu)  
[medical.systems@dometic.lu](mailto:medical.systems@dometic.lu)

 **Dometic**





# CT Scanner, Vehicle Integration, Logistic Support and Vehicle Survivability on Display at DVD 2013 from Marshall



Queen's Award winning CT Scanner, vehicle integration, logistic support and vehicle survivability form the core of Marshall Land Systems' display on stands 31 and 35 on the steering pad at DVD being held at Millbrook Bedfordshire on 19 and 20 June 2013.

## CT Scanner, Vehicle Integration, Logistic Support and Vehicle Survivability

CT imagery is now an essential capability need within military medicine. The Marshall CT Scanner has been selected and is in-service with three defence forces providing lifesaving diagnostic imagery to assist military surgeons in treating casualties – especially in cases of major trauma.

CT Scanning is a diagnostic capability used routinely and frequently in conventional hospitals. The Marshall's containerised CT Scanner uniquely allows this capability to be brought forward in the battlespace within

deployable field hospitals. The Philips multi-slice CT has been integrated into a military shelter providing the tightly controlled environment needed for safe and effective operation of the scanner. The shelter and patented mounting system protects the CT scanner from shock and vibration in transit and the environmental control keeps the internal temperature and humidity within strict limits allowing deployment in any demanding location from arctic cold to hot desert conditions. The shelter design complies with international ISO standards so is compatible with the standard military logistical systems simplifying both strategic and tactical movement. The system can be moved as any other 20-foot ISO container by road, rail, sea and air. The system is simple to set up with first scans available within four hours of arrival in location.

The company's skills in vehicle integration are being demonstrated by Team SOCRATES in the Future Deployable Geospatial (FDG) Intelligence System. Marshall Land Systems is involved, along with a number of other UK companies as part of Team SOCRATES, in the integration of systems into a box body fitted to the back of a Mowag Duro II vehicle. FDG will deliver a 2 man, deployable, self-contained working environment. The contract is due for delivery later this year.

Following the signing of a collaboration agreement, the company, together with G3 Systems has formed a new force in logistic support – Team M3 which will be discussing its offering in infrastructure support for the UK MoD. The team offers a low risk solution using the skills of both companies to deliver the necessary expertise in infrastructure and



service solutions through a single point of contact. The team has been structured to add real value and to have the capacity to grow as the need arises.

Vehicle Survivability skills are demonstrated by Lorica, a joint venture between Marshall and Plasan of Israel. On display will be a piece of armour used in recent trials as part of the test process following the announcement in November last year that the company had been selected as the preferred turret armour supplier for the demonstration phase of the UK's MoD Warrior Capability Sustainment Programme (WCSP).



**MARSHALL** **LS**  
LAND SYSTEMS

# Northrop Grumman Achieves ISO 14001 Certification for Environmental Management System at Peterborough, UK, Facility

Northrop Grumman Achieves ISO 14001 Certification for Environmental Management System at Peterborough, UK, Facility

Northrop Grumman Corporation (NYSE: NOC) announced that its Europe-based air traffic management systems subsidiary, Northrop Grumman Park Air Systems, has received the International Organisation for Standardisation (ISO) 14001:2004 accreditation for its environmental management system, demonstrating that it meets rigorous international standards for

minimising the company's impact on the environment.

Northrop Grumman Park Air Systems earned the certification after implementing a thorough environmental management system, which included creating a list of the environmental aspects associated with business operations and systematically identifying those with the most significant impact. The certification was issued by Lloyd's Register Quality Assurance, an accredited third-party organisation, after a series of certification audits.

"Achieving this certification reaffirms Northrop Grumman's commitment to being a responsible corporate citizen by making the

development and manufacturing of our products cleaner, safer and more efficient," said Charles Houseago, managing director of Northrop Grumman Park Air Systems. "This certification provides assurance to all stakeholders that environmental impact is being measured and improved."

Northrop Grumman Park Air Systems is committed to improving the aviation community's environmental credentials through its business activities and employee initiatives. This applies to design, manufacture, integration and long-term support of air traffic communication products, systems, software and services.

