

MILITARY SYSTEMS

TECHNOLOGY

ELECTROTHERMAL ENGINEERING LTD

Vehicle Mounted Heaters and
Water Rations

EOD SOLUTIONS

Complex Problems Simple Solutions

MARONTECH

highly skilled Marketing and
Public Relations Consultancy

MARSHALL LS

rugged and high performance
technologies

PLUS...

BREAKING NEWS FROM...

ACUMENTRICS

AVON

RUD

SYSTEMATIC

TRELLCHEM

CHILLER 'CROCKPOT'

HEATS AND COOLS



Electrothermal

...one solution for mission success!

The VMV-HC connects with standard military connectors to the auxiliary power supply of 24 volts DC in armoured and soft-skinned vehicles.

The VMV-HC has a low power uptake and only pulls 10amps in the cooling operation and 15 amps in heating operation. The unit has a built-in

intelligent sensor, the unit automatically switches off if the battery power is getting low and drops to 22 volts; there is a similar over-voltage protection.

The outside of the VMV-HC unit remains cool-to-touch to ensure safe transit should the product be mounted on the back door of a vehicle, or located in an

exposed position. Constructed from a robust stainless steel outer casing, the unit is sealed to be water-tight. The choice of heating ranges is the same as the RAK15, when the unit is in chilling mode you can take 3 litres of drinking water from 50°C to 15-20°C at 0.5°C/min.

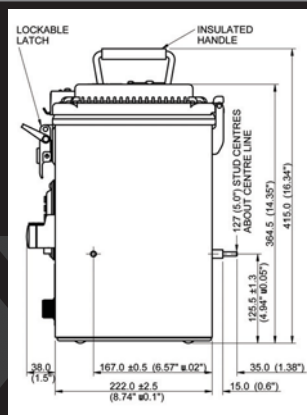
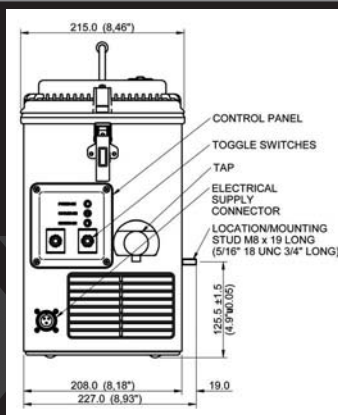


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VMV-HC units are designed to withstand the rigours of modern conflict and have been comprehensively tested to meet military standard specification MIL-PRF-44466D, including MIL-STD-461 and MIL-STD-810.

- Heats or cools while on the move
- Chills 3 litres of drinking water to 15-20°C even at elevated temperatures or heats MRE's and gives hot potable water on demand
- Non-spill relief system
- Low thermal signature
- 24V DC



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

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

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VEHICLE MOUNTED HEATERS AND WATER RATIONS



Electrothermal Engineering Ltd is the world leader in serving science; providing analytical instruments, equipment, reagents and consumables, software and services for research, analysis, discovery and diagnostics.

Surprising uses for electrical heaters, from heating drinking water and warming food rations on-the-move in a military vehicle? Or helping to make the pouring of that perfect pint of beer less of an art form and more of a foolproof operation? Facetious enquiries, you could be forgiven for

thinking, posed to raise a smile in an idle moment with colleagues who have enjoyed too much of the ice-cold beer. Most definitely not! These were critical business problems for the organizations concerned and all of them resolved.

If the right heater cannot be supplied off the shelf, then they lend themselves readily to customization, sometimes directly by the customer but mostly by our own design team. The only real limitation to their use is imagination; and with many years of experience, this is something we

have plenty of.

The need for battery warmers in a plane soon makes itself very clear when you consider that the airstream can be as cold as -50°C at high altitudes reached by fighters. Batteries exposed to this quickly cease working. This scenario can be avoided by completely encasing the battery with one of our silicone rubber mat heaters. They can heat up to 200°C , and are held firmly in place with adhesives that will withstand up to 250°C . In practice, two such encased batteries would be placed side by side. We have been manufacturing military aircraft battery warmers in conjunction with major dry-cell battery manufacture for over ten years.

Military Vehicle Mounted, Water and Ration Heaters

The Heater Water & Ration (HW&R) can provide hot meals and drinks for a five person crew of an armored vehicle or provide hot water for washing, heating water for drinks and ration packs (MRE) in 20 minutes (depending on power rating) under operational conditions or at other



times in most climates and keeping the contents hot for over four hours after switch-off.

All this in a lightweight, robust and versatile unit which has both low and high temperature settings, and features an over-temperature and low-battery (voltage) cut-out for safety. The unit comes with its own built-in control and has been designed in alignment with most military armoured vehicle power uptake requirements, so a separate control unit is no longer necessary.

These units have been installed in many different types of military vehicles in a number of countries.

The HW&R NSN's are 7310-01-387-1305, 7310-99-362-3482 plus 7310-99-811-6909. Finally, we return to our starting point, pouring beer. This interesting application arose out of an enquiry from a major gas company who had developed a new drinks dispensing system for public houses. Nowadays propellant gas plays a major role in dispensing beer as it is widely used to force the beer out of the keg whilst the barperson pulls the pint. It can, however, affect the beer's taste, as real ale drinkers are frequently known to lament, mainly due to residual impurities in the gas. To counter this, the company had developed a new plastic membrane filter that would

condition the gas before the beer went up the tube to be served. Their problem was that to be effective, the filter had to be kept at 40°C. In conjunction with ourselves the filter has been modified to include a surface heater that will last for ten years. Electrical Heaters - the only real limitation to their use is imagination....

We are maintaining our tradition of innovative product design, keeping abreast if not ahead, of current international standards, as we believe that only through excellence will we succeed.

Electrothermal Engineering Vehicle Mounted Cooking Vessel Products for Heating Water and Rations

A range of rugged vehicle mounted heating vessels for heating water and rations includes:

- The older-style and much respected Mk 2 FV706656 cooking vessel and separate control unit;
 - The new range of heater, water and ration RAK products designed to meet the demands of the modern day, rapid, mechanised Forces worldwide.
- Products designed for land, sea and air.

