



THE DEFENCE
Design Agency

Design, Print & Web Solutions

Past project samples

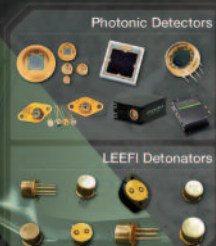


» www.militarysystems-tech.com



- » Large Format / Exhibition
- » Data Sheets / Brochures
- » Advertising
- » Logos / Stationery / Branding
- » Magazines

www.excelitas.com



DEFENCE SENSORS AND DETECTORS

- Laser Guided Munitions,
- Laser Range Finders,
- Laser Warning Systems,
- Electronic Safe Firing



NIGHT VISION THERMAL AND FUSED WEAPON AND SURVEILLANCE SIGHTS

- Boresight retention
- Low power, light weight
- Intuitive user controls
- Through Life Support

EXCELITAS
TECHNOLOGIES®

QIOPTIQ
Photonics for Innovation
An Excelitas Technologies Company

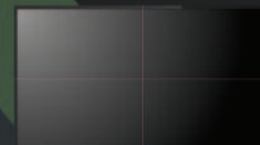


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LONG RANGE SURVEILLANCE CAMERAS

- Fixed Platform Surveillance
- On the move surveillance and targeting
- Critical Infrastructure Surveillance
- Counter – UAS



Enabling the future through light

Engage. Enable Excell.



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DEFENCE SENSORS AND DETECTORS

- Laser Guided Munitions,
- Laser Range Finders,
- Laser Warning Systems,
- Electronic Safe Firing

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CheetIR FAMILY

NOTE
socket for Fridge

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Enabling your mission success through
advanced technology solutions

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We make weapon and surveillance sights that
enable 24 hour operations and mission success
for the dismounted soldier.

KEEPING OUR TROOPS SAFE



DRAGON-MR

Medium-Range,
Uncooled, Thermal
Weapon Sight

The Dragon-MR is a medium-range, uncooled, thermal weapon sight that provides a clear, high-contrast image of the target area. It is designed for use on a variety of weapons, including rifles, machine guns, and anti-aircraft guns. The sight is rugged and reliable, and it can be used in a variety of environments, including urban, rural, and maritime.

DRAGON S12

Uncooled, In-Line,
Thermal Weapon
Sight

The Dragon S12 is a uncooled, in-line, thermal weapon sight that provides a clear, high-contrast image of the target area. It is designed for use on a variety of weapons, including rifles, machine guns, and anti-aircraft guns. The sight is rugged and reliable, and it can be used in a variety of environments, including urban, rural, and maritime.

SAKER

Fused Weapon
Sight

The Saker is a fused weapon sight that provides a clear, high-contrast image of the target area. It is designed for use on a variety of weapons, including rifles, machine guns, and anti-aircraft guns. The sight is rugged and reliable, and it can be used in a variety of environments, including urban, rural, and maritime.

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MISSION
DEPENDS
ON IT** 

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SPACE OPTRONICS

Excelitas enabling space technology



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EXCELITAS
TECHNOLOGIES®

MILITARY AND AEROSPACE MISSION CRITICAL PHOTODIODES, EMITTERS, DETECTORS, SENSORS AND OPTRONICS

PLEASE VISIT US – BOOTH 1416

- LASER RANGING AND DESIGNATING
- PROXIMITY FUZING
- LASER WARNING SYSTEMS
- PULSED LASERS
- GUIDED MUNITIONS AND LASER SPOT TRACKING
- TARGET ACQUISITION, RANGING, AND DESIGNATION

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Photonics for Innovation
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CUTTING EDGE TECHNOLOGY

Electro-optics renowned for
quality and performance

MISSION CRITICAL EQUIPMENT

Fifty years of design, development
and delivery to DOD Users

UNRIVALLED SUPPORT

Fifteen years of delivering Through-
Life Support to the front line

AFC SIGNATORY & ERS GOLD AWARD

Regularly supporting our armed
forces in Wales

ARMY SPORT & REHABILITATION

Actively supporting injured
servicemen and women

Image Intensified, Thermal Imaging and Fused weapon and
surveillance sights that enable 24 hour operations and mission
success for our dismounted soldiers.

KEEPING OUR TROOPS SAFE



Team THOS
GOLD SPONSOR



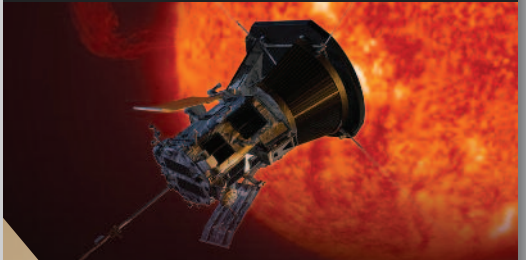
RFCA
Rangefinding Federation of Wales
Rangefinding Federation of Wales

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OVER 50 YEARS OF SPACE HERITAGE

1971 OMS (Orbital Module) Viking 1	1984 OMS (Orbital Module) Venus Express 'Venera'	1990 OMS (Orbital Module) Hubble Telescope	1998 OMS (Orbital Module) International Space Station	2003 Toughened Glass Spect and Opportunity on Mars	2020 Solar Orbiter

Notable Excelitas Space Missions



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TALON

Fused Weapon Sight
Image Intensifier / Thermal Imager



TALON is the new dual channel optically Fused Weapon Sight product development from Excelitas providing the Dismounted Close Combat User with an enhanced, multi waveband Detect, Recognise & Identify capability.

- Provides the User with an enhanced, multi-waveband Detect, Recognize & Identify capability in a fully qualified military Weapon Sight designed specifically for close combat surveillance and target engagement

- Combines high-performance Image Intensification and uncooled Thermal Imaging capability in a single lightweight, compact yet rugged package which attaches to accessory rails in front of the day sight, providing 24hr capability

- Simple and intuitive control Interface allows the user to select and utilize the most effective technology throughout the mission profile

- Provides a low power architecture and is operated from just 2 Lithium AA batteries



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DRAGON-S12

Uncooled Thermal Imager
In-line Thermal Weapon Sight



DRAGON-S12 is the new In-line Thermal Sight, part of the latest development in thermal imaging technology from Excelitas. Providing snipers with 24hr surveillance and target engagement capability.

- Part of the DRAGON family of products from Excelitas that utilizes the latest in uncooled thermal camera, electronics and optical technologies to deliver world leading performance and reliability in a lightweight, compact and rugged military qualified design

- Provides snipers with 24hr surveillance and target engagement capability utilizing a state of the art 640x480, 12µm, 60Hz uncooled thermal sensor, delivering class-leading sensitivity and uniformity

- Delivers a capability to detect, recognize and identify man and vehicle targets 24hours a day, in poor visibility, in total darkness and through battlefield obscurants

- Attaches to accessory rails in front of the day sight via a quick release throw lever, providing 24hr capability without the need to remove or re-zero the day sight



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CheetIR-L

Medium Wave Infrared (MWIR) High Definition (HD) Continuous Zoom Camera



CheetIR-L offers best in class long range imaging performance optimised for the latest format 8µm/10µm focal plane arrays utilising fast F/3 optics and high frame rate output (60Hz) as standard. The rapid continuous optical zoom function enables surveillance of vast areas of interest whilst also achieving impressive identification ranges.

Applications

- Border Surveillance • Vehicle mounted surveillance and targeting
- Drone detection • Coastal Surveillance • Naval platforms

Key Features

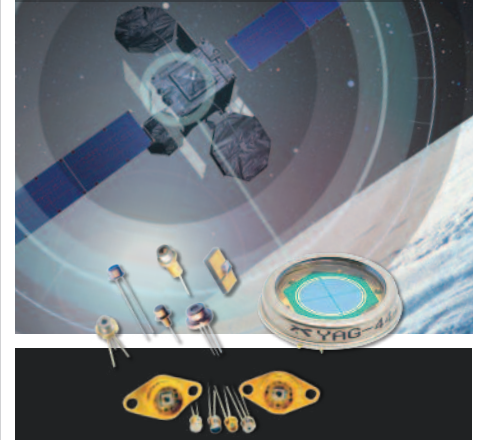
- HD 720 (1280x720) or XGA (1024x768) resolution
- x13.5 Continuous Zoom • HOT detector technology
- Long range performance—MBT Recognition @ 15km
- High MTBF >16,000 hours



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SATELLITES

Space-qualified photonic technologies deliver enduring mission success on-orbit and beyond



Our photonic technologies enable satellite mission success for geostationary, medium-earth orbit (MEO) and low-earth orbit (LEO) space satellites, and has a proven pedigree for reliable deployment on extended probe missions.

Excelitas is critical for ensuring the accuracy of global positioning synchronization and is key to providing solar power for the satellites themselves. In an increasingly connected world, our technology is enabling global communications with the launch of space constellations to provide internet access to previously unconnected parts of the planet.

We have over 45 years of space heritage in the manufacture of radiation-hard space glass for optical solar reflectors and coverglasses. We fulfill 80% of the world's requirements for these components. Every coverglass is customized to specific customer requirements to maximize efficiency.



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LEADING THE WORLD WITH HUD AND HMD



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50 YEARS DELIVERING COVERGLASS, OSRS AND RAFS



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**NIGHT VISION SYSTEMS.
THERMAL IMAGING SOLUTIONS.
FUSED TECHNOLOGY.**

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**CUTTING EDGE
TECHNOLOGY**

Electro-optics renowned for quality
and performance

**MISSION CRITICAL
EQUIPMENT**

Fifty years of design, development and
delivery to DCC Users

**UNRIVALLED
SUPPORT**

Fifteen years of delivering Through Life
Support to the front lines

Engage. Enable. Excel.

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Mission Critical Protection

Composite Armour & EOD Technology



Mission Critical Protection

Personal Armour & EOD Suits

- Personal Armour
- EOD Suits

www.npaerospace.com





www.exsel-group.com

PROTECTION THROUGH TECHNOLOGY



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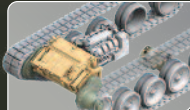
MOBILITY

Horstman Suspension Systems – Combat Proven & Customer Satisfaction;
Agility – Manoeuvrability – Reliability – Durability – Strength in Lightweight Solutions

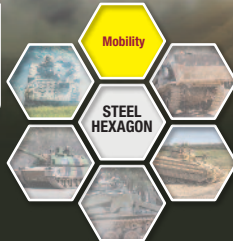


World's Widest Range of Hydrostruts®

**Horstman InArm®
Suspension System**



- Compact
- Rising Rate
- Ride Height
- Lock Out



Hydrogas® and Rotary Damper Systems



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

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



A company of the RENK group

**Commercial Armoured Vehicle (CAV)
Lightweight Tactical Vehicles**



**Providing mobility
solutions to
increase performance
and payload**

Horstman's leading edge mobility technology allows us to provide the optimum solution