The company's Airport Realtime





Collaboration (ARC) solution provides all of the technical, professional and business service support required to deploy an A-CDM programme effectively. By reducing taxi times and the time spent queuing at the runway with engines on, an airport using ARC A-CDM can minimise the environmental impact by reducing CO2 emissions fuel burn and noise pollution.

Northrop Grumman Park Air Systems has embarked on a number of initiatives to minimise the environmental impact at its facility near Peterborough, U.K. These include installing a rain water harvesting system to collect rain water for use onsite as the primary water source for operations, rather than using expensive purified water that has been treated and pumped from the water authority. The company has also adopted a zero landfill waste recycling programme, which will result in all of the company's waste being recycled by the end of 2013.

ISO is the world's largest developer and publisher of international standards for business, government and society. ISO 14001:2004 is an environmental management standard that specifies a set of requirements for environmental management systems. The purpose of this standard is to help organisations protect the environment, prevent pollution and improve their environmental performance. Only those companies with excellent environmental programmes qualify for this globally recognised certification.

Northrop Grumman Park Air Systems supplies communication systems for airspace operations worldwide.

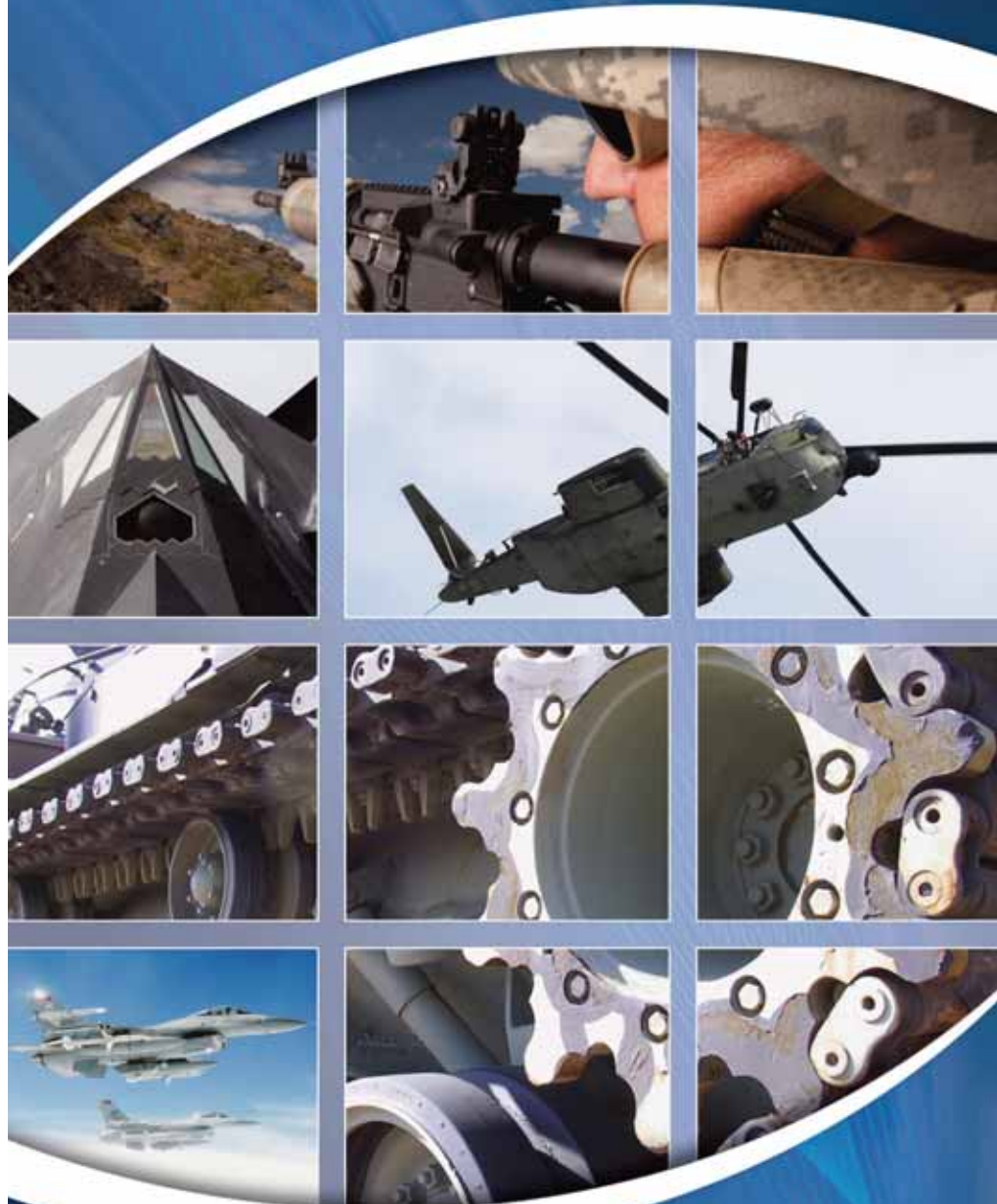
Northrop Grumman is a leading global security company providing innovative systems, products and solutions in unmanned systems, cyber security, C4ISR, and logistics and modernization to government and commercial customers worldwide. Please visit [www.northropgrumman.com](http://www.northropgrumman.com) for more information.

