



**MPE**  
Quality. Reliability. Performance.

# Company Bulletin

for EMC, EMP & TEMPEST Protection

## Issue 17

## MPE PEOPLE

### MPE wins prestigious business awards

MPE has overcome stiff competition from the many innovative manufacturers, large and small, across the region to win three major awards from the Engineering Employers' Federation (EEF) for the North-West of England. MPE was the proud winner in three categories: regional winner for Business Growth and Strategy, regional winner for Developing Future Talent, and regional winner for Leadership – an individual Award to MPE's Director Paul Currie.

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### Spotlight on Tracy Lowe

MPE has expanded its Purchasing Department by recruiting Tracy Lowe to the new position of Procurement Manager. Tracy is responsible for the purchase and control of all incoming materials, using and developing the ERP system to optimise MRP, purchasing systems, inventory levels and supplier performance within a lean and flexible manufacturing environment. Tracy equally plays a lead role in the management of the supply chain and delivery timescales.

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## MPE TECHNOLOGY

### Novel research results in new patents

In early 2015 MPE initiated an intensive research and development programme into the systems used in ElectroMagnetic Pulse (EMP) protection technology. One result of the research has been two innovations in varistors, and MPE expects to obtain granted patents for both in the UK, Europe and the USA within the next 12 months.

[Click for more details](#)



### MPE busy at EMSEC & AMEREM 2018

During October Paul Currie of MPE was invited to speak at the annual EMSEC Workshop in Seoul, South Korea. In his presentation entitled "EMP Protection and Operation for Public Organisations" Paul detailed how and why IEMI presents an increasing threat to public organisations and what measures can be taken to protect against it.

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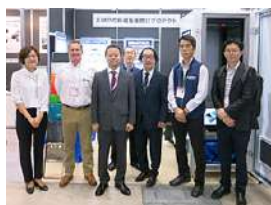


## MPE DISTRIBUTOR NEWS

### MPE supports Tokin at anti-terror show

Tokin EMC, MPE's new distributors for Japan, took a stand in October at the annual, three-day SEECAT exhibition and conference for anti-terrorism in Tokyo, supported by MPE Sales and Marketing Director Paul Currie. Tokin EMC exhibited there this year for the first time, displaying MPE filters, capacitors and applications such as a Mil-Std-188-125 compliant HEMP rack made by Eretec, Inc in South Korea.

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### New distribution partner for Finland

Following Milcon Oy's appointment in August as MPE's distribution partners for Finland, MPE's John Jephcott participated on their stand at the Comprehensive Security exhibition, organised by the Finnish Defence Forces during September in Lahti, southern Finland. Milcon specialise in defence and aerospace and are a trusted member of the Association of Finnish Defence and Aerospace Industries (AFDA).

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## MPE APPLICATIONS

## Test chamber for South Korean military

MPE has manufactured – and supplied via its Gold Partner for South Korea, Eretec – a suite of 16 filters for an EMC test chamber in the Seoul area dedicated to the testing of warplanes and ground weapons systems. 45 metres long, this is one of the largest test chambers MPE has ever equipped with filters. Comprising both power line and control line types, the filters range from 16A through to very large 800A units.

[Click for more details](#)



## Power supply unit for Polish defence

MPE's filter products are integral to many solutions offered by its Polish distributors Radiotechnika Marketing, such as their high-reliability stabilised power supply, with energy conversion technology achieving efficiencies of up to 96% across the full working range. Such efficiencies are essential for the thermal balancing of equipment, such as heating, ventilating and air conditioning on military vehicles.

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# FAST FACTS ON MPE LTD

- MPE has traded since 1925 and employs over 50 people.
- MPE has designed, manufactured and shipped in excess of 8,000,000 high-performance EMC, EMP and TEMPEST filters and feedthrough capacitors in the last 30 years.
- Many products have been in service for more than 20 years with undiminished performance.
- MPE has a portfolio of over 20,000 custom product designs to meet all possible requirements.
- The MPE factory at Knowsley, Liverpool, is certified to the quality standard ISO 9001:2015, and its products meet all applicable defence 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)**

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# Company Bulletin

for EMC, EMP & TEMPEST Protection

## Issue 17



Left to right, Richard Halstead – EEF Membership Engagement Director for the North, David Seabury – Managing Director of MPE Ltd, Tim Mennell – Account Director at the Award sponsors Randstad Recruitment



Paul Currie of MPE on the platform with Future Manufacturing Awards presenter Wendy Wilson



Left to right, Paul Currie and David Seabury of MPE display the company's three Future Manufacturing Awards certificates from the Engineering Employers' Federation

## MPE wins prestigious business awards

MPE has won three major awards from the Engineering Employers' Federation (EEF) for the North-West region of England ([www.eef.org.uk/awards](http://www.eef.org.uk/awards)). As a champion of UK manufacturing for the past 120 years, the EEF represents 20,000 companies of all types and sizes across the industrial spectrum, helping British manufacturers to compete, innovate and grow.