Optimum Solutions



High Performance Struts



Configurations



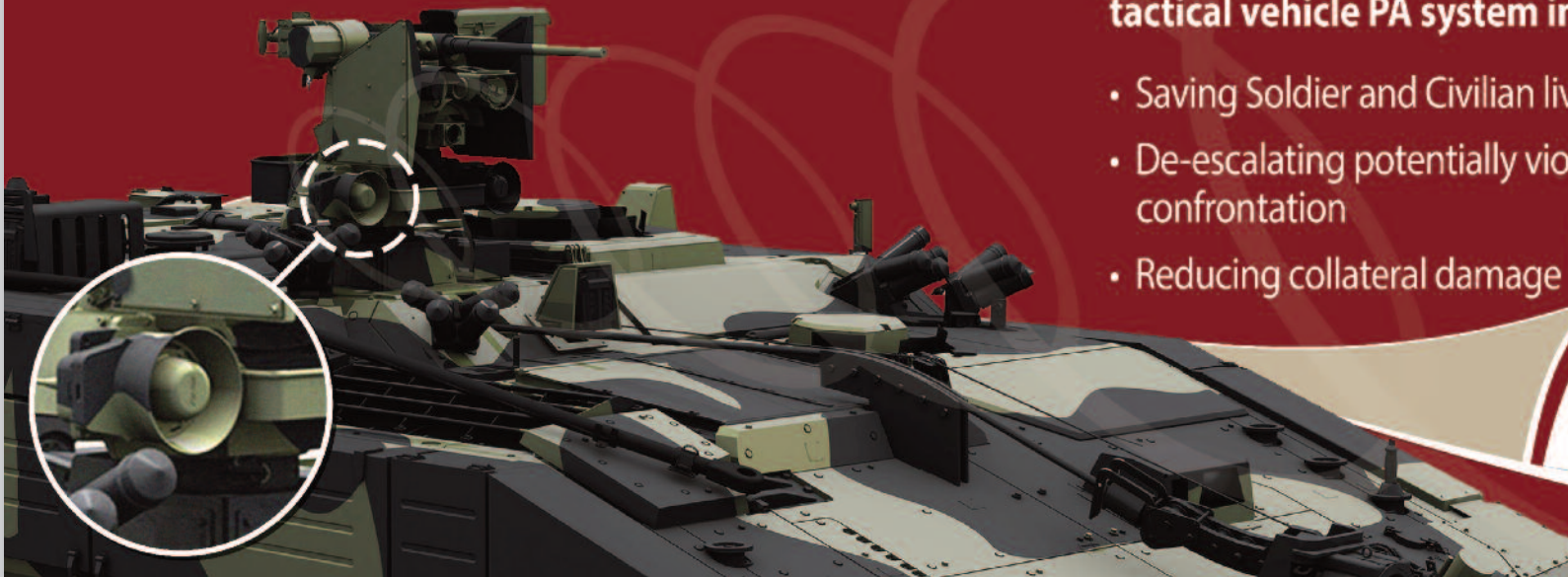
VITAVOX

www.vitavox-sound.com

Shout ...Before You Shoot

Ajax is equipped with Outacom™, the only fully qualified tactical vehicle PA system in current manufacture.

- Saving Soldier and Civilian lives
- De-escalating potentially violent confrontation
- Reducing collateral damage





Allan Webb



60Years

of delivering support excellence
with data intelligence at our core



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Training

Supportability Courses
delivered by Experts.

Training Courses designed to meet your needs:

- Over 14 core courses covering end-to-end support solutions.
- Public classroom, or private in-house courses available.
- Online courses – access remotely from anywhere in the world.
- Bespoke courses – tailor made to focus on your requirements.



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Horstman

LeClerc Main Battle Tank

Generation 3 Hydrogas® Suspension Unit



Feature Benefit to user

PROVEN TECHNOLOGY	Low risk solution to minimize programmatic risks and costs associated with major retrofit vehicle development.
PROVEN LONG TERM RELIABILITY	Maximum vehicle usage time and maintenance intervals to shorten new vehicle development life cycle.
INTEGRATED SPRING AND DAMPING FUNCTION AT EVERY WHEEL STATION	Rugged and robust suspension to make approach marches over poor road conditions so that vehicles are available for combat and the crews not exhausted by system maintenance duties.
FEW MODIFICATIONS REQUIRED TO THE BASE VEHICLE ARCHITECTURE	Improved vehicle performance allowing user to reach the ideal balance of mobility, armour and firepower.
COMMON PARTS WITH HORSTMAN SERIES PRODUCTION PRODUCTS	Simplified upgrade route from current hydro-pneumatic suspension keeping upgrade vehicle programmatic costs low.
UNITS MANUFACTURED CAPABLE OF BOTH LH AND RH ORIENTATION DURING ASSEMBLY	Lower product cost enabled by making benefit of existing manufacturing tooling.
	Lower overall program cost through commonality of components and ease of assembly.
	Fewer components to manage through the supply chain and through life logistics support for maintenance and spares requirements.

- Horstman worked with Nexter in early 2010s to develop new Hydrogas® suspension (GEN3)
- Initial design and manufacturing was completed in 2014
- Trials in 2015 for overseas client
- Since 2016, GEN3 technology deployed to other fleets including Terrier, Puma, Hunter and Challenger 3

Suspension Unit Construction



Hydro-pneumatic Suspension Unit



Challenger 3 Case Study



- Horstman awarded contract October 21 for Hydrogas® Upgrade
- 10 year contract
- Using kits of parts
- Increased performance & reliability

horstmangroup.com

A company of the RENK Group

Horstman Defence Systems Limited



OPERATIONAL EFFECTIVE PRODUCT

We have a proven operational effective product that is in service around the world

GLOBAL EXPERIENCE

We have global experience since 1913

SUPPORTING OTHER COUNTRIES

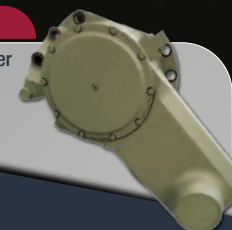
We are used to working in support of other countries around the world – Singapore, Korea, Germany

AFTER CARE SERVICE

We are used to providing in country manufacturing and after care service – Korea and Singapore

IN-ARM® SUSPENSION SYSTEM

We are the Original In-Arm® designer and manufacturer that has growth potential into the future



horstmangroup.com

A company of the RENK Group

Enduring partners with Germany & NATO



Dauerhafte partner für Deutschland und die NATO



Horstman Puma Hydrostrut®



Horstman Boxer Gearbox



Horstman In-Arm® Suspension System

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Mission Critical Protection

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Personal Armour

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-  Vehicle Systems



CBRN | EOD | Hazmat | Decommissioning

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DETECT
DISPOSE**

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60 Years

of delivering support excellence
with data intelligence at our core



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Training Courses designed to meet your needs:

- Over 14 core courses covering end-to-end support solutions.
- Public classroom, or private in-house courses available.
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- Bespoke courses – tailor made to focus on your requirements.



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Blue Wolf

NVIS COMPATIBLE LED LIGHTING

AIRCRAFT – FIXED WING AND ROTARY
LAND VEHICLES – MILITARY AND LAW ENFORCEMENT
MARINE APPLICATIONS – RECON, BORDER PATROL, SEARCH & RESCUE

Map Lights



Pod Lights



Dome Lights (round, rectangular, custom)



Utility Lights



Stair / Step Lights



Ingress / Egress



- Durable, all machined aluminum.
- Custom Design & Engineering services (electro, mechanical, PCB design)
- Rapid prototyping, manufacturing expertise.

APPLICATIONS

PART NUMBER:
• NVIS-NVIS WHITE
• NVIS-NVG Green
• NVIS-White
• NVIS-Red
• NVIS-IR

1179 N. State Street
Bloom, Idaho 83714

BlueWolfInc.com
+1-208-693.5222

EST. 2007
Bloom, IDAHO USA



Blue Wolf

NVG COMPATIBLE LED LIGHTING APPLICATIONS

Cockpit / Instrument Panels

- Map Lights



- Pod Lights



- Utility Lights



- Post Cap Lights



Cabins / Cargo Bay

- Dome Lights



- Utility Lights



- Stair/Step Lights



Ingress / Egress lighting

- Doors, Hatches & Ramps



APPLICATIONS

PART NUMBER:
• NVIS-NVIS WHITE
• NVIS-NVG Green
• NVIS-White
• NVIS-Red
• NVIS-IR

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COMMAND WIRE DETECTORS

METAL DETECTORS

CIED EQUIPMENT

DEMINEING EQUIPMENT

CIED TRAINING

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DRAGON-C12

XR

EXCELITAS
TECHNOLOGIES®

02

UNCOOLED
RANGE

Multi-Role Thermal Weapon Sight

DRAGON-C12-XR is a high-performance multi-role system that delivers extended range performance in a compact and lightweight package, utilizing a 640X512 12µm thermal core.

DRAGON-C12-XR is well suited to longer range sharpshooter and machine gun support weapons, in particular platforms with restricted rail space

Package

- DRAGON C12-XR Weapon Sight
- Lens Cap and Light Secure Shroud
- Transportation Case and Field Pouch
- Operator Manual
- Lens Cleaning Kit

Options

- Multi-Function Remote Control
- Interface cable

ITAR
FREE

AA+
X2



VGA
12µm



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DRAGON-C12

XR

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TECHNOLOGIES®

Multi-Role Thermal Weapon Sight

Optical Parameters

Horizontal Field of View:	8°
Focus Range:	5m to infinity
Magnification:	x1

Sensor

Waveband:	Long Wave IR
Resolution:	640 x 512
Pixel Pitch:	12µm

Boresight and Image Shift

Boresight Retention:	<0.5mrad
Image Shift:	<0.1mrad

Power

Battery Type:	2 x 1.5V LiFeS2 AA
Battery Lifetime:	> 6 hours @ 21°C

Connectivity

Wireless:	Bluetooth Low Energy 5.0
I/O Interface Port:	External Power
	Composite Video
	USB Digital Video
	Remote Control Interface
	Serial Communication for peripheral devices

Nominal Size and Weight

Mass:	490 g
Length:	145 mm
Width:	70 mm
Height:	70 mm

Excludes batteries, lens cap and accessories

Finish

Various paint colours available

Cerakote Paint Finish with colour options

DLC Optical Coating

Lo-Glint Objective Coating available

Environmental

Complies with Military Standards

Def Stan 00-35

Def Stan 59-411

MIL-STD-810

MIL-STD-461

Range Performance



For technical information contact:

Qioptiq Ltd, Glascoed Road
St Asaph, Denbighshire, LL17 0LL

email: land@excelitas.com



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VITAVOX

www.vitavox-sound.com

OUTACOM™

Vehicle Mounted Tactical Public Address System



Vitavox **OUTACOM™** is a vehicle mounted tactical public address system for use on all tracked and wheeled armoured fighting vehicles. Built to rigorous military standards, **OUTACOM™** is robust, powerful and enables direct communication to distances of up to 300m. Crucially, **OUTACOM™** keeps personnel protected inside the AFV and away from possible danger.

OUTACOM™ is deployed on AJAX and its variants, integrating into the British Army's leading-edge ISTAR platform. Fundamental to the flexibility of AJAX, the **OUTACOM™** PA system works in partnership with other AJAX technologies; enabling warning, instruction and de-escalation of potential risk to civilians, personnel and equipment.

Compatible with the Vitavox **VITAVIC** Intercom System, the **OUTACOM™** PA system integrates and switches seamlessly using the **OUTACOM™** Control Unit. This also ensures full

communication traffic security. Disperse crowds and clear areas whilst maintaining a full understanding of latent threat.

Consisting of two Compact Broadcast Loudspeakers, the **OUTACOM™** Control Unit plus Noise Cancelling Microphone and bracket; the system is blast proof, shockproof and weatherproof (IP67), enabling reliable service in critical situations.