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# Digital Degaussing Equipment for Surface Ships and Submarines

The Company's experience in Degaussing is considerable with over more than 25 years that covers the design and supply of Digital Degaussing equipments for submarines, steel surface ships mine countermeasure vessels (MCMVs). All Polyamp AB Degaussing systems are fully digitalized, with multiple magnetometer controll, and all are of the Advanced type (ADG) and using the latest type of modern decentralized design. More than 45 in Service Degaussing Systems have been delivered.

#### They include:

- RSwN MCMVs type Landsort and Styrsö class
- RSwN Gotland Class Submarines

- RSwN Corvettes type Stockholm, Göteborg classes and the Visby Class Stealth Corvettes
- Singapore Navy Bedok Class Minehunters & Challenger Class Submarines
- US Navy San Antonio Class Landing Platform Docks
- Royal Danish Navy Absalon Class Flexible Support Ships and Nils Juel class Frigates
- Royal Danish Navy SF MKI MCMV vessels
- US Navy CVN 77 Air Craft Carrier

## Unique Degaussing System Feature

The world first Deagussing system with a

semi automatic organic back-up system onboard a frigate type vessel was tested successfully during the Sea Acceptance Test (SAT) on the new Iver Huitfeldt class frigate of the Royal Danish Navy.

## ADG Systems with a Semi Automatic Organic Back-up System

Thanks to the unique Polyamp ADG design and excellent cooperation with the Danish Defence Acquisition and Logistics Organization (DALO), the RDN now possess what is believed be the first ADG systems with a semi automatic organic back-up system onboard a frigate type vessel.

This is a full hardware back-up system for the ADG to be used in case of, for example battle-damages and it goes far beyond previously tried software back-up solutions. The ADG system is highly reliable but in the rare case where a power module should go out of order, the switch to a spare power module takes only a few seconds and the ships underwater signature is virtually unchanged. The new concept gives a Mean Time To Repair (MTTR) for the Degaussing System of typically less than 10 seconds and this is a record that will be hard to beat.

Polyamp has in fact, as a part of the same development concept, supplied a similar Backup system, with an ever higher level of





automation for another, and smaller, RDN ships class.

That the successful design now has been demonstrated at the signature trials is the result of a long and fruitful cooperation between Polyamp and DALO that goes back as far as year 2003 when Polyamp took full magnetic signature responsibility for the Absalon class. The latest contract is however dated in July 2007 and it includes the delivery of ADG systems, including back-up functionality, for the three Iver Huitfeldt class frigates.

The ADG SAT was performed as a part of the underwater signature procedure performed at the Swedish Sea Range Station in Lysekil on the new frigate HDMS Peter Willemoes. That the RDN performs important Sea Acceptance Trials in Sweden is in itself a proof of the RDN confidence in the underwater signature know-how in Sweden where Polyamp is acknowledged and respected in the underwater signature control area.

Polyamp Sweden Vice President Per Ennerfors: "This SAT demonstrates our capability in technology edged ADG systems

deliveries while maintain the highest possible level of product technology as well as quality. We are proud of the excellent result and the very good and most creative relation with DALO and the Royal Danish Navy."