In a ceremony for the EEF's tenth regional Future Manufacturing Awards, held in the AJ Bell stadium in Salford, Greater Manchester, MPE Ltd was the proud winner in three categories:

- North-West regional winner for Business Growth and Strategy.
- North-West regional winner for Developing Future Talent.
- North-West regional winner for Leadership – an individual Award to MPE's Director Paul Currie.

MPE overcame stiff competition from the many innovative manufacturers, large and small, across the region. The company was chosen by a panel of judges drawn from business leaders, industry experts and academics, after impressing them with its ambitious target to become a world leader in its field, punching well above its weight.

The Managing Director of MPE Ltd, David Seabury, commented: "Every business aims to grow, but it requires a defined strategy to achieve this. The Awards we have achieved are testament to our hard-working, close-knit team, who have been essential to delivering our growth plans and ensuring that we go from strength-to-strength. We cannot wait to share this good news with all of our staff, customers and suppliers.

"It's fantastic to get this far, and now we're all looking forward to the National Finals in January, to see how we measure up against the rest of the UK."

Paul Currie said of his Leadership Award: "Manufacturers work extremely hard to ensure the success of their business, and so I am honoured to have been recognised in this way. My Award is not about individual effort though: it is for the talented and conscientious team with whom I work, and without whom this achievement would just not have been possible."

Richard Halstead, EEF Membership Engagement Director for the North, summed up: "Strategies that deliver productivity, efficiency and innovation are all part of a package that will lead to growth. Manufacturers are at the forefront of delivering these strategies, and MPE Ltd is a great example of what can be achieved. We wish them the best of luck in representing our region at the National Finals."

Accordingly, MPE now progresses to the National Future Manufacturing Awards, making a fresh presentation to the judging panel on 13th December for each category. The EEF's National Awards ceremony will be held at a gala dinner on 30th January 2019 in the iconic Grand Connaught Rooms in the West End of London.



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# Company Bulletin

for EMC, EMP & TEMPEST Protection

## Issue 17



Tracy Lowe

### Spotlight on Tracy Lowe

To keep pace with the rising demand for the company's products worldwide, MPE expanded its Purchasing Department in July 2018 by recruiting Tracy Lowe to the newly created position of Procurement Manager. Reporting to the Manufacturing Manager Marcus Wright, Tracy is responsible for the purchase and control of all incoming materials, using and developing the current Datawright ERP system to optimise MRP, purchasing systems, inventory levels and supplier performance within a lean and flexible manufacturing environment.

The Materials Buyer reports direct to Tracy, who also plays a lead role in the continuous improvement of MPE's supply chain, visiting, evaluating and monitoring new and existing suppliers. Her overriding objectives include the management of risk in the supply chain, the maintenance of materials specifications and delivery timescales, and cost reductions for the benefit of MPE's customers.

Tracy holds the Advanced Graduate Diploma Level 5 from the Chartered Institute of Procurement and Supply in Northamptonshire. Her career path has included purchasing management and materials planning roles at Saint-Gobain Performance Plastics at Rochdale, plastics masterbatch producer Colloids at Knowsley, industrial paint manufacturer Leighs Paints at Bolton, and the EMEA headquarters of Anixter Wire & Cable at Warrington.

After only two months' training at Bolton Commercial College, Tracy was awarded a placement at a division of Courtaulds Textiles in Bolton and, with natural career progression, was ultimately employed there for 12 years variously as Senior Manufacturing Administrator – Soft Furnishings hand-in-hand with the role of Production Controller.

For five years from 1997 to 2002 Tracy was also the proprietor of an interior design company with her partner. Tracy resides with him at Lostock, Bolton, and her varied leisure interests include interior design, genealogical research, pilates exercise, country walking and playing golf on some of the more testing Scottish links courses.