Military Cooking and Boiling Vessel - FV706656

The cooking vessel FV706656 serves a dual purpose in that it can provide boiling water for beverages, washing or other purposes and, at the same time, heat up tinned or decanted foods for the crew of any vehicle that has a 24-28 V dc (24 V dc nominal), 57.5 amp power supply. Operation is possible at any time but normally during stationary



mode. For vehicles without a standby generator, the power drain needs to be monitored. Dependent upon the type of vehicle, the power supply to the cooking vessel may or may not incorporate a switch. In all cases, the plug connection to the cooking vessel is standard push-on, pull-off, with the low power pins shorter than the heavy current pins, to avoid arcing on the make and break.

RAK15 and RAK30 Water and Ration Heaters

The HW&R provides a mounted portable water and pre-packaged rations heating facility for the crew of any vehicle that has a 22-28 V dc (24 V dc nominal) 15 amp electrical system. Operation is possible at any time (including full battle conditions), in any climate, while stationary or mobile. When used for water only, the HW&R can heat up to one gallon of potable (drinking) water for beverages, hygiene or medical purposes. When used for rations (MREs – Meals ready to Eat), the HW&R can heat five unopened MRE entrees together with 40 fluid ounces of potable water. With the cover closed and locked, the HW&R can keep the contents hot for as long as operationally required.



COMPLEX PROBLEMS SIMPLE SOLUTIONS

EOD Solutions Ltd is a company specifically created to undertake ammunition and weapons stockpile destruction. The company employs retired Ammunition Technical Officers and Ammunition Technicians trained at the Army School of Ammunition in the UK to undertake the logistical destruction of ammunition. Understanding how ammunition and weapons function is a prime consideration when dealing with the destruction and reverse engineering of these dangerous items.

EOD Solutions Ltd has undertaken reverse engineering projects where the company teamed with factories in country or other organisations that allowed the work to be undertaken in a safe and secure manner. Environmental issues are now of high importance when disposing of ammunition and EOD Solutions Ltd is working with environmentalists in this area.

Demilitarisation in Afghanistan

Transportable Ammunition Destruction System (TRADS)

The installation of the Transportable Ammunition Destruction System (TRADS) at Camp Bastion under contract to DESWpns DGM to destroy small arms ammunition in an environmentally benign manner. The TRADS incinerates up to 45000 rounds per hour depending on the type of ammunition which equates to one ton all up weight of ammunition per hour on a normal working day and was designed



and built by the company in association with Caldo Engineering with whom the company has a long and trusted relationship.

The TRADS (which is built into a forty foot container) comes complete with all infrastructures so that the user can place the system on the ground and within three days have the system working destroying ammunition. The system has wind down legs as well as lifting points that enable the system to be jacked up from the delivery vehicle without the need for a crane or it can be craned if the user requires. This is especially desirable in the present position in Afghanistan where the system is a standalone operation outside the ammunition storage facility in an area where there is no infrastructure. See video EOD Solutions Ltd is currently building a smaller batch type furnace for EOD Technologies in the United States for deployment in Afghanistan in support of US troops in other areas of the province. The picture shows the build nearing completion ready to ship to Afghanistan.



Explosion Aftermath Clearance

The company is currently working with the International Trust Fund (ITF) undertaking a clearance operation in Gerdec, Albania where four explosions at an ammunition unpacking facility killed 26 people and injured hundreds more.

Over two hundred houses were damaged or had to be demolished. In all a total of 90 acres of land is to be remediated before being returned to the Government of Albania. This is a difficult and demanding process as it is in the centre of a residential area. This limits operations considerably due to the proximity of the local population.

This year will see the conclusion of this task that has made EOD Solutions Ltd well equipped to undertake future operations of this kind. The pictures show the problems and the successes EOD Solutions Ltd has accomplished over the four year clearance process.

Weapons Destruction

EOD Solutions Ltd has undertaken weapons destruction programmes that reduce the weapons to scrap to prevent use or sale to organisations that lean towards terrorism and criminal activities. So far 175000 have been destroyed in Albania and another 10000 in Senegal by the company. The weapons are destroyed using methods that totally destroy any part of the weapon from being used for its intended purpose.

Quality, Safety and the Environment

EOD Solutions Ltd has strict safety quality and environmental guidelines that are in line with US and UK governmental regulations. These guidelines are employed irrespective of which country operations are undertaken. Demilitarisation procedures are also allied to the NATO and UK regulations regarding ammunition and weapons safety and disposal.



HIGHLY SKILLED MARKETING AND PUBLIC RELATIONS CONSULTANCY



We are a highly skilled Marketing and Public Relations Consultancy with over 25 years' experience in the Defence and Aerospace sectors. We are active on a number of worldwide programmes working as a business partner within our client community.

Over the years, we have not just built a list of clients, but have evolved a group of client companies, which has, thanks to them networking between each other,

become what we regard as our 'Client Community'.

We do not employ large numbers of people, but over the years we have developed a network of experts in individual fields which allow us to deliver solutions – whatever that solution might be.

Core to our offering are integrity, agility, quality and experience coupled with a strong desire to be part of your team. We work with you to identify your organisation's needs and develop a structured plan of activities agreeing a budget with you and then implementing the programme.

Marontech is focused on providing Marketing and Public Relations consultancy support to clients operating in the defence and aerospace markets; areas where we have expertise and an unmatched portfolio of results.

Clients for whom we devise and manage national and international Marketing and Public Relations campaigns, range from small start-ups to international organisations with headquarters across the globe.

Our expertise ranges from writing trade media releases and articles (technical and corporate,) through creating marketing material, managing your company's presence at major exhibitions, new product launches, running international marketing campaigns, which deliver results, and helping you to develop marketing strategy and plans.

Marontech is a member of the ADS Group and the managing director is a Member of the UK's Chartered Institute of Public Relations.





Public and Government Relations for the Defence and Aerospace Sectors

In our market sectors, interaction with governments is a core part of any marketing activity. Using our network of experts we are able to put together and implement a government relations programme to help you succeed in winning the business and keep the customer and stakeholder community on your side.

Defence and Aerospace Marketing Communications

Exhibitions, brochures, event management, videos and websites are all tools which have an important part to play in creating an environment where your customers want to do business with you. We have considerable experience in project managing these from beginning to end, including working with you to clearly identify why you are exhibiting for example, how you are going to gain the most benefit from the event or what design should be used for your brochures, videos and website to ensure they fit into an integrated “look and feel” as part of your corporate identity.

