



MPE
Quality, Reliability, Performance

Company Bulletin

for EMC, EMP & TEMPEST Protection

Issue 12

MPE PEOPLE

David Seabury reviews a record 2016

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Pete Williams proud to become a Chartered Manager

Pete Williams, the Machine Shop Manager at MPE, has responsibility within Production including Fabrication, Choke Manufacturing and Facilities Management, and a total of nine personnel report to him. Now, having been an Associate Member of the Chartered Management Institute for over a year and then successfully completed their Level 4 course in Easter 2015, Pete has proudly achieved the prestigious Level 5 qualification, becoming a full Chartered Manager in August 2016.

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MPE TECHNOLOGY

Why compromise when you can customise?

Customisation spans the full breadth of MPE's product portfolio. Examples range from custom ceramic filters manufactured for the Eurofighter aircraft, custom feedthroughs produced for SPARK mine clearance rollers, and numerous custom equipment filters supplied to almost every NATO vehicle manufactured over the last 25 years – through to TEMPEST filters manufactured for the new Queen Elizabeth class aircraft carriers and, very recently, specialised filter designs supplied to the US Air Force for their high-profile Space Fence program.

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Ultra-low-leakage filters – a seachange for marine applications

MPE has developed and released a range of ultra-low-leakage powerline filters having no neutral line, designed specifically for naval "floating earth" applications. During late 2016 MPE updated and expanded this range in response to market demand. MPE's ultra-low-leakage filter range now include models from 10A through to 230A, providing high levels of attenuation from 100kHz right up to 18GHz – and with extremely low line-to-earth leakage properties from 6mA to 8mA.

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MPE DISTRIBUTOR NEWS

Breaking the US code with Technical Sales Solutions (TSS)

MPE has a history with Technical Sales Solutions (TSS) spanning ten years and, more recently, over the past five years, MPE and TSS have focussed their combined efforts on the US defense sector and the HEMP threat and requirements within that area. MPE's year-on-year sales into the USA have grown, and with an effective strategy and focussed efforts, sales have grown significantly in the last two years. This substantial rise saw the USA become MPE's single biggest export territory last year and culminated in TSS being honoured with MPE's Top Distributor award for 2016.

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MPE support for IMCA at IDEF

The 13th International Defence Industry Fair (IDEF) ran from May 9th to 12th at the TÜYAP Fair Convention and Congress Center in Istanbul, Turkey. Building on their success at previous IDEF events and celebrating their 15th anniversary as a company, MPE's distributor in Turkey, IMCA Elektronik, again took a large stand space to display their portfolio of solutions. In support of IMCA, who were exhibiting a wide range of filter and capacitor products from the MPE portfolio, Paul Currie of MPE attended the event for two days.

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MPE APPLICATIONS

Turning up the power at Horiba MIRA

MPE has a working relationship dating back over 15 years with MIRA EMC Engineering based at Nuneaton, Warwickshire, UK. More recently in 2015, MIRA engaged with MPE for adapting and upgrading of one of its existing anechoic vehicle test chambers, in order to meet the increased demand for testing electric vehicles and their components. For MPE, the chamber upgrade presented both AC and DC filtering requirements, with the DC demand being high current and high voltage.

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MPE comes of age with Teledyne e2v

Although the defence sector has historically been and remains MPE's largest market, the same high levels of quality, performance and reliability demanded by this sector are also required by the medical and scientific markets. Accordingly MPE has been supplying its high-performance feedthrough products to e2v Technologies since 1999, some 18 years ago. Via its Medical Division based in Chelmsford, Essex, e2v have long supplied cutting-edge products into the radiotherapy, scientific, ophthalmic and dental imaging markets.

[Click for more details](#)



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. Website www.mpe.co.uk

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David Seabury – Managing Director, MPE Ltd

MPE in 2016 . . . reviewing the year

Following record-breaking exports during our 90th Anniversary year, 2016 was again an incredibly busy period for MPE. Entering the year, MPE had already secured a very significant high-current HEMP filter order, for supply to a European defence application across the second half of the year. This was the largest HEMP protection project within Europe last year, and the fact that MPE was selected by the client is again testament to our World leader status within the HEMP arena.

Continuing the themes of export and HEMP, MPE experienced record sales into the USA during 2016 as a direct result of the strategy that MPE has adopted within the USA over the past five years, along with the hard work of our US distributor Technical Sales Solutions (TSS). With many follow-on orders expected during 2017, and the recent announcement that the US defence budget is to increase to the tune of \$54 billion, US sales are set to grow again during 2017.