Direct, command and control your vehicle's locality, with the **OUTACOM™** Vehicle Mounted Tactical Public Address System.



www.vitavox-sound.com | T: 020 8732 1300 | E: sales@vitavox-sound.com

Vehicle Mounted Tactical Public Address System

OUTACOM™



www.vitavox-sound.com

- Direct, instruct and control whilst personnel remain protected inside the AFV
- Reduce probability of unnecessary escalation of violence
- Seamless switching between OUTACOM™ PA System and intercom
- Target enemy lookouts – Enhance local command and control capability
- Direct communications in urban theatres of operation
- Safe crowd dispersal and area clearance
- Reduces risk of unnecessary collateral damage

- Direct communication up to 300m from vehicle
- Standalone or intercom integrated system
- Blast proof, shock proof and weatherproof (IP67)
- Compliant to DEF-STANS 00-35, 59-411 & 61-5 and MIL-STDs 461E & 861F
- Selectable audio broadcast messaging in local language via standard digital device input
- Dismounted soldier radio link (optional)
- Compatible with Vitavox VITAVIC Intercom System



Equip any tracked or wheeled AFV with OUTACOM™

Installed on AJAX, Vitavox OUTACOM™ is suitable for integration in new vehicles and existing Readacross platforms via a vehicle upgrade platform.

Investigate OUTACOM™ further by contacting the Vitavox team to discuss your future communication needs.

www.vitavox-sound.com | T: 020 8732 1300 | E: sales@vitavox-sound.com

Vehicle Mounted Tactical Public Address System

OUTACOM™



IEDD Van

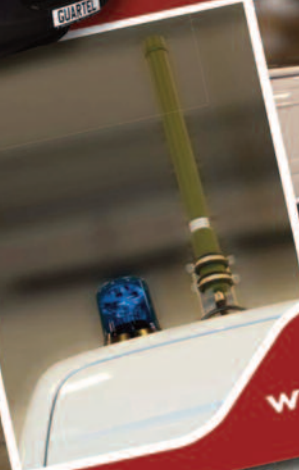
BESPOKE EOD/IEDD VEHICLE

DESCRIPTION

Building upon over 30 years experience of design and manufacture of specialist Counter IED detection products Guartel now also provides bespoke EOD/IEDD Vehicle packages. Each system is specifically designed to the customer's requirements, with subject matter expertise provided by Guartel as required.

Guartel Technologies works with all the major OEMs of EOD and Counter IED products to provide a single source solution for our clients.

All conversion work is undertaken by specialist vehicle-conversion engineers and coach builders with input from experienced CJED operators. All work is carried to the relevant NIJ, STANAG, Home Office & MILSPEC standards. All projects are managed under Guartel Technologies Quality Management System ISO 9001:2008.



T: +44 (0)20 7384 3001
www.guartel.com

IEDD Van

BESPOKE EOD/IEDD VEHICLE

SPECIFICATIONS

We can take a standard box or body vehicle or chassis and convert this into a high specification response vehicle, options available include:

- Armoured glass
- Armoured crew cab
- Internal storage racking
- ECM installation
- Ramps for ROV
- Air conditioning / climate control
- Ammo & explosive storage
- Internal / External power for charging onboard systems
- Lighting bars
- Remote controlled camera & Lighting mast
- Installation of communication system including SATCOM & GPS



Guartel Technologies Limited
Forest Enterprise Centre
Unit SO40 9LA United Kingdom
Tel: 020 7384 3001

W: www.guartel.com

CAGE Code: U4586
DUNS No: 641176024
VAT No: 915654121



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A – Z Listing

A – E

A

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www.drakongroup.com

E

Environmental Defence SystemsP.23
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www.solutions-ew.com**Explosive Learning Solutions**P.25
www.elsbusinessstraining.co.uk**Explosive Risk Management**P.26
www.explosiveriskmanagement.com

CAPABILITIES

Category

Members

Category	3DX-Ray	7 Technologies Group Ltd	Aardvark Clear Mine Ltd	ABP Technologies Ltd	Agilent Technologies	Allen-Vanguard Ltd	Artios Global Ltd	Brimstone Site Investigation Ltd	Cambridge Consultants Limited	Chemring Technology Solutions	Conjay Collectors Ammunition Company	CRF-I Limited	DRAKON GROUP Ltd	Environmental Defence Systems Ltd	EW Solutions Ltd	Explosive Learning Solutions Ltd	Explosive Risk Management	Guard Technologies Ltd	ISS Global	ISSEE Limited	Kirinite Ltd	Leban's TRL Technology	Laser Optical Engineering Ltd	Leonardo UK Ltd	Melis Aerospace Limited	NIC Instruments LTD	NP Aerospace Ltd	Pearson Engineering Ltd	Peli Products (UK) Ltd	Pieret Services Limited	PPM Systems	Primetake Ltd	Rohr Minor Research Limited	Sale Lane Global Ltd	Scanna MSC Ltd	Surface Technology International Ltd	Tetra Tech	Thales UK	United Shield International		
Blast Mitigation																																									
CBRNE																																									
Consultancy																																									
Demining																																									
Detection																																									
Disruptors																																									
Electronic Counter Measures																																									
EOD Tools																																									
Equipment Packages																																									
Explosive Ordnance Clearance																																									
Explosives & Accessories																																									
Initiation																																									
Maritime EOD																																									
Packaging																																									
Personal Protective Equipment																																									
Quality Assurance																																									
Remotely Controlled Vehicles																																									
Test & Design																																									
Training																																									
Vehicle																																									
X-Ray System																																									

Leonardo



Leonardo a Leading Supplier of EW Capability across the Globe

Leonardo are a leading supplier of Counter RCIED solutions. We have been supplying leading edge capability to many of the world's major military Users for over 40 years and have a large installed base of systems in the User community. Our Guardian Counter RCIED (C-RCIED) systems target the land domain and provide full protection across all roles including Force Protection, EOD, Base and VIP protection. Our operationally proven systems are available in manpack and vehicular variants, and come with a full range of support solutions tailored to suit individual customer needs.

When you purchase a Leonardo C-RCIED system you are not only purchasing a leading edge capability, but also full turn key support if required based on many years of deep involvement and experience in the global C-RCIED operational space.

Leonardo also supply Falcon Shield a world leading Counter UAS system featuring leading edge Radar, ES, EO and EA capabilities to detect, identify, track and defeat multiple drones. Once a legitimate threat has been identified the Electronic attack function will defeat the drone causing it to land or return to its point of origin.

In the wider EW space Leonardo are a world leader in supply of airborne ECM capabilities with many systems in

place with leading military customers across the globe. Leonardo are able to provide a broad range of EW capability across the spectrum in Land, Sea and Air domains. We are always pleased to work in collaboration with customers to provide best capability, support and value for money.



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www.leonardocompany.com/en/home



- EOD
- Force Protection
- System Integration
- Communications
- Electronic Warfare
- Surveillance



XP-360™

Explotrain® LLC



Additionally, the PULSE shockwave effect can be used to create additional impact as a 1 liter water bottle, placed on a workbench in an HME environment, will shatter IEDs themselves such as...

Specific

- Operate
- Simple
- Fill v
- Safe
- M



291 Lewis Street
Florida 32547
Fort Walton Beach
USA

T: (850) 862 - 5344

E: info@explotrain.com

XP-360™ Pneumatic Ultra Loud Shockwave Effect (PULSE™) Simulator

The XP-360™ Pneumatic Shockwave Device produces a tuned Shockwave and loud Blast Effect using compressed air or CO2 at 100-150 PSI.



Unlike traditional pneumatic or CO2 powered devices that rely on bursting discs or containers, the XP Series produces a tuned shockwave effect with no fragmentation hazard. Rapid repeat firings are possible with no need to "reload" the XP-360, simply refill and refire in a matter of seconds.

- Loud blast and shockwave effect
- Uses compressed air or CO2
- No burst discs or fragmentation hazard
- Completely submersible
- Automatic refill capability

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Explosive Blast Simulators - Battlefield Effects - Artillery Simulators - IED Training Aids

X-05™

Explotrain® LLC



of 100-125+ dB with an accompanying safe simulation of the effects of IEDs, waterproof construction and separate gas concealed in a variety of training scenarios. Long Range Transmitters, X-CAP wired switches such as trip wires or

X-05™

Explotrain® LLC

Mid-sized Explosive Blast Simulator

The Model X-05 uses Explotrain's patented propane/oxygen system to create realistic explosive battlefield effects



- Realistic yet safe explosive effects
- Extremely low operating cost
- Easily concealable
- Can be partially buried or submerged
- Long range remote control



The explosive blasts produced by the X-05 result in an adjustable 100-120+dB punch of sound that is felt as well as heard, allowing you the necessary realism required for your training needs.

Explosive Blast Simulators - Battlefield Effects - Artillery Simulators - IED Training Aids

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Explosive Blast Simulators - Battlefield Effects - Artillery Simulators - IED Training Aids

X-CAP™ **Explotrain® LLC**

The X-CAP Transmitter replaces the inert blasting caps used in simulated devices, allowing the electronic circuitry to transmit a firing signal to X-0 or XP Series Simulators when triggered. The X-CAP Receiver can be used in classroom settings to produce audible buzzer effect upon triggering, or connected to an X-0 or XP Series Blast Simulator to produce realistic blast effects. Indoor, Urban, and outdoor environments. Eight different color coded transmitters are available to allow the X-CAP Receiver to differentiate between multiple transmitters.

Specifications

- Completely inert
- 433 MHz
- Up to 50m open air
- Controls one or more
- Simulates response
- Rugged construction

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Explosive Blast Simulators • Battlefield Effects • Artillery Simulators • IED Training Aids

X-CAP™ **Explotrain® LLC**

Blasting Cap Transmitter for IFIEDs™ and IED/EOD Training

The X-CAP Blasting Cap Transmitter™ provides realistic training and IED simulation capabilities.

- Realistic appearance
- Standard length and diameter
- Response time similar to commercial caps
- Easy to insert into simulated device circuitry
- Wirelessly interfaces with X-0 and XP Simulators

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Explosive Blast Simulators • Battlefield Effects • Artillery Simulators • IED Training Aids

X-CAL™ **Explotrain® LLC**

State of the Art Machine Gun Simulator

Explotrain Model X-Calibre™ simulates 5.56mm, 7.62mm, and .50 caliber automatic weapons fire

Interchangeable Barrel - multi caliber simulations
Rugged construction
Independent operation
Portable design
Control and hardwired triggering options

The Explotrain Model X-LRT and X-MIT Transmitters provide a rugged housing and intuitive interface for controlling multiple Explosive Simulators. Sunlight readable LEDs, each dedicated to a Simulator, continuously indicate not only the communications status of each unit but its Armed/Disarmed and Firing state as well.

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Explosive Blast Simulators • Battlefield Effects • Artillery Simulators • IED Training Aids

Explotrain® LLC

Specifications

- Simulates 5.56mm, 7.62mm, and .50 caliber fire rates and report
- Interfaces with Explotrain's X-MIT and X-LRT Transmitters
- Hand carried configurations available
- Single shot sniper fire simulation capability
- Cold-Fire™ technology for reliable operation
- AA battery power supply

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Explosive Blast Simulators • Battlefield Effects • Artillery Simulators • IED Training Aids



THE CUBE RAPID DEPLOYMENT SOLUTION

ENGINEERING INNOVATION

Excel Design & Integration specialises in precision engineering capability, including the innovative design and build, verification and installation of electromechanical, electronic and communication systems into mobile platforms and container-based solutions for rapid deployment and secure environment applications. Across Air, Land & Sea Excel Design & Integration products and services have for years proven their high quality with years of continuous service.