Our Core Skills

Planning and Strategy for Defence and Aerospace

We work with you and your team to develop your marketing strategy and then create and implement the plans to deliver results. Key to this is establishing clear key messages, understanding your customer base and knowing where you want to position your company in the future.

Defence and Aerospace Corporate Marketing

Within our network we can provide independent market research which looks at what your customers’ want, what is out there already, and how you are going to reach those customers. We can then work with you to develop integrated campaign capture plans.

Media Relations in the Defence and Aerospace Sectors

The media play a significant role in helping

you to spread your message to your customers and stakeholders. We have strong media contacts and understand their requirements. We prepare and distribute news releases (the emphasis is on news), arrange journalist briefings, prepare and secure placements for feature articles, create media packs for events, develop issues briefing documentation and be there to support you should a crisis occur.

Advertising, Planning and Design for the Aerospace and Defence Sectors

We can prepare advertising plans to raise your profile in your chosen markets or to provide focus for specific campaigns. We make recommendations, provide budget plans and manage the advertising process from initial design through to finished artwork.

Web presence is becoming increasingly important. We work with you to develop the content and maximise its effectiveness so that your company and product solutions are easily visible to potential customers.



RUGGED AND HIGH PERFORMANCE TECHNOLOGIES

Formed in 2008, Marshall Land Systems drew together the capabilities, skills and expertise across the Land Systems businesses of the Marshall Group. Our major area of focus is within the defence and security arena; however we are increasingly working across non-governmental and civilian projects where similar requirements for rugged and high performance technologies exist.

Right from the start we design the project around your priorities. For us it is all about delivering the systems that our customers need, in the way that best satisfies their performance requirements and within the budgets they have available.

Everything that we do is underpinned by our approach to project management and our mantra of Agility, Quality and Integrity. This approach has seen us cement our position as one of the UK MOD's highest ranked suppliers and an organisation that is recognised as "working for you".

Our Land Systems Business is Formed of Six Individual Divisions:

Protected Workspace
Deployable and
Expandable

Integrated Shelter
Solutions

Through design, development, manufacture and integration we provide deployable and expandable integrated shelter solutions that allow end users to perform the critical role required. Our mobile and expandable containerised solutions satisfy requirements across the following core areas:

Military Forensics and
Laboratory Modules

Our mobile forensic and laboratory modules enable forensic sampling, analysis and profiling through to detailed DNA investigation of buccal, blood, hair, tissue and contact traces. The rapid mobility we enable allows for time critical, point of incident, clean room analysis that delivers the results required within the critical golden hour.

Solutions are available under integrated multiple module configurations or single stand alone modules.



C4ISTAR, Ground Stations and Command Posts

Our command and control and C4ISTAR solutions cover a range of roles including UAV control centres, computer server units, briefing rooms, command centres, intelligence cells and image processing facilities. We add considerable value to the integration of complex sub-systems, delivering a seamless and unified operating system.

Military Deployable Catering Facilities

Utilising our extensive ergonomic integration capabilities we provide modular catering infrastructure. Our catering facilities allow for significant improvements in the equipments and working environments available, considerably enhancing both the quantity and quality of output.

Deployable Military Medical Facilities

We understand the specialist nature of deployable medical facilities. Harnessing this experience alongside specialist partners we are able to supply deployable healthcare facilities that enhance patient care across in-transit care, role 1, 2 and 3 deployable field hospitals, mobile CT scanners and deployable medical laboratory systems.

Our Deployable medical facilities span the military healthcare spectrum including:

- ▀ **Battlefield casualty evacuation systems ranging from stretcher loading systems to complete ambulance systems in armored or wheeled platforms for in-transit care**
- ▀ **Complete deployable modular medical facilities from Role 1 to Role 3, including full CBRN protection if required**
- ▀ **Medical logistics, including the storage and distribution of medical consumables, medical waste management, clinical gas management systems and the supply and distribution of power and water**
- ▀ **Medical facility infrastructure such as accommodation, ablutions, kitchens, laundry and other hospital support facilities**
- ▀ **CT Scanners, operating theatres and many other individual modules that can be integrated into existing facilities.**
- ▀ **Conversion of aircraft for tactical and**

strategic medical evacuation roles

Military Vehicle Engineering Loadbeds, Flat Racks and Cargo Systems

Our Military Vehicle Engineering division undertakes the specification, design and integration of vehicle based logistic equipments. Irrespective of platform type we are known as vehicle completers and take pride in ensuring a vehicle leaves our facilities fit for the role intended. We work with multiple vehicle OEMs and we are trusted for our performance in delivering loadbeds, flat racks, cargo systems and associated vehicle mounted logistics equipment.

- ▀ **Our vehicle loadbeds take full account for the rigours and stresses of operations. We offer low torsion load beds for the more standard load through to state of the art zero torsion systems for the most specialist and delicate of loads.**
- ▀ **Our flat racks are customised to the requirements of the vehicles role. Hook loadable, smaller and lighter than industry standards, pre loading and storage of our flat rack solutions ensure enhanced effectiveness of our customers operations.**
- ▀ **Through vehicle integration and completion activities we are known as 'vehicle completers'. We understand the complexities of system integration and the application of numerous systems with multiple vehicles.**

Our expert approach to program management has been tried and tested as part of the UK MOD Support Vehicle Programme. Under this programme we have delivered in excess of 7000 vehicle logistics systems on time and to specification.

Military Capability Development

The defence and security environments present complex challenges. Our Capability Development division is established to examine, develop and deliver turnkey solutions and is widely recognised for adding the greatest benefit in situations in the most technically challenging environments.

Our Capability Development expertise centre around the following activities:

- ▀ **Armoured Vehicle Systems**
- ▀ **Vehicle Communications Systems**
- ▀ **Specialist Vehicles including Covert Surveillance and Missile Launch Platforms**
- ▀ **Unmanned Vehicles and Payload Specification and Integration**
- ▀ **Ground Control Stations for UAVs**
- ▀ **Energy and Power Systems for Multiple Applications**

We work collaboratively with our partners to address project risk, identify solutions and rapidly implement prototypes. Our solutions not only facilitate the completeness and technical performance of our partners systems but also serve to ensure they are completed to time and within the budgetary restrictions imposed.