#### Other Systems delivered are:

- Multi Influence Sensor Systems for France and India
- UEP/ELFE sensor system for RSwn, US, Germany and other International Navies
- Multi Influence Sweep Systems for RSwn

#### The Polyamp Management and Production includes:

- Electronic Engineers, Mechanical designers and Software engineers with very long system, production and design experience
- System specialists with long experience in Electromagnetic Signature Management
- All production personnel including Production preparation and purchase have very long experience in the electronics industry, many have worked for Polyamp for more than 25 years and all production personnel are qualified for their specific responsibilities

#### Locations and facilities

The head office of Polyamp AB is located in Sollentuna, Stockholm, the capital of Sweden. The activities of the Systems Division are concentrated in Sollentuna and includes project management, product development, final assembling, and systems tests prior to delivery and installation.

Polyamp is also located in Åtvidaberg some 240 km south of Stockholm. The international marketing, sales and supply of DC/DC converters for both Polyamp AB and Switch Craft SA is located in Åtvidaberg. The site produces the electronic sub assemblies for the Systems division products and has the product development, product maintenance, and electronic production and test facilities for the DC/DC converters. The factory in Åtvidaberg has newly been renovated and expanded with 40% more space all to built-new conditions.



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delivering mobile expertise

**UFED series**

## UFED Touch Ultimate – The Ruggedized Version

### Purpose-designed for Mobile Forensic Investigations in the Field

- ✓ A ruggedized carrying case
- ✓ A solid protector case for UFED with a touch screen cover
- ✓ MicroSIM adapter
- ✓ SIM ID cloning cards
- ✓ UFED Forensic memory card reader
- ✓ A full set of phone connector tips and proprietary cables and more

Supports more than **10,000** device profiles of mobile phones, portable GPS devices and tablets.

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# R. A. Rodriguez Showcase at DSEI 2013

The DSEI exhibition is now a regular fixture for R. A. Rodriguez. It's the ideal showcase for the company's high quality drive line components that are widely used in the defence and aerospace sectors. The show also provides an excellent forum for visitors to tap into the considerable expertise of the R. A. Rodriguez technical team in the field of bearing specification and system design.

## KAYDON® Bearings

The company's status as sole distributor for KAYDON® bearings in the UK, Ireland, Turkey and Scandinavia underpins this know-how. R. A. Rodriguez has represented the interests of this highly respected manufacturer for 43 years and its good stewardship has now led to the company's involvement in other

burgeoning markets in Europe, such as Turkey.

KAYDON® too has a very long history in the defence and aerospace. In 1941, the US Navy sought a supplier of large bore turntable bearings for warship gun mounts. When no other company would take on the task of producing 50 inch and larger bearings, KAYDON® was born. This heritage has made KAYDON® the number one choice for many OEMs serving the defence sector.

Central to the KAYDON® product programme today is the Reali-Slim® range, bearings-of-choice where space is at a premium and weight needs to be minimised. These bearings are available in both Imperial and metric sizes and in different radial sections up to 1m diameter from stock – larger to order.

Turntable bearings remain a KAYDON® speciality, providing optimal economy in a given envelope dimension. Its field-proven designs are widely specified for their significant load carrying capacity and where precision positioning is critical. The KAYDON® HS light profile series is a particularly popular choice from R. A. Rodriguez. It features rectangular cross sections which extends capacity to size ratio. R. A. Rodriguez also supply own-brand turntable bearings that are available in two grades. One is for light duty applications where high accuracy is not a critical factor and the other where a higher order of performance is needed for greater loads. Both are manufactured in high grade carbon steel or stainless steel and shipped, pre-lubricated and ready for use.



**DSEI 2013, 10th – 13th September 2013, ExCeL  
London - Stand no. S4-137**





# Booting up the RAF Typhoon Display Team



The British Armed Forces boot supplier, YDS, has been busy supporting one of the country's proudest assets. The RAF Typhoon Display team fly the incredible Typhoon aircraft in up to 43 different air shows in the UK and around the world, and demonstrate its exhilarating aerobatic capability to thousands of people each year. The displays also aim to attract new recruits into the RAF as they enthuse about the aircraft.