THE CUBE

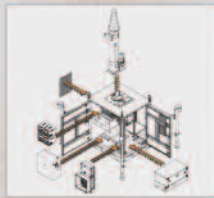
A generic packing system approach to integrate sub-systems. A common footprint packaging power generation, distribution and connectivity infrastructure that allows any product set to be integrated and supported.

FLEXIBLE & VERSATILE

System equipment packaged in the Cube is capable of operating as a standalone self-contained entity or alternatively as part of a larger deployment system. The Cube is modular in construction and offers maximum flexibility and versatility.

TYPICAL APPLICATIONS

- OPTICAL / RADAR SENSING
- WATER PURIFICATION SYSTEM
- MEDICAL EMERGENCY RELIEF
- DISASTER RELIEF
- REMOTE WEAPON STATION
- COMMUNICATION POST
- MOBILE PHONE HUB
- WASTE DIGESTION SYSTEM



KEY CAPABILITIES

The Excel Cube comprises of a simple frame the structure within stainless steel or mild steel, the frame being bolted together and aspects of the frame, roof and supports and can be accommodated a range of module configurations including but not limited to:

- AC or 230/110V AC with power provision from integrated generator, eco sources (wind/solar, fuel cell etc) or local power
- customer specific 1U - 23U.
- flexible telephonic masts.
- leveling / stabilising legs allow the unit to sit level on uneven ground -25°C and +40°C, and complete security.
- the Cube is a convenient hot swap battery housing for military, military and civilian battery, air and land.
- demanded requirements - both military and civilian.
- flexible connectivity.
- measured with the use of pulsed truck.
- being transported by all civilian and military.

ENGINEERING INNOVATION



PROTECTION THROUGH TECHNOLOGY

The Excel Group is a leading independent defence technology solutions company. Providing integrated land and maritime engineering solutions, electronic and mechanical systems and support services to Defence and Industry where protection, reliability and safety are paramount. The business has grown through demand for our products, serving a global list of clients across government, defence and commercial interests.

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

The Excel Group provides superior levels of protective technology through the rapid and advanced application of cutting edge science, technology and engineering - ensuring the personnel, assets and locations of our clients remain protected against a broad range of threats.



E: enquiries@excel-group.com | T: +44 (0) 1684 579000 | www.excel-group.com



VMU & VIDI VEHICLE MONITORING UNITS & SOFTWARE SUITE

CONNECTED. PROTECTED.

Excel Electronics designs and produces fully engineered, documented and supported electronic defence systems to meet customer project-specific requirements. The Excel Electronics facility based at Walswood, Poynor, is Excel Group's centre of excellence for design, manufacture and testing of software and electronic systems and offers proven expertise in Systems Engineering where reliability, safety and protection are paramount.

VMU SUMMARY

Excel Electronics VMUs are condition monitoring and logging units designed specifically for use on mobile platforms subject to severe operational use such as military vehicles, mining equipment and marine craft and in extreme environments where functionality must be maintained for long periods of time, for example marine wind turbines or remote installations monitoring.

- 10 Analogue input
- 2 Frequency input
- RS232 & RS485
- Ambient temperature sensing
- 8 Digital input
- 2 CANbus Channels
- 3 Axis accelerometer
- Power supply monitoring

DATA TRANSFER OPTIONS INCLUDE:

- MICAN
- MODBUS
- GSM/GPRS telemetry

OPTIONS AVAILABLE:

- Internal GPS
- GSM/GPRS
- 6 axis inertial sensor

- 28 channels of Analogue input
- 4 channels Frequency input
- RS232 & RS485
- 3 Axis accelerometer
- Power supply monitoring
- 24 channels of Digital input
- 3 CANbus Channels
- 8 Digital output channels
- Ambient temperature sensing

DATA TRANSFER OPTIONS INCLUDE:

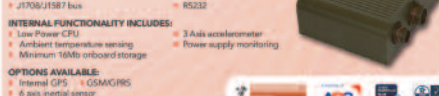
- MICAN
- CAN and MODBUS
- Serial connections

INTERNAL FUNCTIONALITY INCLUDES:

- Low Power CPU
- Ambient temperature sensing
- Minimum 16Mb onboard storage
- 3 Axis accelerometer
- Power supply monitoring

OPTIONS AVAILABLE:

- Internal GPS
- GSM/GPRS
- 6 axis inertial sensor



CAPABILITY

The software consists of four principal applications:

- VIDI Download**
The main entry point into the VIDI software suite provides facilities to upload configuration and alert data downloaded from the VMU, and to extract that data into various formats and subsequently produce visual reports for data analysis. Requires a connection to the VMU via a CDH.
- VIDI Configuration**
VIDI Configuration allows the user to configure any VMU, channel allocation, parameter levels, alarm points, data logging, status and histograms.
- VIDI Template**
Allows the creation and design of templates for the report generated functionally within VIDI Download. The templates define the look, feel and content required for the PDF reports, and include the ability to add multiple charts to review and analyse the data.
- VIDI Live**
Real time display of operational channel data.

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Excel Design & Integration

The Excel Group's precision engineering capability. Excel Design & Integration, includes the innovative design and build, verification and installation of electromechanical, electronic and communication systems into mobile platforms and container-based solutions, for rapid deployment and secure environment applications.

A heritage and commitment to quality can be traced back to the founding of Drawing & Tracing Ltd in 1987 in all our products and services.

Many projects are supplied on a 'turnkey' basis against initial concepts or drawings across a broad range of mobile platforms - specially designed containers, integrating complex mechanical, electrical and software systems ready for operation in the world's most hostile environments, high-fidelity robust trading systems or lightweight, modular armour solutions.

Across Air, Land & Sea Excel Design & Integration products and services have for years proven their high quality with years of continuous service.

Excel Electronics

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

Excel Electronics designs and produces fully engineered, documented and supported electronic defence systems to meet customer project-specific requirements. The Excel Electronics facility based at Walswood, Poynor, is the group centre of excellence for design, manufacture and testing of software and electronic systems and offers proven expertise in Systems Engineering where reliability, safety and protection are paramount.

Across 6 key product groups, Excel Electronics delivers a broad range of solutions:

- Protect Data
- Transmit Data
- Collect & Analyse Data
- Deliver Power
- Simulate & Learn
- Control Systems



DRAGON-S12

Uncooled Thermal Imager
In-line Thermal Weapon Sight



DRAGON-S12 is the new In-line Thermal Sight, part of the latest development in thermal imaging technology from Excelitas. Providing snipers with 24hr surveillance and target engagement capability.

DRAGON-S12 utilizes a state of the art 640x480 format 12µm, 60Hz uncooled thermal sensor coupled with a near silent shutter, delivering class leading sensitivity and uniformity.

DRAGON-S12 is part of the DRAGON family of uncooled thermal products from Excelitas that utilizes the latest in uncooled thermal camera, electronics and optical technologies to deliver world leading performance and reliability.

DRAGON-S12 attaches to Picatinny and NATO accessory rails in front

of the day sight via a quick release throw lever, providing 24hr capability without the need to remove or re-zero the day sight.

DRAGON-S12 thermal sight is designed specifically to meet target and surveillance requirements for military customers and law enforcement agencies providing high performance within a lightweight compact and rugged military qualified design.

DRAGON-S12 delivers a capability to detect, recognise and identify man and vehicle targets 24hours a day, in poor visibility, in total darkness and through battlefield obscurants.

Enabling the future through light

www.excelitas.com

DRAGON-S12

Uncooled Thermal Imager
In-line Thermal Weapon Sight



Main Features

Thermal Imager:
Sensor: 12µm, 60 Hz VOx (ITAR free) Near silent shutter
Field Of View: 9.5 x 7.2°
Focus Range: 15m to ∞ (fixed focus) Diamond Like Carbon (DLC) Anti-Reflection optical coating

Image Intensifier:
Field of View: 11.8° circular
Focus Range: 15m to ∞
Durable Anti-Reflection optical coating
Image Intensifier Tube: PHOTONIS 4G – Green or White Phosphor

Display Type: OLED, full color, 1280 x 1024

Magnification: x1

Controls and Functionality:
Modes: Off / I2 / Blend / TI / Menu
Functionality: Blend Adjust, Brightness, Polarity, NUC, Outline, Edge

I/O Port: RS232 Comms, External Power, Video Out (PAL/NTSC)
Standard: TI Video Out

Power: 2 x 1.5v AA Cells
Polarity Protection
>7hrs continuous operation, Fused Mode
>24hrs continuous operation, I2 Mode

Nominal dimensions: 123mm (L) x 80mm (W) x 72mm (H)

Weight: 650g - Includes:
TALON Weapon Sight including rail grabber lens cap and light security shroud.
2 x AA Lithium Batteries

Finish: Various paint options available

Environmental

DEF Stan 00-35 Part 3 (Environmental)
Temperature (Operating)
Temperature (Storage)
Thermal Shock
Solar Radiation
Shock – Drop Test (Sight Alone, Field Pouch and Logistical)
Shock – Vibration (Fixed Wing Propeller, Rotary Wing, Tracked and Wheeled Vehicle)
Low Air Pressure and Transportation
Chemical and Biological (Resistance and Decontamination)
Dust and Sand (Wind Blown)
Water Immersion (20m)
Driving Rain
Mist, Fog and Low Cloud
Salt Atmosphere
Mould Growth

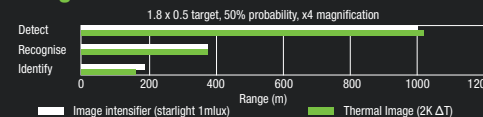
DEF Stan 08-41 Part 1/1 (Chemical and Biological)
Chemical and Biological Hardening
Decontamination – In Service decontaminants

DEF Stan 59-411 Part 3 (Electro-Magnetic Effects)
Electro Magnetic Compatibility – Emissions and Susceptibility

Package

Standard:
TALON Weapon Sight, Lens Cap, Light Secure Shroud, Transportation Case, Field Pouch, Operators Manual, Lens Cleaning Kit, 2 x AA Lithium Cells
Options: Multi-Function Remote Control, Daylight Training Filter

Range Performance



For technical information contact: sales@uk.qioptiq.com | phone +44 (0)1745 588000

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IEDD Van

BESPOKE EOD/IEDD VEHICLE

DESCRIPTION

Building upon over 30 years experience of design and manufacture of specialist Counter IED detection products Guartel now also provides bespoke EOD/IEDD Vehicle packages. Each system is specifically designed to the customer's requirements, with subject matter expertise provided by Guartel as required.

Guartel Technologies works with all the major OEMs of EOD and Counter IED products to provide a single source solution for our clients.

All conversion work is undertaken by specialist vehicle conversion engineers and coach builders with input from experienced CIED operators. All work is carried to the relevant NIJ, STANAG, Home Office & MILSPEC standards. All projects are managed under Guartel Technologies Quality Management System ISO 9001:2008.