Irrespective of the nature or context of the project, we are widely recognised for adding the most value in situations where the greatest technical challenges exist.

Military Survivability Solutions

Building on our platform integration and modification capabilities we offer market leading survivability solutions through Lorica Systems UK Ltd, our joint venture with Plasan. In partnership we design, manufacture and integrate innovative protection technologies across land, sea and air platforms.

Our core survivability capabilities reside within the following areas:

- **Composite Armour – We offer operationally proven, totally ballistic tested hardened metals, ceramics, fabrics and resins that maximise crew and systems protection. We are committed to deliver state-of-the-art, lightweight armour protection for platforms and personal body armour.**
- **Whole Platform Survivability – Further to our armouring capabilities, through Lorica we offer complete platform survivability solutions. These solutions incorporate blast deflection and absorption, seating and harness integrity, fire protection and suppression and protection of critical components.**

Military Fleet Solutions

Our Fleet Solutions division specialises in the provision of fleet support to land transport fleets across the commercial and military sectors. With capabilities across vehicle cooling, heating, tail lift and servicing our Fleet Solutions business operates as a one-stop-shop for all fleet solution requirements, achieving the most heightened level of vehicle availability.

With over 150 highly skilled mobile engineers, on call 24 hours a day, we are able to offer unrivalled support levels to both military and commercial vehicle fleet operators.

Through our fleet solutions activities we offer the following services:

- **Vehicle Refrigeration and Heating – Our activities within this sector ensure that our customer’s vehicles retain the correct and necessary temperature for the transportation of specialist loads. We work from equipment specification through to installation and continued service agreements.**
- **Tail Lift – Vehicle tail lifts are an essential element to many logistical operations. We work to specify, install and support delivery vehicle tail lifts, passenger lifts and double deck lifting equipment.**

The responsiveness of our Fleet Solutions capabilities are ensured through our 24/7 call centre support facility. With over 80,000 incidents handled by our call centre per year, we are on hand and available as your one-stop-shop for fleet management requirements.



capability gaps by developing robust requirements and specification standards, including assisting with the complex requirements capture and trade-off process. Trade-offs are inevitably required to acquire a system that is affordable (lowest life cycle cost), operable, supportable, sustainable, transportable, and environmentally sound. We also review existing designs to create accurate and unambiguous definitions of systems and ensure that clarity of design is flowed throughout the supply chain. This same approach is equally applicable to any modifications, re-roles or mid-life upgrades.

In Service Military Support

Our philosophy is to take a through life approach to capability management in which every aspect of new and existing capability is planned and managed across all lines of development. We work alongside our customers to address

We work closely with customers from the initial design through to manufacture and in developing innovative support solutions using the structured approach of Integrated Logistic Support (ILS). We then support the product in-service throughout its life, including on deployed operations (CONDO), and ultimately arranging for its final safe disposal at end of life.



When it Comes to Rugged Uninterruptible Power Supplies in the Military, Smaller is Better



The modern military relies on computers and other sophisticated electronic equipment to perform its vital missions, often in extremely harsh environments like the mountains of Afghanistan or the intense heat of Iraq.

Electrical variance, surges, spikes, and interruptions can cause communication and surveillance breakdown and data loss, especially during the rigors of active duty. Consequently, the military depends heavily on rugged uninterruptible power supplies (RUPS) to keep that equipment online with clean AC or DC power while withstanding the various weather- and terrain-related impediments to performance, including blown rain, dust and sand as well as extreme heat and cold. The equipment must also withstand significant vibration and shock sustained from multiple sources.

However, reliability, while certainly the most critical characteristic of a quality RUPS device is not the only important variable; size and weight are also vital. More to the point, when evaluating the size of a RUPS device in a military environment, a small, high power density unit is the best solution.

The reason? RUPS devices, like virtually everything in the military, fall under the jurisdiction of SWaP: size, weight, and power.

When evaluating systems of all kinds - communications and transportation rank among the two most important - reducing size, weight and power, especially for systems used in theater, is paramount. This must all be accomplished while considering the "C" that is usually found at the end of that acronym: cost.

There are a number of reasons why a more compact RUPS device is preferable in military applications. From a purely physical perspective, the smaller the equipment, the more equipment can fit in the same or smaller space. Thus, if a RUPS is reduced by even 1U in height (1.75"), another 1U modem, router or server can be placed in the extra space that has been created. This translates to additional features, functionality and redundancy.

Or assume the RUPS is mounted in a 4U transit case with routers and servers. Not only will a smaller RUPS create "extra" room for critical communications equipment, with no additional equipment the transit case size itself can be reduced. In the end, the smaller RUPS allows for a smaller, lighter system and/or the ability to add more equipment to the system without increasing weight or size.

Why is all this important? In military

applications, particularly combat situations, every available inch of space is valued as prime real estate. And while RUPS devices are a crucial source of power, they do displace real estate that could potentially be employed for computers, servers, and routers - the truly critical gear that makes up the C4ISR landscape. Even if the additional space isn't utilized, it serves to lighten the load.

The quest for smaller RUPS size also translates to a decrease in weight, which is an ongoing issue in military operations. To begin with, the average soldier carries over 100 pounds of gear into battle. So if they're lugging transit cases around, it's essential for the weight to be manageable. Weight reduction in any form is important to reduce the burden on military personnel. Plus, "smaller" not only translates to more electronic gear but more food, water and ammunition for the soldiers.

What's more, consider the extra weight on military vehicles, such as a Humvee. The additional poundage decreases efficiency, causing greater fuel consumption; given that fuel in theater can cost as much as \$400 gallon, the importance of this factor cannot be overstated. Weight reduction - regardless of how little - is a fundamental objective.

It's not just the equipment of today that requires space. Because new C4ISR capability is constantly being developed, there is a continuing need to create space for these devices; equipment that might not be on the drawing board today will require space tomorrow. Thus, the need to decrease RUPS size and weight needs to keep pace with these new developments. Additionally, power consumption affects mission duration, and power electronics and digital processing are big power consumers. Consequently, while the need for smaller and lighter RUPS devices in combat situations is apparent, these goals must be met without sacrificing power output.

