



**MPE**  
Quality, Reliability, Performance

# Company Bulletin

for EMC, EMP, HEMP & TEMPEST Protection

## Issue 18

### MPE PEOPLE

#### 2018 . . . an award-winning year

Many activities and achievements contributed to a strong and successful 2018, during which MPE once again delivered solutions for a host of high-profile applications . . . . . [Read More >](#)



#### MPE scoops national & regional awards

MPE has been recognised with two national Awards at the Future Manufacturing Awards held by the Engineering Employers' Federation (EEF) in London . . . . . [Read More >](#)



### MPE TECHNOLOGY

#### Wider range of power line filters to meet demand

MPE has further expanded its best-selling standard performance EMC power line filter range with the addition of three new filter variants . . . . . [Read More >](#)



#### Revolutionary power line filters – the biggest yet!

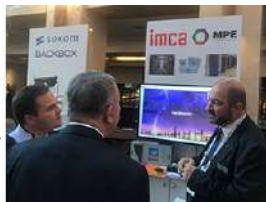
MPE has shipped two 3000A very high current EMP power line filters with TEMPEST performance, two of the largest filters it has ever manufactured . . . . . [Read More >](#)



### MPE DISTRIBUTOR NEWS

#### IMCA capitalises on emerging TEMPEST market

IMCA, MPE's Silver distribution partner for Turkey, has exhibited a range of MPE's TEMPEST protection solutions at the IDC Security Roadshow in Ankara . . . . . [Read More >](#)



#### MPE revitalises distribution in Norway

MPE has appointed Nordic Defence & Security as its distribution partner for Norway, aiming to sell to a broader application and client base there . . . . . [Read More >](#)



### MPE APPLICATIONS

#### Custom filter for advanced all-purpose ASV

Via its German distributor Electrade MPE has supplied a custom multi-line EMP filter solution to FFG for the multi-functional ASV WISENT 2 . . . . . [Read More >](#)



#### Custom filters for British Army's GEOINT shelters

MPE has delivered four custom filter solutions for vehicle-mounted shelters manufactured by Marshall ADG for the new battlefield Geospatial Intelligence system . . . . . [Read More >](#)



### FAST FACTS ON MPE LTD

- Trading for over 90 years, MPE employs over 50 people.
- MPE has designed and manufactured in excess of 10,000,000 high performance protection filters and feedthrough capacitors across the last 30 years.

- Many products in continuous service for more than 25 years.
- MPE's portfolio spans over 20,000 custom designs.
- MPE is certified to the ISO 9001:2015 quality standard, and its products meet all applicable defence, safety and regulatory standards.



For comprehensive information about MPE's products and services, contact the Sales and Marketing Department, MPE Ltd, Hammond Road, Knowsley Industrial Park, Liverpool, L33 7UL, U.K.  
Tel +44 (0)151 632 9100. Email [sales@mpe.co.uk](mailto:sales@mpe.co.uk). Website [www.mpe.co.uk](http://www.mpe.co.uk)  
If you have a friend or colleague who you think might find the MPE Company Bulletin informative, then why not forward it to them?



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David Seabury – Managing Director, MPE Ltd



David Seabury & Paul Currie, Directors of MPE, at the Future Manufacturing Awards in London, January 2019



The new automated storage carousel at MPE enables an operator to access required parts in seconds



Ground-breaking varistor research conducted at MPE leads to new patents in EMP protection technology

## 2018 . . . an award-winning year

So, with 2018 completed and a new financial year already well under way, it is all too easy to forget many of the activities and achievements which contributed to a strong and successful 2018 at MPE.

Still fresh in our minds is how MPE's year finished with a surge of custom filter activity. That culminated in MPE shipping some of the largest filters we have ever designed and manufactured, each measuring over five metres in length and weighing more than a tonne.

Thinking further back, following record-breaking levels of export business in 2017, the year kicked off with an incredible amount of manufacturing activity. In line with this, MPE invested in the installation of an automated storage carousel for parts, consolidating disparate storage locations and further improving MPE's kitting for manufacture. Such investment, along with the efforts of the whole manufacturing team, contributed to MPE again significantly improving its on-time delivery rates through the year.