T: +44 (0)20 7384 3001

www.guartel.com



Guartel
Technologies Ltd

IEDD Van

BESPOKE EOD/IEDD VEHICLE

SPECIFICATIONS

We can take a standard box or body vehicle or chassis and convert this into a high specification response vehicle, options available include:

- Armoured glass
- Armoured crew cab
- Internal storage racking
- ECM installation
- Ramps for ROV
- Air conditioning / climate control
- Ammo & explosive storage
- Internal / External power for charging onboard systems
- Lighting bars
- Remote controlled camera & Lighting mast
- Installation of communication system including SATCOM & GPS



Technologies Limited

Forest Enterprise Centre

on SO40 9LA United Kingdom

W: 3001

W: www.guartel.com

CAGE Code: U4586

DUNS No: 641176024

VAT No: 915654121



www.guartel.com

LIGHTWEIGHT CABLE REELS

DESCRIPTION

Cordwheel

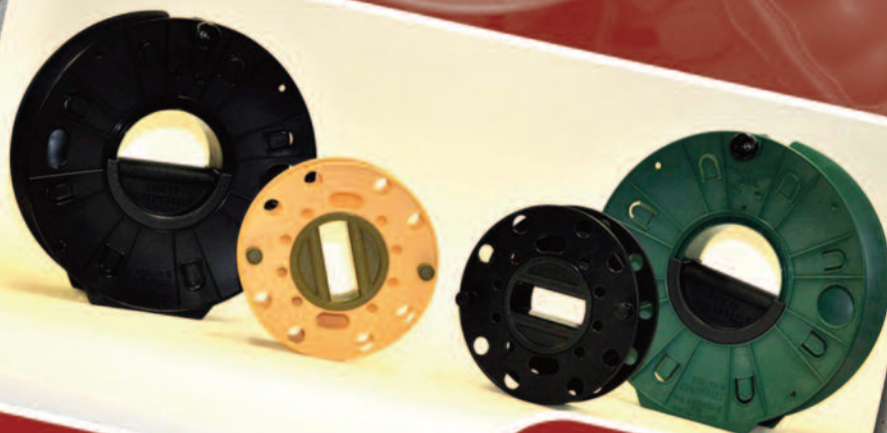
The Cordwheel is a hand held, lightweight, rugged, ergonomic, multi-function reel used by defence and homeland security for OH&S tangle free handling and storage of cables, optical fibre, detonator cord, firing cable, rope, tape, hose and wire.

The Cordwheel is manufactured from impact resistant polypropylene and is UV stabilised and chemical resistant; it can be used in the harshest environmental conditions.

The Cordwheel is ideal for use by signals specialists, EOD Teams, Combat Engineers & Dive Teams.

Pack Reel

The Pack Reel is a small rugged lightweight ergonomic reel that can be operated by a gloved hand in any conditions to deploy hook and line, firing cable, detonator cord, comms cable, rope, wire and cord. The Pack Reel can be attached to a soldiers webbing or pack carried. For storage the reel can be easily stacked on each other. The Pack Reel manufactured from high impact copolymer and ASS and is UV stabilised and flame resistant.



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LIGHTWEIGHT CABLE REELS



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DUNS No: 641176024
VAT No: 915654121



www.guartel.com

MD5

METAL DETECTOR
NSN 6665-99-303-7248

DESCRIPTION

The Guartel Technologies MD5 metal detector is designed for specialist search and exploitation operations. The detector is compact and lightweight and is particularly suited for Special Forces, police special operations and military/police Specialist Search Teams.

The MD5 utilises high speed pulse induction coupled with digital processors and custom designed software. The MD5 is self testing and self calibrating; use of a zero button function allows the user to discriminate readings from targets in close proximity to each other.

The MD5 is of one piece construction using high performance carbon fibre composite tubing and aircraft grade aluminium. The probe is telescopic making the MD5 very compact for carriage and stowage, extending the telescopic probe allows the MD5 to be used in the lying, kneeling and standing position. The MD5 has a folding control turret handle which houses the zero button and LED display module. Power is supplied from 2 x D cell batteries allowing up to 12 hours of use.

The selectable alarm allows the user to have vibrate, visual or audible alarms either singularly or in combination. Volume can be adjusted and the MD5 is supplied with an earpiece, which when fitted mutes the onboard loudspeaker.



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www.guartel.com

MD5

METAL DETECTOR
NSN 6665-99-303-7248

Electronics

Batteries

Battery Life

Transit Weight

Operation Weight

Detection

MD5

SPECIFICATIONS

Digital processors, RISC based 8 bit, surface mount technology.

2 Dry Cell IEE LR20 Manganese Alkaline, D cell.

12 Hours at an ambient temperature of 20°C

6.8kg (in Peli Hardigg Storm Case) 3.2kg

1.6kg including batteries

UK 2pence coin 170mm, PP3 battery 300mm

Supplied with, transit case, Cordura nylon carry pouch, earpiece, 2 batteries, MD5 detector, user instructions (English)



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CAGE Code: U4586
DUNS No: 641176024
VAT No: 915654121



www.guartel.com

H&L KIT

STANDARD HOOK
AND LINE KIT

DESCRIPTION

The Guartel Standard Hook and Line Kit is designed to provide the EOD or Search operator with the tools and equipment required to conduct basic hook and line tasks when conducting semi-remote EOD/Search procedures.

The kit is supplied in a EOD backpack which provides enough capacity for the hook and kit and also other EOD tools or personal equipment. The backpack is molle and hydration bladder compatible and has a 5 detachable pouches and a tool roll.



USES

CIED Operations
Search Operations
Demining
UXO clearance



T: +44 (0)20 7384 3001

www.guartel.com

MINI H&L KIT

MINI HOOK AND LINE KIT

CONTENTS

- Molle Cordura Nylon Pouch (ATP, black, green or tan)
- Pulling Line 2mm or 3mm (select either compact reel 1.2 kg or Packreel 600g)
- Line Puller
- Mini Self Opening Block x 2
- Large Flat Hook
- Small Flat Hook
- Mini Folding Grapple
- Mini Cutter
- Small Folding Double Hook
- Small Vice Grip with eye
- Toothed Spring Grip
- Snapgate Carabineer x 2
- Revolver Carabineer x 2
- Screw in Earth Anchor x 2
- 1m Dyneema Rope Loop x 2
- Mini Lever Action Suction Cap x 2
- Compact Mine Probe
- Trowel attachment for Mine Probe
- "Scrush" Mini Scraper/ Brush
- Leatherman MUT EOD Multi Tool
- Ceramic EOD Scissors
- 50m sacrificial line



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A member of
Counter IED UK

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Horstman is an agile small business comprising businesses units in the UK, US and Canada. Providing world leading design and manufacturing capabilities, our customers benefit from our time-tested pedigree in innovation, product development manufacture and defence project management in heavy armoured and tracked vehicle suspension systems.

Horstman led the world in the 1930's with development of the independent suspension bogie that bears its name, and the company's influence features on tanks and wheeled vehicles to this day.



- HORSTMAN PROVIDES THE WORLD'S WIDEST RANGE OF HYDROSTRUTS®
- HYDRAULIC DAMPERS
- TORSION BARS
- HYDRO-PNEUMATIC SUSPENSION



Horstman Hydrostrut®

The hydro-pneumatic suspension uses high-pressure nitrogen gas and an integral oil damper and provides for an easy path to ride height and wheel station load adjustment. Compact and providing excellent ride this is a superior selection for 4x4, 6x6 and 8x8 vehicles compared to coil or leaf spring, conventional shocks or air bag technology.



Horstman Hydrostrut®

Overview

In the late 1980s for tracked vehicle and wheeled applications, from the outset to eliminate the need for a separate spring by the vehicle designer to overcome the damping unit. This allows the vehicle designer to overcome the need for torsion bars or external packaging constraints in the case of size and cost.

on uses high-pressure nitrogen gas and an integral oil damper like the Hydrostrut® a sealed module suitable for robust use of compressed gas provide a natural progressive end stop into the chassis and crew. Separate bump stops can be in size and cost.

Best range of Hydrostruts®, together with ride height and features, M-77 howitzers, and a wide variety of 4x4, 6x6 such as the AMV, PARS and Terrex, Horstman has with the latest in ride height control and semi-active

an size compared to separate shock-coil or air up. The natural spring rate of compressed gas provide progressive end stop to travel and reduce shock loads and crew. Separate bump stops can be eliminated reduced in size and cost.

Space of Hydrostrut® allows use with road arms, or short / long arm suspensions. can be replaced: damaged units can be replaced

4 booked and reduce the height of the vehicle fully 100-500kg (or) ability to increase

nt spring rates at each wheel station allowing different vehicle variants in a quality, simpler than a torsion bar road arms, bump stops, dampers, and protective tubes. Upgrade path to ride height, lockout and semi active damping



Ride Height Control System - RHCS™

Horstman Ride Height Control System (RHCS™) Delivering vehicle strategic mobility for aircraft, rail transportation and sea lift.



Product Overview

The Horstman Ride Height Control System (RHCS™) provides a fully selectable ground clearance adjustment that also maintains the correct weight distribution on multiple axles. A CANBUS compliant Driver Interface Unit allows for terrain and ride height selections. The RHCS™ delivers vehicle strategic mobility for airlift, rail transportation and sea lift. Tactical mobility, platform stability, and suspension life expectancy are improved. Integrated, tested and produced on multiple 6x6 and 8x8 platforms the RHCS has delivered high mobility into amphibious, desert, mountain and tropical terrain.



www.horstmangroup.com

Benefit

and height for air-portability and rail gauge. Lower silhouette for maintenance, or higher ground clearance for counter IED

Height settings for improved performance across defined wheel station management provides recovery position improves vehicle maintenance operations

and contact and vehicle stability while ensuring conditions on all axes. Compensation for payload vehicle variants



Ride Height Control System (RHCS™)

Ride Height Control System (RHCS™)



Mastiff & Ridgback XC

ADVANCED OFF-ROAD PERFORMANCE

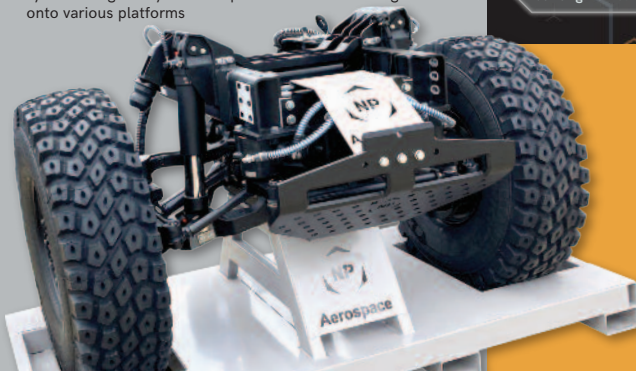
Mastiff & Ridgback heavy armoured vehicles can now achieve impressive offroad performance following a major engineering upgrade delivered by NP Aerospace and partners through the UK Ministry of Defence Protected Mobility Engineering Technical Support (PMETS) contract.

The vehicles proven on operation in Afghanistan and Iraq now feature state of the art high mobility suspension systems, ride height control, upgraded driveline, steering and braking systems and central tyre inflation systems.

The engineering upgrade is for an Urgent Capability Requirement in Mali, Africa. Partners on the programme include HORIBA-MIRA, Horstman, Texelis, Tyron and Universal Fabrications. Mastiff and Ridgback XC vehicles have been deployed to the UK MOD in 18 months, the first prototypes were delivered within 89 working days, sustaining the life of proven combat vehicles.