All of this begs the question, "Where are the primary opportunities for RUPS size reduction that won't affect performance?" Ultimately, through increased power density, an equivalent amount of power can be produced in a much smaller form factor. Thus, the key area for accomplishing the cutback in size is the transformer - more specifically, to change from a full galvanic

isolation transformer to a high-frequency transformer. Of course, engineers are constantly examining alternative ways in which RUPS devices can be compressed while maintaining the necessary power output - including adopting different board technology within the device. Essentially, any part of the device is a candidate for potential size reduction; but at this time, the high-frequency transformer remains at the forefront of this effort.

Lithium-Ion batteries also provide a size-reduction opportunity, as these batteries have a higher power density compared to the lead-acid variety, thereby decreasing weight and increasing battery backup run time.

Ultimately, the decision regarding the best possible RUPS for any application, particularly military, is based on meeting the required power needs for the application while keeping size and weight at an absolute minimum.

The focus on RUPS size and weight reduction not only means that more space is available in the areas where the RUPS will reside; it also means that transit cases, military vehicles and the shelter in which they are located can be designed with a smaller size in mind. Until recently, it would not be unusual for the designer of a new transit case to allot at least 4U for a RUPS device. That's because military equipment designers often rely on past experience to estimate the space the RUPS will require and plug that figure into their blueprints. With the availability of 1U devices, however, that allotted space can be significantly reduced. As long as designers stay current on what is available in the RUPS world, they can plan accordingly.

Even more than simply being aware of what is available in terms of smaller RUPS devices; it is advisable for designers to consult directly with RUPS manufacturers in the early stages of product development. This will give them more latitude in design and can, as it is often said, help people understand the art of the possible.

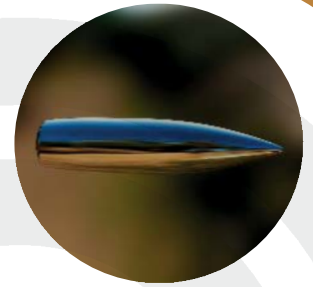
What is the practical threshold for the size of the RUPS device? Plainly put, how small can these devices realistically be made? Given the level of performance they are expected to deliver - as well as the cooling systems that are an essential part of their make-up - it is difficult, at this time, to envision anything smaller. However, it was hard to imagine a 1U device at this power before it was actually manufactured, so it's entirely possible that RUPS devices could be even smaller in the future.

There is no question that when it comes to RUPS devices, the quality and ability to deliver clean, uninterrupted power is priority one. But given the situations in which these devices are being used, as well as the objectives at stake, size and weight - especially reducing the burden on our fighting men and women - are also critical.

ABOUT THE AUTHOR

Steve Graves is Vice President of Sales and Marketing for Acumentrics. Headquartered in Westwood, Massachusetts, Acumentrics designs Rugged Uninterruptible Power Supplies (RUPS) for use in harsh and combat environments as well as heavy-duty industrial applications.





When lives depend on the quality of your product then precise engineering is required



Introducing the BDS1, considered the most durable defence block on the market today



Engineered Ballistic Impact Reduction using the latest in polymer technology

www.octagondefence.com

Avon EZAir Takes the Heat from Middle Eastern Market

Avon Protection Systems' EZAir, the first of its new generation of NIOSH approved compact, battery powered modular airflow units, is now winning major orders in the Middle East following successful trials.

By combining an advance in Avon respiratory system engineering within an ergonomically designed housing unit, the EZAir delivers a dramatic reduction in the physical burden of traditional respiratory systems. This has found particular favour with law enforcement teams and first responder units operating in the arduous Middle Eastern climate – where temperatures regularly exceeds 40 centigrade.

Both Bahrain and Qatar have now placed significant orders for EZAir units to complement their large stocks of Avon FM53 and C50 masks with further orders from the Saudi National Guard expected soon.

At the heart of the Avon EZAir modular unit is a super-light engine. This drives a compact, self contained blower unit which

incorporates Avon's NIOSH approved CTF12 riot filters. In addition, on board warning alarms, supported by 'hot swap' removable batteries, provides the wearer with an incredibly lightweight and versatile system that delivers a new level of comfort combined with traditional Avon respiratory protection.

According to Steve Windley, Avon's Sales Manager for the Middle East, "Reducing wearer burden is particularly important during high intensity periods of activity, especially for the high temperatures that face Middle Eastern law enforcement or HAZMAT teams during pro-longed crowd-monitoring or CBRN clean-up scenarios.

"Designed primarily for use with Avon Protection's class leading FM53 and C50 full-face respirator, the Avon EZAir module has introduced a new category of breath assist blower with a wellbeing product that makes it easier and cooler to breathe, and reduces the size and weight of traditionally burdensome respiratory support systems."

Avon's newly designed modular respiratory engine weighs just 225g and measures 70mm x 120mm in diameter. This, Avon claims, positions it as the smallest self-contained blower unit with integrated battery pack on the market. The unit can run on three different power options: replaceable CR-123; rechargeable Li-ion or single use emergency battery. Depending on filter and battery configuration, the unit will run from 4-10 hours and is supported with on board warning alarms.

However, it is the new level of wearer comfort that Avon believes will prove Avon's EZAir greatest attraction. Here the unit provides users with cooler air intake, elimination of potential for mask fogging, and a lower breathing resistance when compared to non-assisted filters. All of which enables the wearer to last much longer in a physically taxing scenario. And, equipped with Avon's CTF12 filter, the wearer is fully protected from non-lethal riot agents, including tear gas and pepper spray.



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RUD Load Ring VLBS Offers Increased Working Load Limit and Can be Loaded in Any Direction

RUD Chains Ltd, a leading manufacturer of chain systems and components, provides specialist and standard solutions for the Armed Forces Worldwide. On Land, Sea and Air, RUD Military Technology is meeting the specific needs of the world's defence forces through innovative products and advanced industry knowledge. For over 140 years the RUD group has been

producing top quality chains and applications to suit a vast array of working environments.

Military Lifting and Lashing Applications

RUD offer an extensive range of lifting and lashing applications which includes both welded and threaded types, covering a working load capacity range from 0.6 to 200 tonne.