On the people front, we were pleased to welcome Marcus Wright as MPE's Manufacturing Manager and Tracy Lowe to the newly created position of Procurement Manager, and in August I had much pleasure in presenting Karen Tighe with her 25-year service award.

I was also delighted that MPE was again able to expand its Apprentice program, now in its third year. August saw Jack Gorman join our program, boosting MPE's Apprentice team to almost 10% of MPE's employee total, with this figure set to grow again during 2019. MPE was also able to progress Keiron Campbell to a Manufacturing Technician role, following the achievement of his HND qualification.

MPE's Distribution Partner program continued successfully, as did our expansion into new territories. In April 2018 Tokin was appointed as MPE's territory distribution partner for Japan, and this was followed by Milcon in Finland, Kamic in Sweden and Nordic Defence & Security in Norway, all joining our distribution family later in 2018.

A packed event schedule was completed. Commencing in February, MPE exhibited with Strongfield Technologies, our territory distributor for India, at the tenth biennial DefExpo in Chennai, opened by India's Prime Minister Narendra Modi.

Distribution partner support then continued throughout the year, with MPE exhibiting with Euromip at Eurosatory in Paris; with Milcon at the Comprehensive Security exhibition in Lahti, Finland; with Eretec at the EMSEC conference in Seoul; and with Tokin at the SEECAT exhibition in Tokyo, concluding with our presence alongside Xi'An Tech Crown at the EMC China event in Shanghai.

In addition to participation at these events, Paul Currie, our Sales and Marketing Director, delivered papers at both the EMSEC conference in Seoul and EMC China in Shanghai. In August John Lindsay, one of our talented team of Design Engineers, participated as a technical expert, representing the BSI and UK interests, at the IEC SC77 meeting held during the 2018 AMEREM symposium in California.





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Paul Currie presents a technical paper at EMC China in Shanghai, October 2018



MPE supplies equipment filters for the multi-role tanker transport (MRTT) for in-flight refuelling of Airbus A330



45m long, this massive EMC test chamber in South Korea for testing warplanes & ground weapons systems incorporates MPE power line & control line filters

In November MPE exhibited with great success at the Electronica trade show in Munich. MPE's next exhibition will be in conjunction with IMCA, our Silver distribution partner for Turkey, at the 14th International Defence Industry Fair (IDEF) in Istanbul at the beginning of May.

Back at base, MPE's commitment to, and investment in, continuous ElectroMagnetic Pulse (EMP) research and development, resulted in two patent families covering the UK, Europe and USA. The first family of patent applications relates to MPE's latest feedthrough varistor system, which dramatically increases switch-on speed, whilst the second set of applications concerns a varistor solution that may be integrated into many types of power cords or plugs.

Over the year MPE once more delivered solutions for a host of high-profile applications that included the Airbus A330 refuelling aircraft, turret crew training simulators for the British Army's Ajax armoured fighting vehicles (AFVs), and, for the Korean Government, one of the largest EMC test chambers ever built anywhere in the world.

All of the above contributed to the unexpected yet fantastic result of MPE being either shortlisted for, or winning, a number of prestigious national and regional awards in the course of 2018.

Starting in May, Paul Currie, our Sales and Marketing Director, was shortlisted by the Institute of Directors (IoD) in their Director-of-the-Year awards. Paul also went on to be recognised by the EEF North-West Region, receiving their Leadership award. MPE was shortlisted in the Knowsley Business Awards, won two EEF North-West awards and was also runner-up nationally within two categories at the EEF's Future Manufacturing Awards, held in London in January 2019.

To sum up, such an award-winning year is going to be a hard act to follow but, given the activities completed and milestones achieved during 2018, I am confident that MPE is certainly in the best position to do so!