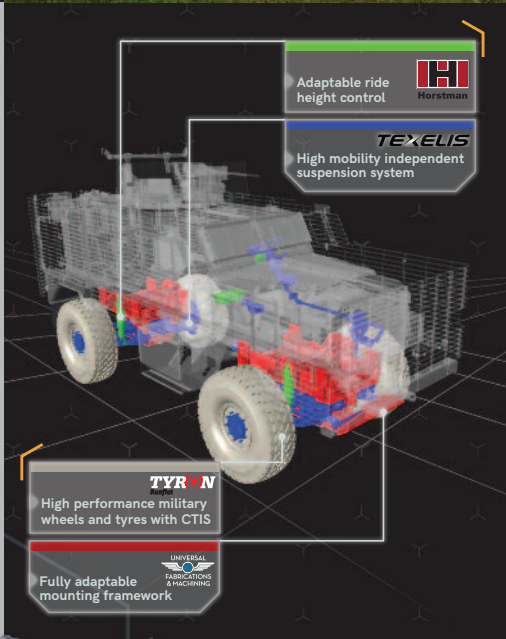
Performance Capability

- **Vehicle:** Mastiff & Ridgback XC
- **Vehicle weight:** 30 tonnes & 21 tonnes respectively
- **Max Speed:** 90kph on road, 55kph off road
- **MMP Ground Pressure:** ~350 kPa
- **Step Climb:** Min 350mm
- **Side Slope:** Min 30 deg
- **Inclines:** 60% gradient
- **Ground clearance:** 415mm
- **Ride height adjustable suspension travel:** ~180mm
- **Approach/ Departure/ Breakover Angle:** 40deg/ 37deg/ 133deg
- **Fording:** Min 950mm (Unprepared), Min 1.5m (Prepared)
- **Braking:** Tested to UNECE Reg 13
- **Reduced noise and vibration:** UK Whole Body Vibration and EU Legislation Compliant
- **EMC:** Tested to Def Stan 59-411 and UNECE Reg 10.05
- **CTIS:** Function Installed
- **Fully transferrable technology:** Utilising a retrofittable system designed by NP Aerospace which can be integrated onto various platforms



PMETS PROGRAMMES

NP Aerospace is the engineering authority for more than 2000 UK Ministry of Defence Protected Mobility Fleet vehicles. These include the Mastiff, Wolfhound, Ridgback, Buffalo, Choker, RODET, Foxhound, Jackal, Coyote and Husky. PMETS projects have included new technologies such as hybrid electric drive, vehicle autonomy, ADAS system integration, platform safety improvements and vehicle mobility enhancements.



NP100-SN06 Ballistic Plate

NIJ 0101.06 Level III Compliant



OVERVIEW

NP100-SN06 is an NIJ 0101.06 Level III compliant ballistic plate which delivers multi-hit protection against named special threats.

THREAT PROTECTION

Configuration: Stand Alone
Material: UHMWPE
Cover: Textile
Application: Plate Carriers, Body Armor
NIJ Level: III
NIJ Reference: H3001*
Thickness: 1.00" (25mm)
Weight: 3.2 lb (1.45kg) (medium, shooter cut) ± 0.25 lb (± 120 g)
Curvature: Multi-curve

FEATURES

7.62x51 M80 (NIJ III)
7.62x39 Lead core
5.56x45 M193



SIZE RANGE

Size	Part No.	Shape	Thickness	Curvature	Weight
6" x 6"	54871-556-6"x6"F	Full	1.00"	Multi-Curve	1.0 lb
6" x 8"	54871-556-6"x8"F	Full	1.00"	Multi-Curve	1.3 lb
8" x 10"	54871-556-8"x10"F	Full	1.00"	Multi-Curve	2.4 lb
10" x 12"	54871-556-10"x12"S	Shooter	1.00"	Multi-Curve	3.2 lb
10" x 12"	54871-556-10"x12"F	Full	1.00"	Multi-Curve	3.5 lb

Additional sizes available on request.
Dimensions ± 0.25 ". Weight ± 0.25 lbs.

*This is the model reference that appears in the NIJ Compliant Product List (CPL) <https://cjtec.org/compliance-testing-program/compliant-product-lists/>

Disclaimer

The information in this document is for guidance only. We reserve the right to make changes to the content at any time.

Product Warranty, Use & Care

NP Aerospace warrants for a period of 60 months after the 'date of issue' that the Hard Armour Solutions shall be free from defects in material and workmanship provided all products are used and maintained in accordance with NP Aerospace's Use and Care Manual.





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Allan Webb Ltd (AWL) has a team of over 30 technical authors offering a comprehensive range of services from the creation and supply of individual elements of documentation, to the management and delivery of entire support packages.

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





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Through our Obsolescence Management (OM) services, we seek to empower our customers with the confidence to support their systems through life.

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Obsolescence is a significant cost driver and can impact products and equipment at all stages of the acquisition process.

With systems expected to last longer in service, and the lifespan of electronic components shortening, it is becoming more difficult to support equipment and not experience unexpected costs or downtime due to the unavailability of components.

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AVOID UNEXPECTED COSTS

Our obsolescence monitoring and whole project risk management services provide the foresight to manage the risk to item availability and make informed decisions on how best to mitigate or resolve them.

Early identification of obsolescence risk allows a wider range of options to be considered and consequently reduces the actual cost of resolution.



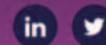
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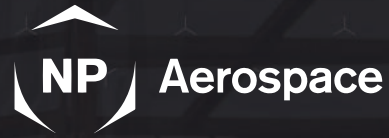


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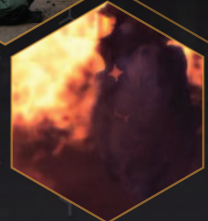
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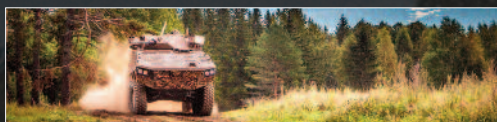
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The EA design and technology comes from the years of experience **SCHROTH** has with energy management in seatbelt systems. The design of the seat gives the occupant not only excellent protection in a mine blast event, but also offers excellent protection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



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

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

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KEY FEATURES

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- Modular construction
- Spring Loaded Self-Folding, storable seat pan
- Foldable backrest

CUSTOM APPLICATIONS

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The newly launched Excelitas RaptIR family of high-definition thermal cameras emulate the attributes of the Raptor birds of prey, delivering exquisite image clarity in an unsurpassed form factor providing a previously unattainable level of resolution per kilogram.

RaptIR offers the best resolution per kilogram available in the industry today and utilises the latest small pixel, high-operating temperature type II super-lattice (T2SL) mid-wave infrared sensor technology to provide a highly flexible solution for long-range surveillance and targeting applications. RaptIR offers vehicle identification at a range of 10Km in a package weighing less than 4.8Kg.

RaptIR offers the perfect upgrade to legacy camera systems providing enhanced imagery in a significantly smaller and

lighter package. This paradigm shift enables long-range imaging to be deployed without the need for heavy pan and tilt positioners so the system can track fast-moving targets more quickly without compromising range performance.

RaptIR is perfect for border surveillance, counter unmanned air-systems (C-UAS), airborne ISR, maritime surveillance &

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Small pitch Type-II superlattice sensors are the latest generation of detector offering unrivalled sensitivity at high operating temperature reducing the cool down time of the camera and increasing the operational lifetime to over 27,000 hours. Cooler operation is also silent making RaptIR an excellent solution for covert applications.

RaptIR uses an 8 μm , high-definition (SXGA), T2SL sensor with a long-life linear cooler. To obtain the best imagery from the small pitch detector, the camera uses our market leading F/3 continuous zoom optics giving greater image clarity and superior signal to noise with a 100% cold shield efficiency.

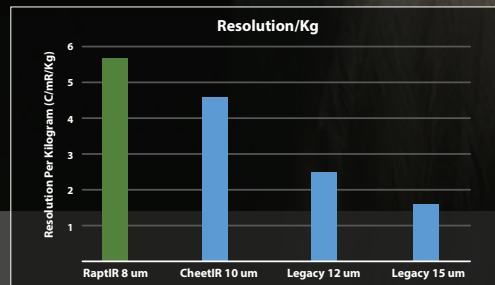
The RaptIR camera utilises our proven 'Veros' linear drive

mechanism which offers incredibly fast zoom transitions with micron precision over a full military temperature and shock environment. This level of precision is essential for optimum imaging, focus retention and boresight performance through the whole 14x zoom range enabling target acquisition and identification to be realised in less than .5 seconds.

RaptIR is provided with a High-Durability Anti-reflection (HDAR) coating as standard but can be configured with an Ultra-durable Diamond Like Carbon (DLC) or Boron Phosphide (BP) coating if required. Our BP coating offers the highest level of salt-fog and sand & dust resistance available in the industry so is particularly well suited to airborne and maritime applications.

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



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Five military electronic technologies driving consumer products



Military developed its first exoskeleton-assist devices to be mounted onto dismounted soldiers to improve their weight carrying ability and speed of travel on foot.

Weight was then supported by the extra structure of the hybrid leg that was part human and part machine. Electronics were often attached to detect pressure as well as to initiate hydraulic response equipment in the knee area. In time, full functioning human robots have emerged in the development process for the military. The electronics became popular in assisting amputees from military accidents and then in civilian hospitals. Biomed sensors: In our daily medical field, biosensors followed the exoskeleton technology and now offer sense of touch and pressure pads on prosthetic hands as well as can transmit data from a motion sense module mounted on an amputees head that sends Bluetooth signals down to the lower leg and foot to tell it to walk for the patient. Biosensor signal are very small that use nano-sized cable and connectors for board to board to board signals and to route low current battery power to the gears that respond in wrists, knees and feet.

FLIR and image collection: Forward looking infra-red imaging systems are designed for night operations in the military. Camera technology as well as binoculars and other surveillance

devices were exclusively military for years. Serious multi-frequency modules are often mounted on the bottom front nose of helicopters. Today we can buy and use night vision cameras, googles and binoculars for hobbies such as hunting and or watching wildlife and making educational films. Security, police and rescue teams use night vision. Night vision head mounted movie devices are also popular. Some of the most significant advances in FLIR imaging is when it is applied in the medical industry for esophageal scopes or other camera systems used for inner-body inspection. This reduces surgery and or helps define specific position of items being operated on.

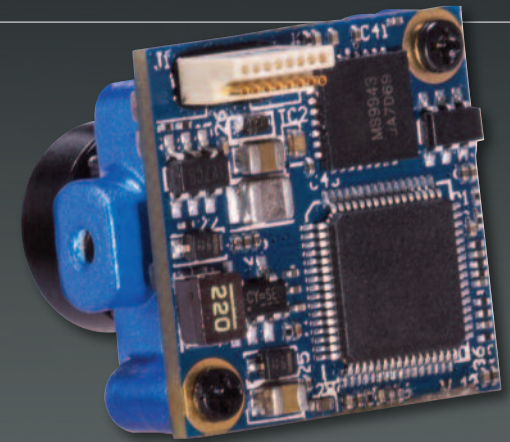
Drones and UAVs were originally developed for flying aircraft targets to help train navy gunnery systems to hit in-bound enemy aircraft. This was triggered from the surprise from the Kamikaze era in the later part of WWII. Drones were operated using old hand held analog frequency signal boxes as the Navy guns tried to shoot them down in the air overhead. The military drone got its first cameras for sending images during Vietnam where it was difficult to see from the ground. Today's drones

are used widely by hobby to industrial uses with cameras onboard. They are used for watching crowd control during public events, taking great photos of scenery, border control as well as building inspections.