Offering over 270 different tested and certified lifting/lashing points, 210 of which are for bolting and 60 for welding. RUD is ISO 9001 certified and renowned for their expertise in heat treatment methods - delivering high performance chain products to suit the most demanding applications.



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- **Resilient non-skid snow and traction chains**, specially designed for harsh military applications to guarantee maximum traction on snow, ice and off road



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RUD Chains Ltd, Units 10-14, John Wilson Business Park, Thanet Way, Whitstable, Kent, CT5 3QT **Contact Alan Walton - alan.walton@rud.co.uk**

RUD know how important safety is in lifting which is why they have produced further product improvements to one of their leading lifting points. The LBS "RUD lug", together with the RBS Eye Plate has recently gone through a significant upgrade - the biggest change since the product line was first introduced more than 25 years ago.

To align with RUD's leading Grade 100 VIP Sling Chain system; the LBS & RBS ranges have been re-designed and released as the VLBS & VRBS. The working Load Limits (WLLs) have increased significantly and the WLL(s) now align and match in with the RUD® Grade 100 chain ratings. The new VIP version VLBS is forged out of high-resistant steel CrNiMo is 100% crack detected and offers RUD's distinctive fluorescent pink powder coated surface. The VLBS offers many advantageous features as listed below:

- VLBS ring bracket is forged out of the high strength material CrNiMo with two patented inner supporting lugs.

- It provides an optimal sitting of the hook and offers better protection for the clamping springs.

- The optimized support shape at the suspension ring enables a strong support at loads 90° to the plane of the eye.

- The load bracket can be tilted by 180°

- 100% crack detected

- The welding block is forged out of quality welding material 1.0577+N (St 52-3) and clearly stamped with an identification number for the permissible WLL (Working Load Limit) The distance lugs are for the measurement and provision of the required gap for the root welding (approx. 3mm). Important: The weld

arrangement (continuous HV weld) fulfils the requirements of DIN 18800 i.e. the closed weld avoids corrosion and is thus suitable for outdoor use. A protected spring keeps the ring bracket in every required position without tipping and it also reduces vibration induced noise.

- The VRBS is available up to 50t WLL and can be loaded in any direction.

As one of the world's largest manufacturers of lifting and lashing applications combined with their extensive range of products and knowledge in the market, RUD are continually innovating and developing their extensive product range to stay at the forefront of their customers' demands.



Systematic and AgustaWestland Collaborate on an Enhanced Rotorcraft Situational Awareness Capability



Systematic and AgustaWestland, a Finmeccanica company, are working together to provide an enhanced rotorcraft situational awareness (SA) capability. Following the signing of a Heads of Agreement in January this year, this joint development will integrate Systematic's SitaWare command and control software with AgustaWestland's rotorcraft platforms.

Enhanced Rotorcraft Situational Awareness (SA) Capability

With funding provided by AgustaWestland,

Systematic has already conducted the initial scoping study which investigated the possibilities to further enhance on-board SA for both aircrew and passengers, whilst also considering the SA needs of tasking headquarters and the units supported by aviation.

Geoff Hoon, AgustaWestland's Managing Director for International Business said "We are pleased that this project with Systematic is moving forward quickly, as we see good business potential not only in Denmark but around the world on a number of our military helicopter platforms. This project is just one example of our long running commitment to work with Danish industry and to deliver long term benefits to Denmark."

"The aim of this project is to further enhance awareness of the land and maritime situations in the cockpit, thereby better connecting the rotorcraft to its operating environment," says Stephen White, President Systematic UK, "At the same time we need to overcome the challenge of providing this much needed capability by exploiting data and hardware already available on the platform in order to minimise weight, cost and development impact".

Hans Jørgen Bohlbro, Director of Product Management C2 Systems goes on to say "SitaWare Frontline has been specifically designed to minimise bandwidth requirements, at the same time it has the ability to maintain a high update rate of friendly force tracks, making it ideally suited to this job. The software also has a small footprint with a lean GIS which allows it to be installed on existing processors and displays in the aircraft."

With the initial study now completed, the integration of SitaWare Frontline with the AgustaWestland AW101 avionics systems is now underway. The system will also be available on AW159. SitaWare Frontline will provide a further enhancement to the modern, fully integrated, reduced workload cockpits of the AW101 and AW159, by providing aircrew with enhanced SA. SitaWare Headquarters and WebCOP will also be integrated into the AgustaWestland Skyflight Mission Planning System, which will address a significant capability shortfall in connecting rotorcraft headquarters to the wider command and control networks. With significant engineering support from AgustaWestland an initial operational capability will be available early next year and will go through field tests and trials with the Royal Danish Air Force.

The output of this industrial cooperation project is initially directed at the Danish Armed Forces for use on the Danish Multi Role Helicopter (DMRH). Once the initial operational capability has been proven, Systematic and AgustaWestland will go on to develop a full operational capability which will be offered on the international market.



SYSTEMATIC

Media Release: Thursday 1st November 2012

Presents: E - Combat

A brand new attraction for



Top Gear Live 2012 wished to recreate the famous scene from 2004 where Jeremy Clarkson drove two high performance convertibles through a MOD urban training facility. Where Jeremy was ambushed by the Irish Guards who were equipped with MILES blank firing equipment in a bid to find out which car was the best.

The 2012 live show held at the National Exhibition Centre (NEC) Birmingham, UK from the 25th-28th October featured a head to head race between Jeremy and the Stig, pitting them against highly trained British Army soldiers from the Mercian Regiment. As the show tours the world, the local military will be tasked to fulfil the shooter role. In every show the Stig - Driving a Caterham R500 trounced Jeremy in his purple electric G-Wiz!

Real weapons with MILES and firing blank ammunition was simply not an option for use in the NEC in such close proximity to a large civilian audience coupled with the huge cost implications of real weapons and ammunition on site.

So Top Gear were forced to seek an alternative solution. Battlefield Sim developed a bespoke weapon system which comprised of replica SA80 rifles each fitted with an infrared lens assembly which is totally safe. The rifles had switches fitted which meant the soldiers had to treat the rifle just like the real thing, even having to remove the magazine to reload. Each of the drivers was equipped with a custom designed vest and halo which carries their receiver sensors. The sensors flash with each hit that the drivers take. Rowland French - Creative Director for Top Gear Live said "The system really could have been sent in some crates from the MOD... it looks great and the soldiers knew exactly how to use it"

Battlefield Sim is a new venture launched to offer unique and safe innovations, specifically force on force simulation, for the professional law enforcement and military training markets.