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The Grand Connaught Rooms in London, venue of the 10th anniversary Future Manufacturing Awards



David Seabury of MPE (left) is presented with the **Business Growth and Strategy** award by Mike Thornton, Partner and National Head of Manufacturing at the award sponsor RSM



From left to right, Paul Currie and David Seabury, Directors of MPE, receive the **Developing Future Talent** award from Sally Cleary, Managing Director of the award sponsor Randstad Inhouse Services

**FUTURE1**  
MANUFACTURING  
awards  
2018  
10<sup>TH</sup> ANNIVERSARY



The  
manufacturers'  
organisation

## MPE scoops national & regional awards

Out of the hundreds of thousands of manufacturing companies of all sizes in the UK, MPE Ltd has been recognised with two national Awards at the 10th anniversary Future Manufacturing Awards held by the Engineering Employers' Federation (EEF) in London. The Awards were presented at the EEF's annual gala dinner on the evening of Wednesday 30th January at the Grand Connaught Rooms, Great Queen Street, London.

The EEF has again applauded the achievements of MPE, this time nationally as well as regionally. MPE was runner-up in the Developing Future Talent award, sponsored by Randstad Inhouse Services, as well as collecting the runner-up award in the Business Growth and Strategy category sponsored by RSM. Developing Future Talent recognises the manufacturer who has looked to build skills and talent and develop their employees internally, whilst promoting engineering and manufacturing careers through activities within the community. The award for Business Growth and Strategy judges organisations which have taken huge steps at growing or entering new markets.

MPE won the Regional round of judging for both categories back in November and nationally was up against extreme competition from many thousands of innovative UK businesses. Quite remarkably, MPE was awarded the runner-up title by a panel of judges drawn from business leaders, industry experts and academics, having made an outstanding impression on them. The panel commented: "MPE have taken huge steps to ensure that attitudes within the business are always focused upon improvement. The NVQ level training that has been rolled out shows that they value a problem-solving culture."

Stephen Phipson CBE, Chief Executive Officer of the EEF, remarked: "Developing future talent and growing business is vital for all manufacturers. The sector is changing at a phenomenal pace, and so I encourage other manufacturers to take a leaf out of MPE's book by taking positive steps in upskilling their workforce, preparing for change and growing their business."

This national recognition has been the climax of an award-winning year for MPE, coming hot on the heels of its being shortlisted as a Finalist within the Small Business category at the Knowsley Business Awards in November. Earlier in 2018 MPE scooped two winners' awards at the EEF's North-West Regional Awards and Paul Currie, Director at MPE, was also the recipient of the Leadership award at the same event. This followed Paul being recognised by the Institute of Directors (IoD) as one of only five finalists within their Director-of-the-Year Awards last May.

David Seabury, Managing Director of MPE Ltd, declares: "I was extremely pleased to see MPE shortlisted as a finalist and to win the EEF Regional Awards a few months ago. The national recognition that we have now achieved as a progressive and innovative manufacturing company is fantastic. We have looked to develop a problem-solving culture across the whole of our business, and I'm delighted that this has now been rightly acknowledged and applauded on a national level.

"Everyone within our business has bought into this idea and contributed to the winning of these awards, and we certainly would not have received such recognition without all that hard work, enthusiasm and commitment."





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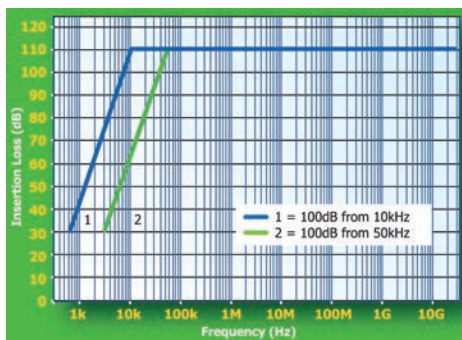
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MPE power line filters



Insertion loss graph for standard performance installation filter



Typical application for MPE power line filters in automotive test chamber at JIAT in South Korea



Thermal imaging is used for checking an installed power line filter

### Wider range of power line filters to meet demand

In direct response to the types of enquiries and orders it is now receiving from British and world markets, MPE has further expanded its well-established, best-selling standard performance EMC power line filter range with the addition of three new filter variants. Each of these new filters has been developed with the objective of reducing installer and therefore end-user cost.