Newest ones are well controlled and often connected to GPS signaling for position monitoring and for matching images to a map. Forestry, agriculture and even petroleum use smaller civilian drones in their business. Connectors are notably small and lightweight to allow longer flight times. Electronics must be quite rugged to sustain constant vibration of small UAVs and to survive shock of some landings.

The FAA maintained control of drones, for home based remote-controlled airplanes for kids and hobbies for years. With the shift to digital transmission being released for other civilian technologies like cell phones, small hobby drones were developed and used for radio control flights.

Software Defined Radio (SDR) was initially designed for military applications such as the Joint Tactical Radio (JTR) and has now



Camera sensor pods under an unmanned aerial surveillance drone aircraft

moved into other specialty defense programs. SDR has also become a key support technology in many other commercial and non-military areas, such as from communications with the international space station, specialty police radio scanners, and emergency services from ambulance and fire department communications to forest fire crews directing aircraft above. Recently portable radio astronomy devices are using it for satellite and planetary tracking. Finally we see international cyber communications security offices using SDR systems.

Bob Stanton
Director of Technology
Omnetics Connector Corporation

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Fast-growing defense market Saudi Arabia opens its doors to the world

SAUDI ARABIA, WHICH HAS LONG BEEN A MAJOR IMPORTER OF DEFENSE EQUIPMENT, IS NOW WELL ON TRACK TO PUT ITS DEFENSE INDUSTRY ON A PATH OF SELF-RELIANCE.

Historically dominated by a handful of international players, the World Defense Show will create a new level playing field for global firms and startups alike within the Kingdom's defense market by opening up new opportunities across all levels of the defense ecosystem.

Saudi is open for business

Under Vision 2030, the Kingdom plans to increase its local production of defense manufacturing to 50% of its defense spending. To achieve this objective, the Kingdom is offering international defense players and investors a unique opportunity to invest in its defense industry, which, with an expected CAGR of 7%, represents one of the most attractive opportunities in the global defense market.

Across four days of trade conferences and exhibitions from 6-9 March 2022 in Riyadh, the World Defense Show will unlock a wide range of opportunities within the Saudi defense ecosystem for global players. Founded by the Kingdom's General Authority for Military Industries (GAMI), which oversees and manages the growth of the local defense sector, the World Defense Show will offer participants unprecedented access through curated networking events, such as the Investor-Investee program and Meet the KSA government program.

The latter, expected to attract large numbers of investors and defense players to the inaugural event, will give participants exclusive access to Saudi key decision makers from entities like GAMI, SAMI and the Saudi's Ministry of Defense.

Exploring the future of defense

Through World Defense Show's Thought Leadership program, featuring a range of conferences dedicated to the future of the defense sector, participants will gain invaluable insights into the Kingdom's defense investment roadmap.

While it is no secret that interoperability and technology transfer are at the heart of Saudi's localization plans, GAMI has also earmarked priority areas and targets for localization across each defense domain under its Vision 2030 plans.

In line with these plans, World Defense Show's 800,000 sqm purpose-built venue will showcase integration across all five defense domains –

land, sea, air, security and space – through live and static displays, as well as virtual simulations held in a 23,200 sqm dedicated area. The show's daily demonstrations will allow visitors to witness how cross-sector interoperable systems operate in action and how cutting-edge equipment comes into play in mission-critical scenarios.

An opportunity too big to ignore

Aside from its high-growth potential, the Saudi defense market offers incredible benefits to foreign investors and defense players. In just a few years, the defense sector's localization rates have more than doubled to 8 percent of total expenditure, and the availability and cost of raw materials used in the manufacturing of defense equipment are particularly attractive for international defense players keen to join the government's efforts to open local manufacturing facilities.

Several prime companies, including Boeing and BAE Systems, started defense manufacturing activities in Saudi Arabia in 2015 and 2017 respectively to leverage the first-mover advantage and historical trade ties with the Kingdom.

With innovation and interoperability dominating the Saudi defense localization agenda, primes, SMEs and startups from across the globe are welcomed to use this once-in-a-lifetime chance to explore the opportunities offered by one of the largest regional defense players. Hundreds of exhibitors, including 125 local Saudi defense companies, and more than 100 military delegations from over 70 countries have already confirmed their participation to the inaugural edition of World Defense Show. The show, which is expected to welcome more than 30,000 visitors in March 2022, has already had to expand its exhibition site by 14,500 sqm to accommodate high levels of exhibitor demand.

Trade visitors have until February to register for the show. Registrants will receive a complimentary multi-entry visa, valid for one year – allowing for connections to extend beyond the show days. To attend World Defense Show in Riyadh from 6-9 March 2022, click on the following link or visit www.worlddefenseshow.com.

Georegistration

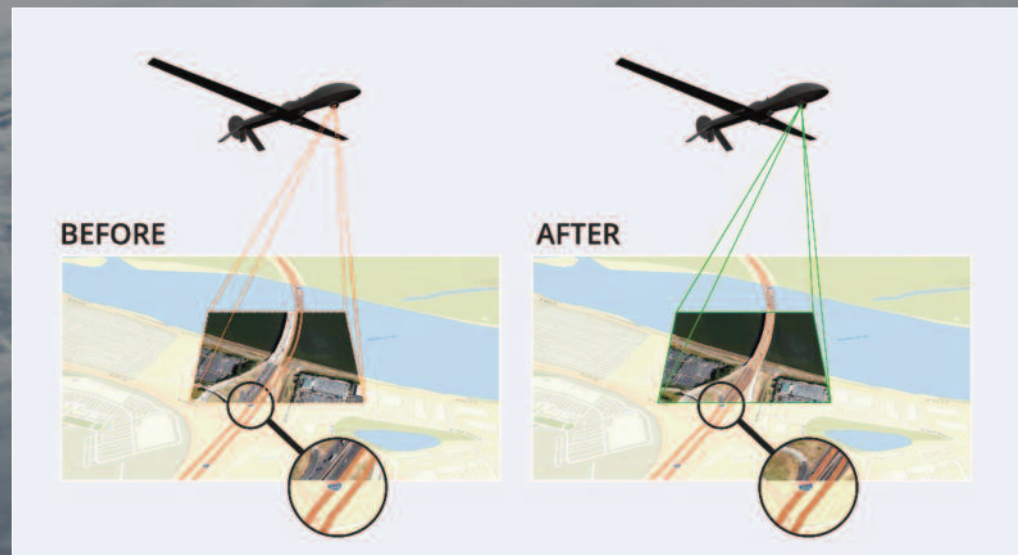
the process of accurately assigning geographic coordinates to images, videos, and other visual assets, is a crucial step in the modern world of analytics, collaboration, and targeting.

Satellite and airborne imagery are inherently inaccurately located, with errors often ranging from tens to hundreds of meters. This is due to a variety of factors, including the accuracy of the sensors used to capture the imagery, the quality of the navigation data used to position the sensors, and the effects of the Earth's atmosphere on the imagery. To address these errors, georegistration techniques are used to accurately assign geographic coordinates to the imagery. These techniques involve comparing the imagery to other sources of geographic data, such as maps or other images with known geographic coordinates, and applying mathematical transformations to the imagery to bring it into alignment with the other data.

For accurate analytics, including machine learning and artificial intelligence, georegistration is essential. By accurately aligning images to references, algorithms can analyze patterns and trends in the data and make more accurate predictions and decisions. For example, georegistered satellite imagery can be used to monitor crop growth and predict crop yields, or identify and pinpoint breaches of construction certificates, while georegistered traffic camera footage can be used to optimize traffic flow and reduce congestion.

Georegistration is also important for situational awareness and collaboration over visual assets. By accurately placing images and videos on a map, multiple parties can view and understand the same visual information in a shared context. This is particularly important in emergency response and military operations, where situational awareness can mean the difference between success and failure.

Accurate targeting is another critical use case for georegistration. By accurately locating target indications over visual assets, organizations can more effectively plan and execute operations, whether it be for emergency response or military purposes.




Finally, the incorporation of geographic information system (GIS) elements in visual feeds is made possible through georegistration. By overlaying GIS data on top of visual assets, organizations can gain a deeper understanding of the context in which the visual assets were captured and/or are operating. This can be particularly useful in fields such as agriculture, urban planning, and environmental management, where the spatial context of visual assets is important.

Overall, the importance of georegistration cannot be overstated. It is a crucial step in the analysis, collaboration, targeting, and visualization of visual assets, and is essential

for making accurate and informed decisions in the modern world. Despite the inherent inaccuracies of satellite and airborne imagery, georegistration techniques can achieve relatively high levels of accuracy, with errors often on the order of a few meters or less. This level of accuracy is imperative for many applications, such as those involving critical infrastructure or fine-scale analysis.





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Avon Protection expands CBRN protection



A new line of CBRN protective garments are enhancing Avon Protection's work to keep operators safe from chemical threats in high-risk environments. Manufactured from the company's proven rubber technology, the EXOSKIN range is designed to protect personnel without compromising the wearer's tactical agility in the field.

EXOSKIN Gloves and Boots

The ambidextrous EXOSKIN-G1 Tactile CBRN Gloves allow for the handling and operation of electronic touch screen devices. With a rubberised outer layer textured to maintain grip in wet conditions, and an intelligent, seamless inner knitted liner that has a conductive tip on both the thumb and forefinger, the layers optimise the wearer's dexterity and allow them to complete their mission safely.

The EXOSKIN-B1 High Traction CBRN Boots provide improved durability and agility in the field with quick-release straps to secure the garment over standard footwear. A highly textured sole improves the wearer's manoeuvrability in all underfoot conditions. In addition, it is 100% leak-tested.

"In developing the EXOSKIN range of CBRN protective garments, our focus was to optimise end-user versatility in the most demanding environments, while continuing our relentless pursuit to keep operators safe from these chemical and biological threats", Steve Elwell, Vice President of Avon Protection UK and International, said. "We applied our deep CBRN and rubber expertise to fill this gap in the market with a quick don/doff boot and glove that offer chemical warfare agent and TIC (toxic industrial chemical) protection, and that are impermeable to biological agents."

Towards protective garments

The EXOSKIN range presents a new capability for Avon Protection, which is best known for its market-leading Air Purifying Respirators (APRs). The company has delivered 3.5 million M50/FM50 CBRN personal respirator systems to military users worldwide, as well as escape devices and self-contained breathing apparatus (SCBAs).

So - what has prompted this shift into protective garments from a company that has built its position in the market as a leading provider of respiratory protective gear?

"This is not so much a shift as an expansion into a wider market offering, which is in line with where we see demand heading in the near future" Elwell said. "In expanding its offerings beyond respirators into protective garments, Avon Protection aims to provide the full scope of integrated protective wear that can be scaled to suit changing threat environments and readiness levels."

Increased agility

Similarly, the company is supporting efforts to help reduce military operators' reliance on APRs and to offer respiratory protective equipment for the wide range of users requiring CBRN protection and the range of threats that exist.

"There is certainly a case for a new dress category state, as these currently offer limited flexibility at lower threat levels," Elwell said. "The changing threat environment highlights the requirement for an additional state of readiness allowing combatants to be agile, while still ready to protect themselves against a broad range of threats - whether this is a release of a weaponised chemical or from a damaged industrial site."



APRs are expensive and require training, maintenance and spare filter provision, which makes them unsuitable for carriage by users at all times. In recognition, Avon Protection has invested in developing the smallest and most compact escape device on the market - the CH15 Compact CBRN Escape Hood - which offers the same high level of CBRN protection that an APR would provide at a lower size and weight, as well as a reduced training and maintenance burden.