2016 was however also tinged with sadness, as June saw the very unexpected passing of our Technical Director and my friend and colleague Jan Nalborczyk. Jan had been part of the MPE team for almost 40 years and, whilst the business continues today as strong as ever, MPE does feel as though it has a little piece missing, as I am sure it will for many years to come.

Happier experiences for MPE saw three of our employees reach the milestone of 40 years' service with the company. Considering today's employment climate and culture, this kind of service longevity is increasingly rare, and it was a great pleasure for me personally to be able to make awards to John Parsons, Tony Robinson and Fred Baker.

John Lindsay was selected by the British Standards Institution to represent the UK on a key International Standards committee, and Pete Williams also attained his Level 5 qualification from the Chartered Management Institute. Toward the end of our financial year, MPE also said goodbye to three of our long-serving employees who left us for retirement bliss. However, with six new starters during 2016, numbers at MPE have again grown, the latest appointment being James Derby as MPE's new Technical Director.

Another first for MPE saw two apprentices join the MPE team in August. This is the first time that MPE has conducted apprenticeships – undertaken in conjunction with Knowsley Borough Council and the North West Training Council. Ben and Dylan have progressed rapidly, both contributing to MPE's efforts, and MPE are now considering a further two apprenticeships during 2017.



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MPE's commercial HEMP filters

A record amount of overseas activity was conducted during 2016, with 11 different territories visited and participation at Achilles Live (Norway), Electronica (Germany), Eurosatory (France) and MSPO (Poland) amongst notable events. Moreover Paul Currie, our Sales and Marketing Director, took part in the keynote address at the two-day ECNE (Energy Council of the North-East) Fall Engineering and Operations Conference which took place at Danvers, Massachusetts. Within the UK, MPE exhibited at the defence procurement event (DPRTE) in Cardiff for the first time.

Technology-wise, MPE saw sales of our unique Gigabit Ethernet filter and our market-leading TEMPEST pluggable filters grow, along with the expansion of our high-voltage powerline filter ranges and the introduction of our commercial HEMP filter ranges, another World first.

So, looking ahead, MPE entered 2017 with an unprecedented order book level across our first financial quarter, and I am confident this will continue throughout the year. In response MPE has invested in the upgrading of our in-house IT systems and is again actively recruiting to expand our team. My one other hope for the business in 2017 is that we find time for that party we were planning to have last year, but never quite got around to!



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Pete Williams

Pete Williams proud to become a Chartered Manager

As we described in Company Bulletin Issue 8, Pete Williams, the Machine Shop Manager at MPE, has responsibility within Production including Fabrication, Choke Manufacturing and Facilities Management, and a total of nine personnel report to him.

Now, having been an Associate Member of the Chartered Management Institute for over a year and then successfully completed their Level 4 course in Easter 2015, Pete has proudly achieved the prestigious Level 5 qualification, becoming a full Chartered Manager in August 2016.

The Level 5 Extended Diploma in Leadership and Management is designed for practising middle managers who wish to develop their core management skills and practices. The qualification focuses on the personal development of the individual learner's management capabilities and competencies.

Accordingly Pete's Level 5 course, undertaken between August 2015 and July 2016, comprised a dissertation on a real-life capital expenditure project at MPE and a programme encompassing nine modules:

- Personal development
- Information-based decision-making
- Resource management
- Meeting stakeholder and quality needs
- Conducting a management project
- Performance management
- Financial control
- Marketing planning
- Leadership practice.



Subsequently Pete was able to utilise the new skills and practices which he had learned, leading a significant facilities management project running from September 2016 through to April 2017, ensuring that all requirements were met fully and within both cost and time expectations.

Moving onward and upward, Pete Williams is now studying for the Chartered Management Institute's Level 7 Certificate in Strategic Management and Leadership, designed for Directors and Senior Managers. So watch this space!



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MPE's custom ceramic capacitors are incorporated into the countermeasure chaff and flare dispense system on the Eurofighter Typhoon



EMI-suppressed 24V alternator shroud for a military vehicle



Novel filter with integral busbar for the USAF Space Fence space radar system

Why compromise when you can customise?