MPE's standard performance EMC power line filters are the most popular and widely installed of any of MPE's filter ranges. They have been in service for many years in a broad spectrum of applications around the globe, such as datacentres, industrial power equipment, screened rooms, test chambers and tactical military shelters. Nevertheless recent enquiries and orders have regularly called for high-current filtering above 400A.

Previously such enquiries had been addressed by MPE using its very high current (VHC) EMC filter range. However, the filter variants within this range incorporate ultra-low leakage elements, which are often not actually needed for a given application and can unnecessarily increase the size, weight and cost of the filter.

MPE has therefore developed and introduced both 800A and 1200A filter variants into its standard performance EMC power line filter range.

Incorporating the same field-proven, highest reliability components as used for its existing range of EMC filters, these new three-phase and neutral filters boast 100dB of insertion loss attenuation across the full frequency spectrum from 100kHz to 10GHz and beyond.

At the same time, the removal of any ultra-low leakage performance element makes both the 800A and 1200A variants far more cost-effective options – with a significantly lower cost than MPE's ultra-low leakage variants.

In addition to these high-current variants, MPE has further augmented its range with the introduction of 250A filters in single-line, three-phase and neutral designs. The 250A additions are to satisfy an increased demand for this specific current rating, which MPE would have previously addressed with its 400A filter variants.

Again, these 250A filter variants feature the same field-proven, high-reliability components as incorporated in its existing range and provide 100dB of insertion loss attenuation across the full frequency spectrum. But they also come at a significantly reduced cost in comparison to the 400A variants, where applications may only require filtering up to and including 250A.

To view MPE's range of standard performance EMC power line filters, click on the following link: [www.mpe.co.uk/products/standard-performance-range-filters/](http://www.mpe.co.uk/products/standard-performance-range-filters/) or, to download your personal copy of MPE's high-performance power line filter catalogue, go to: [www.mpe.co.uk/downloads/power-line-emc-filters](http://www.mpe.co.uk/downloads/power-line-emc-filters)

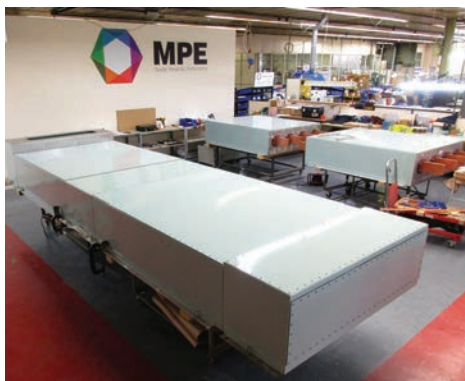


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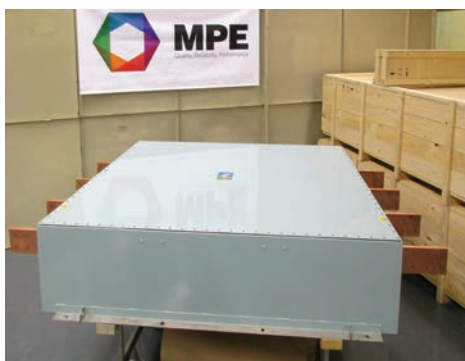
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Completed 3000A EMP power line filter with custom enclosures prior to testing



The smaller filter element ready for packing, following final testing and disassembly prior to shipment



3000A EMP power line filter being loaded for shipment

### Revolutionary power line filters – the biggest yet!

In January 2019 MPE shipped two 3000A very high current (VHC) EMP power line filters with TEMPEST performance. These filters represented two of the largest filters ever manufactured at MPE.

Back in late 2017, MPE was approached by Norshield A/S in Os i Østerdalen, Norway, to develop custom filters to provide protection for a very high power application on the European Continent. Performance had to comply with the NATO SDIP TEMPEST Standard for shielded chambers, with a requirement too for EMP surge protection.