Such thinking is reflective of the company's forward-looking approach to the CBRN sector and gives some insight into how the company is positioning itself for what it sees as a dramatic shift in the way military forces view the CBRN threat.

Non-military theatres

When the milestone 1997 Chemical Weapons Convention banned the use of chemical weapons by the international community, CBRN protection became largely limited to a small sub-set of specialist military operators. Typically, only those personnel whose job it is to respond to chemical or biological attacks would ever need to deploy their respirators while on active service.

However, since then a number of governments and nation state-backed groups have shown themselves willing and able to deploy chemical weapons in non-military theatres, putting the lives of civilians, first responders and military personnel at risk.

"These factors are driving militaries to reconsider how they equip their personnel for operations that can no longer exclude the possibility of chemical and biological threats," Elwell said. "We are continuously applying our deep understanding of the CBRN threat and working with research teams to produce innovative solutions ready to take to market as needs evolve and requirements emerge."

"We have already received orders for the EXOSKIN range from existing users of our respirator products, confirming our belief that users who know and trust the Avon Protection brand want to expand their use of our products to keep their operators safe in the field."

www.avon-protection.com

AVON
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David Brown Santasalo

David Brown Santasalo

...to work with Krauss-Maffei Wegmann and WFEL on the UK Mechanised Infantry Vehicle Programme.

David Brown Santasalo (DBS) is pleased to confirm they will work with Defence manufacturer, Krauss-Maffei Wegmann (KMW) and WFEL on their UK Mechanised Infantry Vehicle (MIV) Programme. The scope of the project

is to supply fully assembled and tested BOXER MIV powerpacks over a 10-year period. The finished units will then be delivered to WFEL in Stockport, where they will be integrated into the BOXER vehicles.

The multi-million-pound project is one of most prestigious Land Defence contracts and solidifies DBS's position as a key supplier to the UK MoD.

DBS has been a well-known and integral part of the Defence industry for over 100 years, headquartered at a state-of-the-art facility in Huddersfield, UK. DBS is internationally recognised as one of the most demonstrated and innovative suppliers of bespoke land and marine power transmission systems. Their gear systems and service solutions underpin assurance critical applications in industries where failure is not an option.

As DBS embarks on this exciting new project with KMW, DBS brings not only extensive experience and expertise as a proven major sub-system supplier, being versed in UK MoD procedures, but also a significant contribution to the stipulated localised content. The contribution made by world renowned UK Defence suppliers like DBS ensures that the UK develops, retains and maintains its Defence capabilities for many years to come.

Steve Watson, Global Defence Director and Managing

Director UK said, *"Through the development of this key partnership with KMW, we are delighted to continue to contribute to the UK economy and our local community through job retention and creation of new roles. We relish the opportunity to continue to strengthen our local team."*

A strong leader in global mechanical power transmission systems for applications in major industrial sectors such as mining, power generation, land and naval defence, DBS's operations span six continents with 30 locations worldwide. DBS has a long-standing heritage and can trace its roots back to 1860 when David Brown in the UK commenced cast gear manufacturing. In 2016, David Brown joined forces with Santasalo to become one of the world's leading gear engineering brands.

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Autel Robotics is excited to be exhibiting at IDEX 2023 in Abu Dhabi from February 20-24.



We recently debuted our newest enterprise drone, the EVO Max 4T, receiving a lot of attention in a relatively short period of time. Following our reveal at CES, this will be the EVO Max 4T's first showcase after launching at CES. We will also bring our Autel Smart Antenna Transmission (ASAT) to IDEX to demonstrate how it can contribute to the Air Defence field.

We're excited to continue expanding our awareness in the MENA market and show off new products and new solutions for the world's most demanding, discerning markets.

Recent Success

Our latest drone, the EVO Max 4T, will be on display at IDEX 2023.

The EVO Max 4T drone was recently unveiled at CES 2023 in Las Vegas, along with a range of new accessories. The EVO Max 4T is an intelligent, autonomous flight platform with powerful self-reliance and navigation capabilities, omnidirectional obstacle avoidance, tri-anti interference capability, and a versatile payload bay. It also includes three high-quality cameras, allowing it to excel in complex environments.

The other key notable release from us was the Dragonfish NEST and EVO NEST stations. The NEST stations are hubs that serve as highly automated stations for our drones, allowing users to conduct semi-autonomous reconnaissance, land surveys or other missions. Supported drones can take off, land, and carry out consecutive missions with little to no human intervention needed. It includes a retractable canopy, a glass-fiber charging board as well as our exclusive software to plan flight tasks remotely.

The EVO NEST is compatible with all EVO II Series aircraft and offers live video feedback, a standard application programming interface, and customization support.

IDEX 2023 and Autel Robotics

At IDEX 2023, Autel Robotics are planning to exhibit the following products:

Enterprise Series: EVO Max 4T; Autel Smart Antenna Transmission (ASAT); Dragonfish Series (Lite and Standard); EVO II V3 Series; Live Deck 2; Autel Smart Controller V3 & SE.
Consumer series: EVO Nano+; EVO Lite+; EVO II Pro V3.

For those who wish to know more about our products, usage scenarios and more, come find us at Booth 03-A34, at the upcoming IDEX exhibition.

We hope to see you there, and wish you success in 2023.

Visit Autel Robotics at IDEX 2023:

Booth: **03-A34**

Venue: **Abu Dhabi National Exhibition Centre**

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Respiratory Protection

for the evolving threat landscape



The images and reports that followed the events of the January 2021 Capitol riots in the United States shocked audiences globally as an iconic democratic institution came under attack and threatened the safety of the lawmakers inside.

Few could foresee such an event taking place, however, it demonstrated the importance of being prepared for any eventuality. With rioters close to breaching the doors to the Senate, escape hoods were distributed and deployed to law makers and politicians housed inside to protect against any airborne threat such as tear gas or any unknown substance that may be released by rioters. These events showed the importance of preparation and having such a device on hand that could be quickly and easily donned.

Individuals who are routinely subjected to particulates, gases or vapours which are harmful to the respiratory tract due to their occupation will deploy suitable Respiratory Protective Equipment (RPE) and other Personal Protective Equipment (PPE) to ensure they are suitably protected from the threat at hand. The presence of harmful substances occurs in a range of workplace professions, often in these cases, the threat substance is known, and suitable protective equipment can be selected to allow work to be conducted safely.

However, in certain situations, the potential for a release of materials hazardous to health means organisations and agencies typically develop an Emergency Response Plan, consisting of a means to protect and safely evacuate all affected individuals, such as that which was followed in the Capitol riots.

Adapting protection to meet changing threat profile

Increasingly, respiratory protection is at the forefront of people's minds due to the ever-changing threat profile. In the last decade, there has been an increased concern about the potential for a terror attack or attack by a hostile state releasing a chemical or

radiological agent. However, these threats are not confined to only deliberate releases. Economic development has meant the presence and transportation of hazardous materials have become more widespread globally due to increasing numbers of industrial facilities and the associated waste being produced and subsequently transported cross-country. The increasing volumes and geographic spread of Toxic Industrial Chemicals and Materials (TICs/TIMs), leads to a greater potential for an accidental release of these materials in both rural and urban communities.

Large-scale incidents of a Chemical Biological Radiological and Nuclear (CBRN) nature can occur without warning or prior intelligence and the proliferation and use of chemical agents by both nation states and individual terror groups throughout the late twentieth and twenty-first century presents a real threat to frontline Military and First Responder personnel. Consequently, global Militaries and First Responders alike have expressed a desire to be prepared for any potential threat and investigate and action the procurement of CBRN protection to all individuals who may be located in potential target sites or high-risk geographies. For this kind of respiratory protection to be successful, it needs to be low-profile, simple to use with a quick don time as well as cause no interference with both the existing ensemble of equipment used by the operator or with their job role.

A respiratory escape device is designed to provide a period of protection to enable a safe escape from the threat at hand. A key differentiator of an escape device, such as an escape hood, is that it is designed and approved by certifying bodies only for escape. Whereas typical Air Purifying Respirators (APRs) are approved by certifying bodies to be used in the workplace for the completion of tasks and job roles, Air Purifying Escape Respirators (APERs) are approved only for the evacuation from a hazardous environment.



APERs, like the CH15 occupy a small footprint allowing them to be carried at all times, with no maintenance, minimal training and no annual fit testing meaning they offer a compact, potentially life-saving device which they can use to escape the incident area and subsequently regroup at a safe zone. Their ease of use also makes them well suited to tactical and civilian personnel.

There are a variety of respiratory escape devices available, which have a range of different potential applications, and fit into two major groups; Air Purifying Escape Respirators (APERs) including Escape mouth-bits and Escape Hoods as well as Supplied Air Escape Devices such as Self Contained Breathing Apparatus (SCBA). The use scenarios of these differing respiratory escape devices depend on the environment and user groups in question.

Air Purifying Escape Respirators

Air Purifying Escape Respirators (APERs) use a filtration system to filter and remove hazardous substances from the air to ensure that the user is afforded a minimum protection time to safely evacuate the area. There are two main types of APER, Escape Hoods such as the Avon Protection CH15 and escape mouth bits. Escape mouth bits cover only the mouth, with a nose clip to prevent inhalation through the nose and typically offer minimum protection durations of 5-15 minutes. Escape Hoods offer higher levels of protection, as they cover the entire head, typically sealing at the neck, and offer protection for 15-30 minutes. Key advantages of APERs are their compact size allowing them to be carried at all times. Furthermore, they typically require no servicing for the duration of their shelf life and have a lower purchase price than SCBA offerings, reducing the total cost of ownership.

Supplied Air Escape Devices

In contrast to APERs which filter atmospheric air to remove harmful contaminants, supplied air escape devices utilise a cylinder containing pressurised air to aid safe escape of the user. These systems are independent of ambient air, meaning they have the key advantage over APERs in that they can be deployed in an oxygen deficient environment. There are a range of supplied air escape devices varying in duration and size. The disadvantages of these devices compared to APERs is the elevated total cost of

ownership due to higher purchase price and the increased maintenance required. They are also generally larger and heavier, meaning they cannot easily be carried on a person at all times in the same way low profile APERs can be.

Portable Solutions

Avon Protection a world leader in respiratory protection recently announced the launch of the CH15, a revolutionary new, ultra-thin, single size portable APER that provides a minimum of 15 minutes of respiratory vision and facial protection against Chemical, Biological, Radiological and Nuclear threats.

The CH15 is a development driven after an emerging requirement from specialist users to provide instant protection from all CBRN materials when in a live threat scenario. Developed in conjunction with The Combating Terrorism Technical Support Office (CTTSO), the CH15 escape hood provides rapid deployment respiratory protection for military, first responders and protective detail.

The CH15 offers a different approach to carrying respiratory protection, this device offers what no other traditional respirator can, a low profile, lightweight, one size fits all solution that is always small and light enough to be carried. This unique portable solution means the CH15 can always be on hand for the unexpected.

This latest generation of CBRN protection is CE approved and compliments Avon Protection's leading respiratory protection portfolio, adapting proven technology to create their most compact CBRN protection device to date.

Capability and threats are always evolving, industry must continue to work with militaries and first responders worldwide to design, develop and deliver world leading solutions like the CH15 to ensure specialist users always have the right protection readily available no matter what the threat.

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