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## Company Bulletin

for EMC, EMP & TEMPEST Protection

### Issue 17



Traditional block varistors as used by MPE for protection against EMP



Novel varistor research conducted at MPE

### Novel research results in new patents

Utilising skillsets and techniques developed over decades, MPE manufactures in the region of 100 different designs of boxed filter and feedthrough solutions each month, with all production and assembly processes being conducted in-house at the company. However, since some 50% of products delivered by MPE are customised in some respect, research and development also lie at the heart of its activities.

As evidence of MPE's commitment to continuous research and development, ongoing work has been devoted to the continued rise of ElectroMagnetic Pulse (EMP) applications and their spread into the commercial market.

All lines in multi-line EMP systems feature high-energy transient suppressors, such as varistors or spark gaps, commonly at the input of the filter. Each transient suppressor has to give an ultra-high-speed response to arrest the incoming pulse. The purpose of this front-end transient suppressor (primary protector) is to shunt the bulk of the pulse energy to earth.

In early 2015 MPE initiated an intensive research programme into these systems used in EMP protection technology. One result of the research has been two patent families covering the UK, Europe and the USA.

The first family of patent applications (GB1600953.2, WO2017125725, EP3405963 and US16/071,193) relates to MPE's latest feedthrough varistor system, which has a thermally activated override. This new product not only dramatically increases switch-on speed by reducing circuit inductance, but also provides a safe and complete disconnection of the system from the circuit in the event of the varistor degrading.

The second family of patent applications (GB1600953.2, WO2017125724, EP3384509 and US16/071,179) relates to a varistor system that can be integrated into many types of power cord or plug. It enables retrofit or additional EMP protection to be added to virtually any device simply by changing the power plug or cord to that device.

Both products can be used in EMP and directed energy protection devices, and the respective families of patent applications were successfully prosecuted through the international phase of the Patent Cooperation Treaty (PCT), resulting in wholly-favourable examination reports being issued. As a result, MPE expects to obtain granted patents for both product lines in the UK, Europe and the USA within the next 12 months.

These two patents are testament to MPE's status as world leader in the field of EMP protection. MPE fully expects these patents to be granted by the European, UK and US patent offices, once regulatory time periods have elapsed. In parallel to this, MPE is completing its R&D work, so as to fully introduce these methods into the EMP filter solutions it is manufacturing and ensure that the company remains at the cutting edge of this area of technology.



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## Company Bulletin

for EMC, EMP & TEMPEST Protection

Issue 17



Paul Currie of MPE is pictured here with the KIEES Committee, next to the EMSEC Workshop event organiser, Mr Tae-Heon Jang, who is fifth from the left in the front row. Mr Jun Sun Park, CEO of MPE's Gold Partner Eretec, Inc, is standing between the two on the back row



Paul Currie delivers his presentation on "EMP Protection and Operation for Public Organisations" at the EMSEC Workshop in Seoul



The University of California Santa Barbara campus (UCSB), where the 2018 AMEREM Conference was held and the IEC SC77 Committee convened in August

### MPE busy at EMSEC & AMEREM 2018

During October the annual EMSEC Workshop took place in South Korea. Hosted by the prestigious Korean Institute of Electromagnetic Engineering and Science (KIEES), this year's single-day event was again held at the K-Hotel in Seoul.

Paul Currie of MPE was one of only two non-Korean nationals (and the only non-academic) invited to speak at the event by the event organiser Mr Tae-Heon Jang of the Korean Test Laboratory (KTL). Given the ever increasing threat from Intentional Electromagnetic Interference (IEMI) in non-military applications, Paul had been asked to brief the assembled audience on how public organisations may counter this threat.

Closing the day's proceedings with a half-hour presentation entitled "EMP Protection and Operation for Public Organisations", Paul detailed how and why IEMI presents an increasing threat to public organisations, how some organisations around the world have mitigated, or protected against, this threat, and what future measures are planned.

Prior to this, in late August, MPE design engineer John Lindsay participated as a technical expert representing the BSI and UK interests at the IEC SC77 meeting held during the 2018 AMEREM Conference at the University of California Santa Barbara campus (UCSB). SC77 is a subcommittee of the International Electrotechnical Commission concerned with high-power transient electromagnetic phenomena and is the global steering group for HEMP protection.