Because of the complex nature of the application and the demands for high performance and very high current, MPE recognised early on in the design process that the massive size of any filter could present significant issues during installation.

The MPE filter solution was therefore ultimately designed with two smaller filter elements, each using revolutionary new busbar configurations. These filter elements were then conjoined, to make installation on site simpler and more straightforward and minimise any difficulties in that regard. Following an extensive modelling and development process, design acceptance and sign-off by the client were completed in June 2018.

Production of the filters with their custom-designed installation enclosures commenced in late September 2018. The custom filters manufactured were three-phase and neutral, rated at 3000A 440/250VAC 50/60Hz, with EMP surge protection up to 100kA 8/20µs and with a 100dB insertion loss from 10kHz through to 10GHz.

Following rigorous electrical and mechanical testing at MPE, including 25% current overload capability, manufacturing was completed in January 2019. Each filter arrangement measured 4.25m x 1.61m x 0.46m and weighed 1144kg, excluding the custom installation enclosures. The custom enclosures and busbar configurations were fitted during testing at MPE and brought the overall length to 5.25m and total weight to 1414kg.

These MPE custom filter solutions and enclosures were then disassembled prior to packing and duly shipped to Norshield in late January 2019 with all necessary assembly and installation guidance documentation.

**NORSHIELD<sup>AS</sup>**

<http://norshield.no/en>





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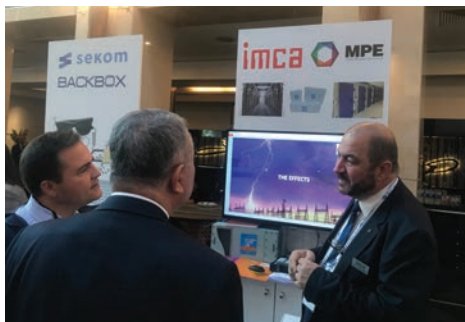
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MPE TEMPEST EMI equipment filter to prevent the covert monitoring of computer room emanations



At the IMCA booth during the 2019 IDC Security Roadshow, Cengiz Karaosmanoğlu, Deputy General Manager – Technical at IMCA, describes MPE TEMPEST solutions to the Director of IT at EGO, the Ankara Electricity & Gas Operations Business



Cengiz Karaosmanoğlu discusses TEMPEST protection with two IT Supervisors from the Turkish Ministry of Foreign Affairs visiting the 2019 IDC Security Roadshow

**IDEF'19**  
14<sup>th</sup> International Defence Industry Fair  
April 30 - May 3, 2019

Silver Partner

**imca**

### IMCA capitalises on emerging TEMPEST market

During 2018 IMCA, MPE's Silver distribution partner for Turkey, conducted an extensive market research survey to investigate the emerging TEMPEST market in Turkey. Building on this activity, on 5th March 2019 IMCA participated in the IDC Security Roadshow at Ankara, exhibiting and presenting a range of MPE's TEMPEST protection solutions.

This was the eighth IDC Security Roadshow, which forms part of the IDC Security Summit series in Turkey. The Security Roadshow is designed as an open platform for all IT and security professionals, with over 1000 end-user attendees including many key decision-makers from both government departments and private organisations.

Attending on behalf of IMCA and MPE were Cengiz Karaosmanoğlu, Deputy General Manager – Technical at IMCA, and Arda Abalı, Product Marketing Engineer at IMCA.

During the one-day event, as well as showcasing MPE's cutting-edge TEMPEST solutions, IMCA's stand featured an eye-catching video display to illustrate the TEMPEST threat and the scalable levels of TEMPEST protection that may be adopted by end-users.

Alongside this, IMCA engaged in one-to-one meetings with 20 senior individuals from private companies within the IT sector, information security experts working within government departments, IT specialists and directors of Turkish defence industry suppliers, and military personnel representing the Turkish Ministry of National Defence (Millî Savunma Bakanlığı).