Battlefield Sim also supplies complementary training products of Inflatable Training Walls and MIL-SIM-FX non pyrotechnic weapons effect simulators to enhance and improve training scenarios in the safest ways possible.

The system supplied for Top Gear Live is powered by Battlefield Sports' patented SATR technology. The SATR software gives the shooters instant hit feedback, without the need for a central computer letting them know exactly how many times they had hit their target.

Battlefield Sim is maintaining, upgrading and monitoring the equipment for Top Gear Live 2012, and constantly improving the equipment and adapting to their needs for future shows.

Contact us for more information:

Battlefield Sim

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info@battlefieldsim.co.ukwww.battlefieldsim.co.uk

Unit 26 Caddsdow Industrial Park, Farm Road, Bideford, Devon, EX39 3BE



TOUGH VEHICLES FOR TOUGH TASKS



ABOVE AND BEYOND



INTRODUCING LAND ROVER'S AVM RANGE

Land Rover's Defender is one of the most instantly recognisable vehicles in the world. Its rugged reliability, exceptional off-road performance and considerable payload have made it extremely popular with both civilian and military users, and that popularity has seen it reach some of the most inaccessible regions of the planet. It is highly adaptable, too, and has been used in numerous applications.

That versatility is at the heart of a range of versions that is offered by Land Rover's ETO (Engineered to Order) Division. Formerly Special Vehicle Operations, ETO has worked closely with designated AVM (Approved Vehicle Modifier) partners to create a family of special-duty variants that are based on the Defender 110 and 130 vehicles. While retaining the legendary characteristics of the standard Land Rover, the AVM range is tailored to a number of critical civilian, industrial, emergency response and security roles in

which the vehicle's strength, reliability and performance are key factors.

The AVM range differs from other post-manufacture conversions by virtue of having been engineered to the same high levels as Land Rover's standard vehicles, giving customers the confidence they need to perform critical tasks in arduous conditions. Whereas modifications by non-Approved converters would not be covered by Land Rover warranties and could in some cases actually invalidate Land Rover warranties, the AVM range also carries the full weight of the company's service support network behind it, and enjoys the benefits of the same warranties as unmodified Land Rovers.

To qualify as an AVM, converters must abide by rigorous design, purchase, quality and manufacturing standards. All designs and finished products are tested to ensure that the conversion elements do not compromise the vehicle's capabilities.



FIELD AMBULANCE

One of the key roles over the years for the Land Rover Defender has been that of field ambulance. For military and civilian agencies working in difficult terrain and where off-road access is required, the Defender has proven to be the ideal vehicle for this crucial task.

While field ambulances come in all shapes and sizes with vehicles being specifically tailored to meet the needs of any particular emergency service organisation, be it paramedic at one end of the spectrum or first aid at the other, Land Rover can cater for almost any request.

Land Rover has designed two basic ambulance versions of the Defender in the AVM range, a single-stretcher variant based on the Defender 110 Station Wagon, and a twin-stretcher model that uses the Defender 130 Chassis Cab as the basis, with an ambulance box mounted behind the cab. Both versions offer the mobility needed to reach hard-to-access areas so that medical intervention and casualty evacuation can be undertaken rapidly.

Working with AVMs, Land Rover has devised a basic medical kit for the ambulances that includes emergency oxygen, hooks for intravenous drips, pole stretcher(s), aspirator, wall-mounted blood pressure meter and basic medical supply kit. The larger vehicle also has an electrical sterilisation box as standard.

Accommodation in the smaller variant provides for a single stretcher, with seating for medic and attendant. The larger vehicle accommodates two stretchers and a medic, plus two attendant seats. A multipurpose patient bench is also provided. Additional medical equipment can be added as required by the user, and the vehicles can be fitted with sirens, loud-speakers, warning lights and radio communications. As with other AVM vehicles, a range of vehicle enhancement options caters for additional safety and arduous operation requirements.

Should a medical organisation require an ambulance for use within very hazardous environments, the station wagon ambulances can also be fitted with roll cages and other occupant protection, merging the requirements of the Mine Site vehicles with the need of medical professionals working in that environment.

MINING OPERATIONS

One sector in which the Land Rover Defender's ruggedness and versatility has long been appreciated is the mining industry. Most of the world's mining activities are in remote areas. The mines themselves provide a challenging environment for any vehicle, and place particular emphasis on exceptional off-road capability. The Defender is a natural for such work, and Land Rover has two vehicles in the AVM range that are tailored for mine site duties.

The Defender 110-based vehicle is a Station Wagon that can be converted by option to nine-seat configuration (where market legislation permits). The Defender 130-based vehicle is in double cab pick up configuration, with the ability to mount a crane of up to 500kg capacity in the rear pick up bed.

Safety is paramount in the mining industry, with stringent standards in place. Land Rover's mining support vehicles address those concerns providing customers with the confidence to safely undertake operations in the challenging conditions that mine sites present.

Both versions of Mine Site Defenders feature roll-over bar protection as standard, front nudge bars for greater impact resistance, and also underbody skid plates that help to protect key areas of the underside, such as the sump and steering mechanism. They are fitted with fire extinguishers, battery isolators (optional), first aid kits and vehicle recovery kits.



Moving large amounts of money and other valuable commodities requires increasing protection in today's world. Moving cash or valuables across challenging terrain is another question. To answer this growing requirement Land Rover offers a protected cash in transit (CIT) vehicle as part of the AVM range. The Defender's payload capability allows a high level of protection to be provided without



For safety around the mine environment they are fitted with amber roof lights, reversing buzzers, top and bottom reversing lights, and a flag pole mount. The latter provides improved visibility when operating in the vicinity of larger mine vehicles. An option is a roof-mounted LED light bar that can be programmed to display signals to drivers of other vehicles.

adversely affecting the vehicle's excellent performance. Like ambulances, as CIT vehicles face many different hazards and attacks, vehicles can be designed to resist the type and level of assault that customers find within their individual operational environment.