The AMEREM Conference is part of the AMEREM / EUROEM / ASIAEM Conference series, a unique forum for the international EMP community since the first meeting in Albuquerque, New Mexico, back in 1978.

So at this, the 23rd High-Power Electromagnetics Conference, technical presentations were spread across three lecture theatres simultaneously and attended by more than 150 invitees. Subjects addressed during the four-day meeting included the proposed update to Mil-Std-188-125, improved modelling techniques for HEMP threats, and the increasing need for HEMP protection of public and commercial organisations.

The next SC77 meeting is planned to take place in September 2019, in the ancient city of Xi'an, home of the Terracotta Army and beginning of the Silk Road in north-western China.





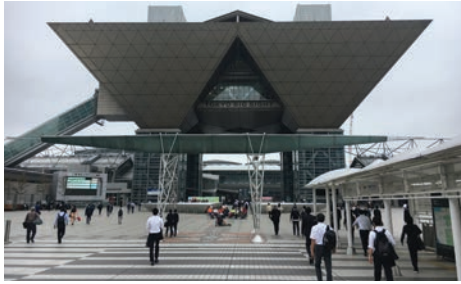


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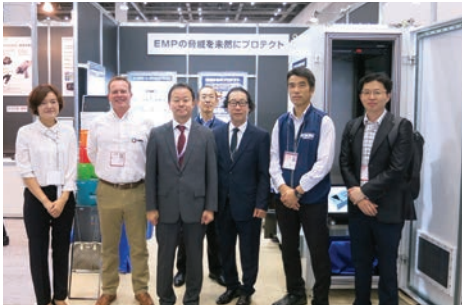
# Company Bulletin

for EMC, EMP & TEMPEST Protection

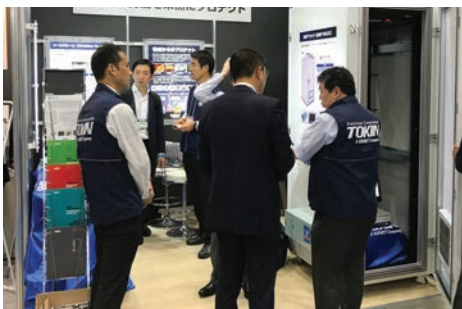
## Issue 17



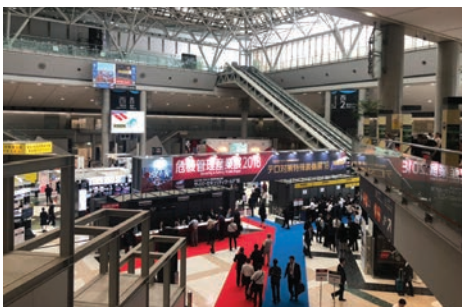
The grand entrance to SEECAT and RISCAN 2018 in the West Hall of Tokyo Big Sight



The Tokin EMC team on their stand at SEECAT 2018, with Mr Susumu Matsuoka, President of Tokin EMC, third left and Paul Currie, Sales and Marketing Director of MPE, second left



Handling enquiries on the Tokin EMC stand



A view over the two co-located trade exhibitions, SEECAT and RISCAN

## MPE supports Tokin at anti-terror show

As announced in Issue 16 of the Company Bulletin, Tokin EMC Engineering Co Ltd (Tokin EMC) have been appointed as MPE's distributors for Japan. During October Tokin EMC took a stand at the annual event SEECAT (Special Equipment Exhibition and Conference for Anti-Terrorism). This was held in the West Hall of Tokyo Big Sight, Japan's largest convention and exhibition centre at over 95,000 m<sup>2</sup>, and was co-located with the annual RISCAN (Risk Control) Security and Safety trade expo.

Feedback from previous SEECAT events had indicated that visitors would be eager to see suppliers of EMI, TEMPEST and particularly EMP protection, and for that reason Tokin EMC decided to exhibit there this year for the first time. In fact Tokin were the only exhibitors showing EMC and EMP protection capabilities and were pleased to welcome a steady stream of interested visitors to their stand over the three days of the show.

Tokin displayed a range of products and applications from MPE, among which a Mil-Std-188-125 compliant HEMP rack attracted considerable attention. Manufactured by Eretec, Inc, MPE's Gold Partner for the Republic of South Korea, this rack featured MPE's HEMP filters and had been independently tested and certified in Korea. Tokin have enjoyed a longstanding business and technology relationship with Eretec.