MPE's ultra-reliable TEMPEST protection solutions have been utilised for land-based and maritime applications around the globe for many years. MPE's pluggable TEMPEST filters are the world's largest-selling range of portable TEMPEST protection filters, whilst the introduction of MPE's marine TEMPEST filters in 2018 maintains MPE's position at the forefront of TEMPEST protection technology.

IMCA was the only company at the IDC Security Roadshow to present and demonstrate such TEMPEST protection solutions, and the interest from visitors with IT security responsibilities was high, with many requesting further information or follow-up meetings. IMCA will be completing these post-event activities in conjunction with MPE over the coming weeks.

The next public collaboration in Turkey between MPE and IMCA will be at the International Defence Industry Fair (IDEF), taking place from 30th April to 2nd May 2019 at the TÜYAP Fair Convention and Congress Center in Istanbul. Hosted by the Ministry of National Defence, this will be the 14th IDEF. The biennial IDEF remains the largest defence industry event in the Eurasian region and one of the top five defence exhibitions in the world. IMCA are again taking a large stand there, showcasing the comprehensive range of services and solutions that it provides for the Turkish market.

So you are invited to visit the IMCA stand 300 in Hall 3 at IDEF 2019, where MPE Director Paul Currie will also be in attendance.



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Studying samples of MPE products are, from left to right, Morten Høygård – Project Manager and Jørgen Lindberg – Managing Director, Nordic Defence & Security AS



In this typical application, Nordic Defence & Security supplied the telescopic mounting structure for the new Coyote anti-UAV tactical support vehicle designed and built by the British special operations vehicle developer Supacat

### MPE revitalises distribution in Norway

As a result of its comprehensive market research of the Scandinavian region, MPE is pleased to announce the appointment of Nordic Defence & Security AS (NDS) as its distribution partner for Norway. This appointment further expands MPE's worldwide distribution network.

Whilst MPE has a very successful track record in test chamber and facility applications in Norway, the appointment of Nordic Defence & Security is aimed at selling a wider portfolio of MPE's EMC and EMP solutions to a broader application and client base within the territory.

First established in 1976 and based north-west of Oslo in the town of Rud, Akershus county, Nordic Defence & Security boasts more than 30 years' experience working with the armed forces and civilian authorities across Norway. Having both consultancy and solutions capabilities, the company offers the most modern and cost-effective solutions for the Army, Navy, Air Force, Police, Fire and Rescue, and Civilian Aviation, in addition to other professional users.

Since Nordic Defence's appointment in September 2018, MPE Key Account Manager John Jephcott has visited the territory to conduct training and instruction on the MPE product range as well as customer visits. MPE now also features prominently on Nordic Defence's website [www.nordicds.no](http://www.nordicds.no)

MPE Sales & Marketing Director Paul Currie commented: "It is clear that Nordic Defence align very strongly with MPE's ethos and the principles of our established Partner Program. I am confident that this addition to our global network of distributors will provide a great opportunity for MPE to expand its sales to Norway outside our traditional markets."

Jørgen Lindberg, Managing Director of Nordic Defence & Security, remarked: "Given its unparalleled record of quality and reliability, MPE are a natural fit to complement the existing product solutions available from Nordic Defence & Security and will surely open up many new applications for us too, across both defence electronics and engineering in general. I am looking forward very much to working closely with the MPE team within our territory."

**NDS**  
Nordic Defence & Security AS





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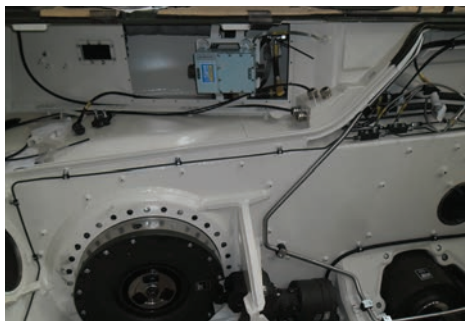
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WISENT 2 operating in its armoured engineer vehicle configuration



The MPE filter solution incorporated into WISENT 2 (see top centre)

### Custom filter for advanced all-purpose ASV

WISENT 2 is one of the world's most advanced multi-functional armoured support vehicles (ASVs), which can be used as an armoured recovery vehicle (ARV) or an armoured engineer vehicle (AEV). Developed by Flensburger Fahrzeugbau Gesellschaft (FFG) in Germany, the 8x8, 70t vehicle can travel up to 68km/hour and is based on the tracked chassis of the Leopard 2 main battle tank (MBT). This combat-tested chassis makes WISENT 2 extremely manoeuvrable, powerful and reliable in the battlefield.