Using the Defender 130 as a basis, the CIT vehicle has an armoured driver cab that gives protection to FB4+ levels. A transparent armour system is employed to optimise outward visibility. The cash vault is located in a compartment that uses multi-layered anti-intruder materials in its construction, and is equipped with a secure drop-chute and protected electrical system. The vault can be reconfigured to carry ATM cassettes, coins or precious metals.

A number of options are available to increase protection levels. They include an armoured security guard compartment protected to FB4+ levels, a transparent armour upgrade to BR6 level to help give better protection against ballistic threats, and the provision of gun ports and racks in the driver and security guard compartments. Additional seating for two more guards can be provided in the rear compartment, and the front and rear areas can be linked by an intercom system.

Other options include a rear-view camera system, anti-blast three-point security lock system, and an escape hatch for the rear cabin occupants. GPS tracking systems are also an option.



INDUSTRIAL, MAINTENANCE AND CONSTRUCTION



Land Rover's AVM range also has applications to a range of other industries, such as oil production, construction and the power industry. The Defender 110 (station wagon) and Defender 130 (double cab pick up) Industrial versions are aimed at such sectors, and are similar to the vehicles developed for mine site operations.

To support construction, maintenance and support tasks across a wide range of difficult terrains and conditions, the AVM range includes a number of specialist vehicles. A Mobile Maintenance variant, based on a single-cab Defender 130, has a large box on the back, which can be configured with various equipment and storage to support a myriad of fleet and equipment maintenance roles. For construction and other work there are Drop Side, Single Cab Tipper and Double Cab Tipper versions of both the Defender 110 and 130.

In all cases the Defender's permanent four-wheel drive, lockable centre differential and high-torque engine provide the basis for rugged and reliable mobility. As with the vehicles tailored for the mining industry, safety concerns and regulations can be met through roll-over protection, enhanced lighting and other options.

ARMOURED DEFENDER



To help provide protection for key personnel against a range of threats, Land Rover has engineered an armoured version of the Defender. Protected to B6 (equivalent to VR7) levels, the Armoured Defender protects against ballistic threats, while its Kevlar floor protects against grenade attacks.

In designing the Defender's discreet armour protection, the Land Rover team has been careful to retain the agility and performance of the baseline vehicle. Up-rated suspension and upgraded brakes are fitted to offset the additional weight.



SUPPORTING THE CUSTOMER

With over 65 years of building vehicles and more than two million delivered, Land Rover has considerable experience in the field of heavy-duty off-road vehicles. The company's deep understanding of the sector has not only allowed it to remain at the forefront of vehicle design, but also to tailor those vehicles to meet the demanding needs of its many customers around the world.

Understanding what is involved in a wide range of duties has allowed Land Rover's AVMs to produce modification packages that fully meet operational requirements, yet retain the Defender's traditional qualities. Working with AVMs allows the company to continue to provide highly adaptable vehicles for emergency services, commercial/industrial/mining operations, and for security tasks.

For the customer, acquiring a Defender from the AVM range brings peace of mind. Because the modification packages have been developed by converters who are approved to design and develop products by Land Rover, they are therefore fully sympathetic to the basic vehicle design. Servicing and spares support is also assured through the global Land Rover network, as AVM vehicles come with a full warranty. These key attributes lead to enhanced mission efficiency and availability throughout the life of the vehicle.

Customer options

Land Rover recognises that customers have many and varied requirements. While baseline modification packages have been engineered for varying operational requirements, a large menu of additional options is available so that vehicles can be tailored to suit each customer's exact requirements.

As well as mission-specific options for the individual role packages, there is a range of common options that can be



fitted to any AVM Defender. The 110 series, for example, can be fitted with enhanced suspension to raise gross weight to 3500kg. A winch with a 4500kg capacity can be installed in either 110 or 130, as can a rear towing hook for towing. Fuel consumption will vary from one product to another, determined by the type of conversion undertaken.

A raised air intake can be fitted for extreme dust and wading operations, while an engine kill-switch and fire suppression system can be installed for additional safety during potentially hazardous operations. A variety of internal lighting options is available, as well as various communications systems and GPS tracking devices. Locking boxes for storage, jerry can stowage and roof racks can further enhance the Defender's versatility and effectiveness.

Combining these options with the AVM range baseline mission packages allows the customer to create the Defender that best suits their needs. Just as important is that only a Defender is fully backed by Land Rover's specialist engineering department.

Land Rover

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Trellchem® VPS Flash Gastight Chemical Protective Suit now certified in Europe

Ansell Protective Solutions announces that the Trellchem VPS Flash Level A gastight chemical protective suit is now also certified to the European standard EN 943-1 and the tougher EN 943-2/ET for Emergency Teams.

Trellchem VPS-Flash has been certified according to the American standard NFPA 1991 for some years already and has grown to be the most popular Trellchem suit in the

U.S.A. “At Ansell Protective Solutions we are very happy to also introduce VPS-Flash to the European market, and give all European customers the chance to discover the benefits of this great suit”, says Product Manager Katarina Filipsson.

This cost-efficient high performance suit is suitable for use typically within the Fire & Rescue and Defense area but also within Law

Enforcement and Industry. It is available in both fully encapsulating and non-encapsulating design and can be fitted with boots or socks, a variety of gloves, airline passthrough, pockets, loops etc. to fit each customer’s specific needs.

The Trellchem VPS-Flash suit material, which was recently awarded U.S. Patent, is a further development of the already well-reputed Trellchem VPS material. Combining abrasion resistant rubber with a multilayer chemical barrier film and a new flame retardant aramid base fabric gives a material with added flash fire protection and also protection against liquefied gases. The chemical protective capability is high with > 8 hours permeation time against a wide variety of hazardous chemicals as well as radioactive particles and biohazards.

Trellchem VPS-Flash chemical protective suits are now, with the new European certificates, certified to the toughest and most stringent standards in the world within the segment of Chemical Protective Clothing (CPC): NFPA 1991 (including the optional Flash Fire and Liquefied gas protection requirements), EN 943-2/ET, EN 943-1, EN 1073-2 (Protection against radioactive particles) and EN 14126 (Protection against Infective agents).





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