How often are we forced to make compromise decisions, and how much do those compromises complicate our lives? There are occasions when the ideal solution is not available and the only option is to select the "nearest fit" from a catalogue range. All too often this compromise leads to other, more far-reaching changes having to be made to accommodate such a catalogue product. Of course, by only offering catalogue products manufacturers can make efficiencies, but usually at a cost to the client.

Throughout its 92-year history MPE has always taken its lead from client or market requirements. Where many similar manufacturers may have simply offered their "nearest fit", MPE has continually striven to find the right balance between catalogue and custom solutions for its clients. In more recent times, this expertise in customisation has seen MPE develop many deep and longstanding client relationships, some spanning back over 20 years.

Such customisation can take many forms, not only mechanical or electrical but also to fulfil specific test requirements or operating conditions, and often the client requirement is driven more by the need for retrospective upgrades to legacy systems.

At its manufacturing site in Knowsley, Liverpool, MPE carries out all mechanical, electrical, assembly and finishing processes. This provides MPE with the ability to conduct customisations from small modifications – such as the relocation of fixing holes or changes to the electrical rating of existing circuits – right through to fully bespoke, custom designs derived from first principles and unique to the specific client.

MPE routinely meets customer demands for multiple lines, special packaging, mounting or terminations, providing solutions that are both versatile and cost-effective whatever the environment.

Customisation spans the full breadth of MPE's product portfolio. Examples range from custom ceramic filters manufactured for the Eurofighter aircraft, custom feedthroughs produced for SPARK mine clearance rollers, and numerous custom equipment filters supplied to almost every NATO vehicle manufactured over the last 25 years – through to TEMPEST filters manufactured for the new Queen Elizabeth class aircraft carriers and, very recently, specialised filter designs supplied to the US Air Force for their high-profile Space Fence program.

Such examples now see MPE with a portfolio in excess of 20,000 custom designs. This portfolio often also benefits new clients since, rather than starting from a blank sheet to meet a clients' custom requirement, MPE can draw from previous designs or design experience to greatly reduce the time to client acceptance of a new design.



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EMC suppression integrated into high-power connectors for military vehicles

Of course customisation is also often led by MPE itself, where a market trend or demand has been identified. In recent times the expansion of both MPE's high-current HEMP filter range and high-voltage DC feedthrough ranges provides examples of this. In addition, MPE has continued to lead in its markets with the introduction of numerous world-leading, novel and sometimes unique designs.

Recent Issues of the MPE Company Bulletin have featured ground-breaking designs such as MPE's high-power military connectors with integral EMC suppression, along with world-first designs such as MPE's range of commercial HEMP filters and its EMP/EMI Gigabit Ethernet filter.

Accordingly, the next time your supplier responds with "You can have anything you want . . . as long as it's in our catalogue", don't simply compromise, because the ideal custom solution may be waiting for you at MPE!



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A typical MPE ultra-low-leakage filter

Ultra-low-leakage filters – a seachange for marine applications

MPE has manufactured low-leakage filters for many years, for use within applications such as secure communications systems, computer installations and portable screened enclosures. These filters are designed for use on mains supplies which have a dedicated neutral line and typical leakage current values between 15mA and 100mA.

In more recent times MPE has developed and released a range of ultra-low-leakage powerline filters having no neutral line, designed specifically for naval “floating earth” applications. During late 2016 MPE updated and expanded this range in response to market demand.

MPE’s ultra-low-leakage filter range now include models from 10A through to 230A, providing high levels of attenuation from 100kHz right up to 18GHz – and with extremely low line-to-earth leakage properties from 6mA to 8mA.

These extremely low-leakage properties allow up to five filters to be deployed in parallel, whilst still maintaining a total leakage current below 30mA. The filters also include high values of discharge resistance, to ensure compatibility with shipborne DC leakage detection systems.

Incorporating the same field-proven, ultra-high-reliability components as utilised for many years in MPE’s other powerline filter ranges, these ultra-low-leakage filters have already been supplied and integrated onto numerous marine platforms such as those pictured here.

You can download your personal copy of MPE’s comprehensive datasheet on the new ultra-low-leakage powerline range from [here](#).