The multi-functional vehicle can be deployed in missions such as recovery and towing of damaged vehicles and equipment, military engineering and mine clearance operations under challenging battlefield scenarios with modern asymmetric threats. It has already seen service in theatres such as Afghanistan. With its modular design, WISENT 2 can be converted from ARV to AEV configuration in less than five hours.

Accordingly, through its Bronze distribution partner Electrade GmbH based near Munich, MPE has supplied a custom multi-line EMP filter solution for WISENT 2 to FFG, a major supplier of innovative vehicle platforms to customers in over 40 countries, in both military and civilian markets.

During 2015, following its presentation to the FFG engineering team in Flensburg by the Danish border, MPE, as an established provider of filter solutions for the Leopard tank, was tasked with developing a custom filter that would effectively protect a variety of systems within the new WISENT 2 military vehicle. Following intensive development and prototyping activities, MPE duly provided production filters via Electrade to FFG during 2016 and 2017.

In a marketplace with much indigenous high-performance filter competition, the success of MPE's solutions on such an application is testament to both MPE's product quality and Electrade's customer relationship and service excellence. MPE expects to supply further production filters to FFG for the WISENT 2 platform during 2019.

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

**Bronze Partner**

**ELECTRADE**  
ELEKTRONIK-VERTRIEB  
UND CONSULTING



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A Marshall ADG GEOINT shelter for the British Army as mounted onto a MOWAG Duro 6x6 all-terrain tactical military vehicle



High-performance EMP protection filter from MPE



Electronic testing of filter performance with oscilloscope at MPE

#### Custom filters for British Army's GEOINT shelters

Fulfilling a follow-on contract from prime contractor Lockheed Martin UK, the Marshall Aerospace and Defence Group (Marshall ADG) has delivered further shelters for the UK Ministry of Defence's new battlefield Geospatial Intelligence (GEOINT) system, which is designed to enhance the British Army's situational awareness during combat. As part of its complex shelter solution, Marshall ADG has once again utilised MPE's field-proven, ultra-high reliability, EMP protection filters.

This follow-on contract provides additional Field Deployable GEOINT (FDG) systems, including a Forward Map Distribution Point (FMDP), further Tactical Map Distribution Points (TMDP) and Tactical Information and Geospatial Intelligence Systems (TIGAS).

FDG delivers a datacentric, GEOINT management, discovery, dissemination and exploitation capability that addresses the deployable requirements of the UK's Joint Force Intelligence Group (JFIG), including the provision of mobile and manoeuvrable working environments at the tactical level.

Integral to each shelter solution are customised EMP filters designed and manufactured by MPE in Liverpool.

During the design stage MPE completed an interactive development and testing process alongside Marshall ADG, resulting in four custom filter solutions. The custom variants included 10A and 63A mains power filters for both the TMDP and TIGAS configurations, a seven-line CBRN filter and a five-line filter for use within the alarm system. These custom filters ensured the integrity of EMP protection for each type of GEOINT shelter.

Marshall ADG is responsible for the design, manufacture, fit-out and integrated logistics for the shelters housing the systems. The TIGAS units are mounted onto MOWAG Duro 6x6 all-terrain tactical military vehicles from General Dynamics European Land Systems (GDELS), whilst the other units are carried on the back of the MoD's support vehicle supplied by Rheinmetall MAN Military Vehicles GmbH (RMMV).

MPE has delivered quantities of all four of its custom EMP filter solutions in support of Marshall ADG's delivery phase, with over 150 filters being manufactured and supplied by MPE to date.

 **Marshall**