MPE Sales and Marketing Director Paul Currie was present on the stand for the duration of the SEECAT event in support of Tokin.

Mr Susumu Matsuoka, President of Tokin EMC, commented: "This was the first time that Tokin had exhibited at the SEECAT event in Tokyo, and I was impressed by the level of interest shown by visitors to Tokin's booth. The event created many new opportunities, which are now being followed up by Tokin.

"As Tokin are establishing the EMP market in Japan, the support of MPE Ltd at this event was both important and valued. Given the undoubted success of the show, Tokin plan to exhibit again at next year's SEECAT."

For EMC and EMP product enquiries in the Japanese market, email [matsuokas@tee.tokin.jp](mailto:matsuokas@tee.tokin.jp) or visit the Tokin web pages [www.tee.tokin.jp/eng](http://www.tee.tokin.jp/eng)





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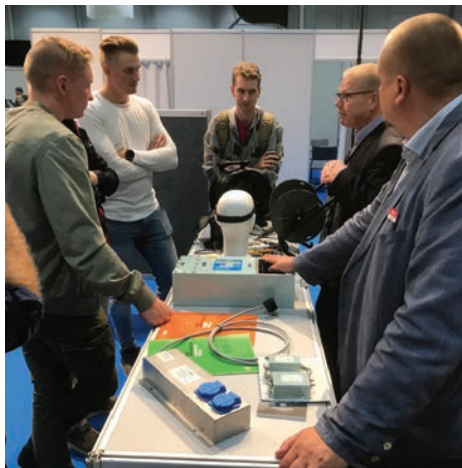
# Company Bulletin

for EMC, EMP & TEMPEST Protection

## Issue 17



The busy Milcon Oy stand at the Comprehensive Security exhibition in Lahti, Finland



The Managing Director of Milcon Oy, Janne Korpinen second right, describes selected MPE products and applications at Comprehensive Security



Live firing demonstration by Finnish Defence Forces at the event in Lahti

## New distribution partner for Finland

Following a period of market research, MPE is pleased to announce the appointment of Milcon Oy as its distribution partner for Finland, further strengthening its established global distribution base.

Whilst MPE has previously been active in Finland, sales into the region have historically been sporadic and development of the national market has been slow and protracted. As a result, during late 2017 and early 2018 MPE arranged an extensive market research exercise for the Finnish region.

This activity, in conjunction with a specialist team from UK Trade and Investment (UKTI), successfully created a list of potential distribution partners. After MPE had conducted telephone interviews and face-to-face meetings with several of those companies, Milcon were selected as the ideal distribution partners for the region.

Founded in 2003 and based along Kolmionkatu in Tampere, the third largest city in Finland, Milcon Oy have a team comprising ten experienced staff. Concentrating their efforts within the defence and aerospace markets and being a trusted member of the Association of Finnish Defence and Aerospace Industries (AFDA), Milcon are ideally positioned to promote their technical capabilities and portfolio of product solutions.

In turn, Milcon believe that MPE's broad range of filters and capacitors for EMC, EMP and TEMPEST protection will significantly extend their present technology portfolio and help to satisfy a rising number of customer enquiries in those areas.

Following Milcon's appointment in August, John Jephcott, MPE Key Account Manager, participated on their stand at the Comprehensive Security exhibition held from 7th to 8th September at the Trade Fair Centre in Lahti, a city also in southern Finland. This was the last of five important combat exhibitions organised by the Finnish Defence Forces during Summer 2018 to mark their 100th Anniversary, showcasing their activities and weapon systems capabilities. That included the live firing demonstration pictured here.

During the event Milcon displayed a range of MPE's product solutions, attracting to their stand a steady stream of interested and informed visitors from the Scandinavian defence sector.

Paul Currie, Sales & Marketing Director of MPE, commented on the appointment: "Milcon will provide a great platform for MPE to revitalise its activities within Finland, as we witnessed for ourselves at the Comprehensive Security event in September. I am very much looking forward to MPE working increasingly closely with Milcon in the future."

Mr Janne Korpinen, Managing Director of Milcon, remarked: "MPE's ultra high-quality filter solutions are a great addition to our current offering and are often requested by our client base. The support shown by MPE since our appointment has been superb, and we very much appreciated John's attendance on our busy stand at the defence show in Lahti."