An Astute Class submarine



QEII aircraft carrier – the Royal Navy’s largest ever ship



A Royal Navy Type 45 destroyer



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Paul Currie, Sales & Marketing Director of MPE, presents the company's 2016 Top Distributor award to Technical Sales Solutions (TSS): from the left, Tom Griffin, Chief Financial Officer of TSS, Paul Currie & Terry Murch, President of TSS



The Technical Sales Solutions (TSS) team with MPE during a visit in late 2016: from the left, Terry Murch and Tom Griffin of TSS, Paul Currie & David Seabury of MPE

Breaking the US code with Technical Sales Solutions (TSS)

Many British brands have been unsuccessful in cracking the US market – notably Oasis, Marks & Spencer, Robbie Williams and most recently Tesco. However, the list of British names successfully exported to the USA is equally long, from David Beckham, Piers Morgan and Ricky Gervais to Pret-a-Manager, The Beatles and Downton Abbey. So might MPE now be added to this list?

The lure of the USA is indisputable . . . a common culture and language and an uncommonly large target audience all mean that, with a quality product, the reward for getting things right can be great. And without question MPE has a quality product range.

However, even with a quality product and the many common factors linking us, there are still significant obstacles to overcome, not least the little bit of water between the two countries. Looking back at the list of successful exports to the USA, great representation in the USA has always been the vital ingredient for successfully exporting to that market.

MPE has a history with Technical Sales Solutions (TSS) spanning ten years and, more recently, over the past five years, MPE and TSS have focussed their combined efforts on the US defense sector and the HEMP threat and requirements within that area.

TSS has been instrumental in overcoming many barriers to US market entry and has worked very closely with MPE in order to reach the right target audience. In the early stages, progress was steady but slow, while MPE established a track record first on US funded / owned projects. Subsequently MPE built upon this established track record with some high-profile applications and projects within the USA. MPE's year-on-year sales into the USA have grown, and with an effective strategy and focussed efforts, sales have grown significantly in the last two years.

This substantial rise saw the USA become MPE's single biggest export territory last year and culminated in TSS being honoured with MPE's Top Distributor award for 2016. The award was presented to Terry Murch, President of TSS, by MPE's Sales & Marketing Director, Paul Currie, during a visit to the USA in late April.

On the same visit, MPE and TSS also delivered a keynote address at an event organised by InfraGard in New England, and later on MPE welcomed a delegation from the US Department of Defense to Liverpool.

Paul Currie commented on the Top Distributor award: "You couldn't say that MPE has been an overnight success in the USA, but then very few organisations are. The key to the volume of exports which MPE is now seeing has been the setting of clear goals, sticking to a well-defined strategy and working closely with TSS. There are still tasks to complete and more rewards to be reaped from the USA, and our expectation is that 2017 will be an even better year than the last."





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The bustling IMCA stand at IDEF



MPE filter products displayed on the IMCA stand



The Aselsan MUKAS mobile shelter solution at IDEF



IMCA celebrate their 15th anniversary during IDEF

MPE support for IMCA at IDEF

The 13th International Defence Industry Fair (IDEF) ran from May 9th to 12th at the TÜYAP Fair Convention and Congress Center in Istanbul, Turkey. The biennial IDEF remains the largest defence industry event in the Eurasian region and one of the top five defence exhibitions in the World.

Building on their success at previous IDEF events and celebrating their 15th anniversary as a company, MPE's distributor in Turkey, IMCA Elektronik, again took a large stand space to display their portfolio of solutions. In support of IMCA, who were exhibiting a wide range of filter and capacitor products from the MPE portfolio, Paul Currie of MPE attended the event for two days.

Despite last year's political instability and the ensuing economic uncertainty that followed, IMCA have continued to champion MPE's solutions within the Turkish defence market and have now established a solid track record of both custom and catalogue product supply. MPE's sales into the region have grown year-on-year, with Turkey being among MPE's top five export territories in 2016.

Particular focus has been directed toward two specific areas – the sizeable and well-established military vehicle sector and the somewhat niche hardened shelter market.

This activity has seen MPE supply a variety of feedthrough and military vehicle type filters in quantity across the past two years. More recently MPE has designed – and accepted significant orders for – a range of custom feedthrough products to be supplied throughout 2017 and subsequent years. MPE products could also be seen within end-use applications at IDEF, such as Aselsan's MUKAS mobile shelter pictured here.

Since the last IDEF event in May 2015, IMCA have opened a new office facility at the Regnum Sky Tower in Çankaya, Ankara, as well as moving their Istanbul office to newer premises in Üsküdar, Istanbul. Alongside this, IMCA have also expanded their team, with the company now comprising 25 employees, 17 of whom have an engineering degree.