## YDS Resolve GTX Boot

To reinforce their important British MoD supplier role, YDS was keen to offer their support to keep the display crew kitted out and equipped to do their job, even in the most extreme weather. The YDS boot 'Resolve GTX' featuring GORE-TEX® fabric was selected for the team to wear for the season. The Resolve GTX is a very light and flexible boot with an injected rubber sole for super durability. With GORE-TEX® footwear it is durably breathable and waterproof keeping the team warm and dry, whatever the climate.



Rob Huckle, Chief Technician of the RAF Typhoon Display Team was keen to say 'The team need durable quality footwear that will withstand all the elements come rain or shine, we are extremely grateful for the support of YDS Boots'

Abby Steele, Marketing Executive who presented the boots on behalf of YDS said 'we had the pleasure of seeing a practice display at RAF Coningsby in Lincolnshire and even on that very blustery day the defiant Typhoon performed some unbelievable loops and twists, flips and turns, it was fantastic. We are proud to support the RAF team with quality made YDS boots.'

To watch the Typhoon in action visit their website to find out when they are at an airshow near you.

[www.raf.mod.uk/tyhoondisplay](http://www.raf.mod.uk/tyhoondisplay)



# SHOWTRAX



## INTERNATIONAL

From The Race Track ... **TO THE DESERT**



Showtrax International's Multi-layer tear-off windscreen film protects against rock strikes, sand blasting, stone chipping and other abrasive material. Extending the life of even the toughest screens that are used on armoured vehicles and protected people carriers in all terrain. This saving can dramatically reduce the cost of replacing damaged screens and the downtime in which the vehicle would be forced to undertake in the process of having new screens fitted.

Designed to protect even the toughest  
of windscreens from damage!



# Protective Multi-Layer Windscreen Film

## **Multi-Layers**

Available as a 2 or 4 laminated layer system, they are simply moulded over the normal windscreen and then tabbed for a fast tear off.

## **Technical information**

Made from multi-layers of the highest quality "optical grade" polyester film that is available with a scratch resistant coating on each layer. Then "factory laminated", preventing distortion to provide the clearest possible view for the driver along with blocking out harmful UV rays.

## **Protecting "Bullet Proof" screens**

Although many screens used on the front line today are bullet proof, it doesn't mean that they are resistant to stone chipping and other abrasive materials. We are already having reports of major cost savings in replacement bullet proof screens due to the hugely extended life of the original screen.

## **Developing new kits**

A template can be taken from a windscreen or window of any vehicle in order to produce a simple and easy to apply protective kit.

## **Removing and re-applying layers**

A layer of the film can be easily 'ripped' off within seconds to reveal a new clean and clear layer of film. Once down to the last layer, another multi-layer kit can be easily applied to re-new the strength of the screen whilst keeping visibility to the maximum.

## **Already on the front line**

Our film has already been fitted to armoured fighting vehicles and protected people carriers out on the front line in Afghanistan.

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# IB Consultancy's Upcoming Events

September

## NCT CBRNe Asia 2013, 24 -27 September, Kuala Lumpur

Asia's premier CBRNe conference, exhibition and demonstration, The Non-Conventional Threat CBRNe Asia, expands its scope by including focused interactive training workshops and the NCT CBRNe Awards. Event partner is the National Defence University of Malaysia.

October

## NCT C-IED Asia 2013, 29 October - 1 November, Bangkok

The second edition of Asia's leading Counter IED and EOD event, NCT C-IED Asia 2013 : The Asian EOD and IED Forum builds on the highly successful 2012 conference and exhibition organised in Mumbai. NCT C-IED Asia 2013 will expand its scope by including focused interactive training-workshops and a live capability demonstration day led by the Royal Thai Police Force.

March

## NCT CBRNe Eurasia, 4 - 6 March 2014, Kiev

The Non-Conventional Threat event series joins the 4th edition of the Kiev International Protection, Security and Fire Safety (KIPS) exhibition, Ukraine's leading Homeland security show. The combined KIPS / NCT CBRNe Eurasia conference and exhibition will attract delegations from across Europe, and the Near and Central Asian region.





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