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[www.milcon.fi/company](http://www.milcon.fi/company)





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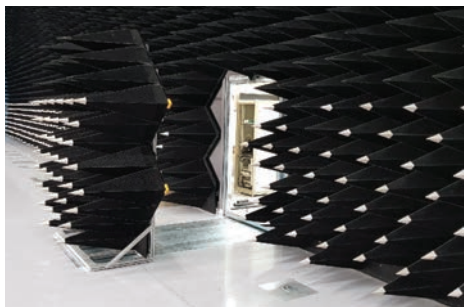
## Company Bulletin

for EMC, EMP & TEMPEST Protection

### Issue 17



The main test chamber with turntable



Point-of-entry (POE) door to the control room



MPE power line filters of different amperages

### Test chamber for South Korean military

MPE has manufactured – and supplied through its Gold territory distribution partner Eretec – a suite of 16 filters for an EMC test chamber located in the Seoul area of South Korea that is dedicated to the testing of warplanes and ground weapons systems. 45 metres in length, this is one of the largest test chambers MPE has ever equipped with filters.

Comprising both power line and control line types, the MPE filters ranged from 16A through to very large 800A units. The application called for standard as well as extended performance models in order to ensure high values of attenuation at low testing frequencies.

Designed, installed and commissioned by Eretec, work on the test chamber commenced on June 24th 2016 and was conducted over an 18-month period. The chamber is compliant with MIL-STD-464C “Electromagnetic Environmental Effects – Requirements for Systems” and IEEE Standard 299-2006 “Standard Method for Measuring the Effectiveness of Electromagnetic Shielding Enclosures”.

The chamber floor space boasts an imposing concrete pit, not to mention the large door, turntable and lift pit areas. The main chamber is equipped with hoist, turntable and state-of-the-art exhaust extraction. A separate heating, ventilation and air conditioning (HVAC) room is also available for any requirements where HVAC systems or equipment need to be tested.

The overall configuration comprises one main anechoic test chamber and two side chambers for container type testing. There are three further rooms around the outside of the chamber – control room, RF amplifier room and sensor measurement room.

Dimensionally, the main chamber is 45m long, 23m wide at its widest, and almost 14m high. The side chambers add a further 360m<sup>2</sup> to this footprint. The turntable area alone occupies an impressive 121m<sup>2</sup>.

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

**Gold Partner**





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## Company Bulletin

for EMC, EMP & TEMPEST Protection

### Issue 17



Completed power supply solution from Radiotechnika



Typical MPE feedthrough capacitors

### Power supply unit for Polish defence

In the battlefield environment electromagnetic compatibility (EMC) remains a critical factor in order to ensure equipment immunity to electromagnetic interference (EMI) or disturbances. In more recent years, through its territory distribution partners, MPE has established an unrivalled reputation for support on defence projects.

MPE's Silver Partner for Poland is Radiotechnika Marketing, an organisation with many years' experience in the design, validation, manufacture and distribution of advanced systems for military as well as commercial and industrial applications.

Radiotechnika has been operating in the city of Wroclaw since 1947 and is one of Poland's oldest and most famous electronics manufacturers and distributors. Whilst the company specialises in power supply and distribution systems for military vehicles, it is also Poland's no.1 military-grade cable harness and fibre optics supplier. All products from Radiotechnika are designed to provide a high level of electromagnetic compatibility.

MPE filter products are integral to many solutions offered by Radiotechnika, such as the company's high-reliability stabilised power supply. This solution is characterised by its high-performance energy conversion technology, in order to obtain efficiencies of up to 96% across the full working range. This level of efficiency is essential for the thermal balancing of equipment on in-vehicle systems such as heating, ventilating and air conditioning (HVAC).

The maximisation of efficiency, so that for example only 10% of electrical power is released into the environment as heat, has been a key consideration in the design of the advanced power supply, with all components and subsystems being required to conform to strict environmental factors. In line with this, MPE has provided continuous technical support during the design and verification phases, which have culminated in MPE supplying feedthrough capacitors and other specialised filters compliant with the emissions criteria laid down in MIL-STD-461F.

Sales of Radiotechnika's high-efficiency power supply solution continue to grow, as do the other areas of its business and, with high quality and reliability becoming ever more important factors, the demand for MPE's filter products in Poland is also increasing substantially.

**Silver Partner**

 **Radiotechnika**  
marketing sp. z o.o.

<http://radiotechnika.com.pl/en>

[www.mpe.co.uk/distributors](http://www.mpe.co.uk/distributors)