Paul Currie commented: "I have enjoyed working personally with Cemal Alpay and his team at IMCA since their appointment as MPE's country distributor back in 2013, and their technical ability and understanding have been significant factors in Turkey becoming one of MPE's fastest growing territories. With the orders already secured and in the pipeline for this year, MPE's sales into Turkey will certainly grow again significantly in 2017."

www.imca.com.tr

<http://idef.com.tr/en>





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MPE 800A 1500V DC filters mounted onto the anechoic chamber at Horiba MIRA, Nuneaton



John Parsons of MPE undertakes a site survey at Horiba MIRA

Turning up the power at Horiba MIRA

Horiba MIRA, the global provider of pioneering engineering, research and test services to the automotive, defence, aerospace and rail sectors, has been working with the World's leading manufacturers to deliver innovative vehicle engineering solutions since 1946.

MIRA EMC Engineering based at Nuneaton, Warwickshire, UK, is an accredited facility to ISO 17025 Standard via UKAS for international automotive and defence applications, along with being approved for all major vehicle manufacturers' test schedules and NPfA approved.

MPE has a working relationship dating back over 15 years with MIRA. More recently in 2015, MIRA engaged with MPE for adapting and upgrading of one of its existing anechoic vehicle test chambers, in order to meet the increased demand for testing electric vehicles and their components.

For MPE, the chamber upgrade presented both AC and DC filtering requirements, with the DC demand being high current and high voltage. Following visits to site by MPE and a rigorous 12-month design process, in late 2016 MPE delivered both AC and DC filters, with the DC filter providing a very high attenuation performance of 100dB from 10KHz through to 18GHz and being rated for 800A at up to 1500V DC.

However, perhaps the most significant challenges presented to MPE were mechanical. Whilst the chamber itself measured around 20m x 11m x 7.5m, the available space for any new filters was of primary concern, as was the overall increase in weight to the existing structure from the filters. MPE therefore adapted designs from its high-current DC filter catalogue range, thereby ensuring that envelope size and weight limits were met.

MPE also designed and delivered custom busbar configurations and custom enclosure hardware for both external and internal mounting to the existing structure. The result was a smooth and efficient filter installation, minimising the need for MIRA to make changes to its existing chamber.

The upgraded chamber at MIRA Nuneaton now provides the capability for RF immunity and EMC emissions testing for the rapidly expanding electric vehicle market sector.





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Typical MRI scanning suite



Custom DC feedthrough capacitor from MPE for the radiotherapy market

MPE comes of age with Teledyne e2v

Although the defence sector has historically been and remains MPE's largest market, the same high levels of quality, performance and reliability demanded by this sector are also required by the medical and scientific markets. Accordingly MPE has been supplying its high-performance feedthrough products to e2v Technologies since 1999, some 18 years ago.

Via its Medical Division based in Chelmsford, Essex, e2v have long supplied cutting-edge products into the radiotherapy, scientific, ophthalmic and dental imaging markets. In particular, these radiotherapy applications demand the highest levels of trust, quality and security of supply, and e2v's RF power products can now be found in over 90% of the world's radiotherapy treatment machines (www.e2v.com/products/rf-power/magnetrons).

The range of solutions offered by e2v includes magnetrons, thyratrons, modulators and support services, with products able to generate and deliver the microwave power required by radiotherapy cancer treatment machines. They produce the X-rays used in both the imaging and radiation treatment of tumours. e2v is now the world's largest manufacturer of pulse magnetrons and a world leader in magnetron technology.

MPE originally worked with e2v to design and develop custom high-voltage DC feedthrough capacitors for use within these magnetron solutions, being selected by e2v because of MPE's reputation for reliability and following a rigorous supplier evaluation process.

During this design process, particular attention was afforded to guarantee that high levels of feedthrough performance were maintained across a full-frequency operating spectrum from below 1GHz through to 95GHz. To date MPE has provided many thousands of feedthrough products to e2v and currently has forward orders for significant volumes to be supplied during 2017 and beyond.

Throughout this 18-year relationship, MPE has continued to work closely with e2v to ensure efficient supply as new programs have come online. Product development at MPE has been continuous to meet any new requirements as e2v's solutions have been updated.

Teledyne e2v recently launched its new MG7095 series of magnetrons to the market in direct response to customer requirements, and it has been designed specifically for radiotherapy linear accelerator use. The new magnetron design again utilises high-performance feedthrough products from MPE.

