MPE
Quality, Reliability, Performance

MPE 90th Anniversary 1925 – 2015

Company Bulletin

for EMC, EMP & TEMPEST Protection

Issue 10

MPE PEOPLE

Jan Nalborczyk passes away

Since Issue 9 of our Company Bulletin in June, the long-serving Technical Director of MPE, Jan Nalborczyk, has very sadly passed away at his home in Ormskirk, Lancashire, from a sudden and unexpected heart attack. He leaves behind his wife and three grown-up children, two sons and a daughter, to whom the Directors, staff and friends of MPE extend their deepest sympathy. Jan will be remembered as a figure much loved and respected by all who came to know him over the years.

Click for more details

Spotlight on Rob Hewitt

Sales Administrator Rob Hewitt joined MPE in March 2011. Being office based, he is the first-line discussion partner for customers contacting the company at Knowsley, Liverpool, handling enquiries and processing, placing and progressing orders. Communicating regularly with customers, Rob's primary functions are preparing quotations and checking the accuracy and pricing of orders, part numbers and special requirements – in particular derivatives of existing designs given that some 50% of MPE's production consists of customised designs.

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MPE TECHNOLOGY

MPE's World first sets tongues wagging

In a World first, MPE has launched a ground-breaking new range of HEMP protection filters designed specifically to fulfil the needs of the commercial market. Both powerline and equipment variants directly address the threat to public utilities, telecommunications, transportation, computer networks, datacentres, control rooms, the emergency services and other key national infrastructure within the framework of homeland security.

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New 250A HEMP filter fills a gap in the market

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MPE DISTRIBUTOR NEWS

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Dedicated in territory support for distributors

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MPE APPLICATIONS

MPE supplies largest test chamber in Korea

Specialist local distributor Eretec is championing MPE's interests in the Republic of South Korea, one of the top three sales territories for MPE last year, and is making great strides in its business. Accordingly the company has recently completed a large anechoic test chamber installation for automotive NVH (Noise, Vibration, Harshness) testing, performance testing and hardware-in-the-loop (HIL) simulation. The location is the Jeonbuk Institute of Automotive Technology (JIAT).

Click for more details

MPE helps protect against ballistic missiles & military satellites

RAF Fylingdales on the North Yorkshire Moors is an integral part of the Ballistic Missile Early Warning System (BMEWS) for UK and US defence, with a secondary duty of detecting, reporting and tracking satellite activity, given that many currently in orbit are of a military nature and able to gather intelligence using diverse covert techniques. As part of a 25-year relationship, in 2013 MPE was awarded the contract to supply a complete suite of HEMP powerline, control line and telephone line filters.

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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. Fax +44 (0)151 632 9112.
Email sales@mpe.co.uk. Website 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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Jan Nalborczyk

Jan Nalborczyk passes away

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Jan had worked at MPE since November 1979, when it was still Dubilier, progressing from the post of Design Engineer, via Assistant Chief Engineer and Chief Engineer by 1985, to take over as Technical Director ten years later in 1995. He was one of four Directors who formed the management buyout team in February 1997, leading to what is the current MPE.

Jan graduated from the University of Birmingham, UK, in 1973 with a BSc Honours degree in Physics. In the first three years of his career, he fulfilled the position of Research Engineer at the Lucas Group Research Centre in Solihull. Next Jan worked as a Process and Development Engineer on ceramic capacitors – at Erie UK which became ITT Components in Norwich – before joining Dubilier at Knowsley, Liverpool.

Jan Nalborczyk enjoyed wide involvement in the EMC world outside of MPE. In August 2011 he became the representative of the EMC Industry Association (EMCIA) to the BSI GEL210/12 Committee. He quickly went on to represent the BSI on the highly prestigious SC77C Committee of the International Electrotechnical Commission (IEC). This Committee is concerned with standardisation in the field of EMC to protect civilian equipment, systems and installations from threats by man-made, high-power transient phenomena, including the electromagnetic fields produced by nuclear detonations at high altitude.

In July 2014, for his contributions to advances in HEMP filter design, Jan received the rare honour of being elected a Fellow of the Summa Foundation of Albuquerque, New Mexico, which promotes scientific and educational activities in the field of electromagnetics. Jan was also a Chartered Engineer and Member of the Institution of Engineering & Technology.

Jan had been working towards his planned retirement in June 2017 and, as such, his recent focus had been within longer term R&D projects, one of which has now resulted in the granting of a patent. Much of Jan's role and tasks, including his representation of BSI, had already been migrated to other members of MPE's engineering team.

Jan will be remembered as a figure much loved and respected by all who came to know him over the years.

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Rob Hewitt

Spotlight on Rob Hewitt

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Rob Hewitt plays a key role at order input and production engineering meetings in establishing manufacturing routes and timescales, so that, however detailed or complex orders may be, MPE's engineering team understand exactly what has to be undertaken to fulfil them to specification. Order paperwork has to be meticulously prepared by Rob in accordance with the quality management principles (QMPs) of the ISO 9001 Standard to which MPE has long been registered.

Rob Hewitt's personal development at MPE culminated this year in his proud achievement of a Level 2 National Vocational Qualification (NVQ) in Business Improvement Techniques.

Looking back on his career, Rob joined the world-renowned pressure gauge OEM Budenberg Gauge in Manchester in 1974 at the age of 16 as an apprentice instrument fitter, studying Engineering at South Trafford College, Altrincham. Employed as an instrument fitter into the 1990s, Rob progressed to work on a special configurator project under Budenberg's Chief Engineer and thereafter joined the company's Sales team for a year.

Next Rob was headhunted to set up BTS – a satellite technical branch specialising in fast-track gauge repairs and deadweight tester sales and repairs – whose success led to the formation of DH-Budenberg Ltd. There Rob held roles in Sales Administration, Accounts and latterly Production, where he was responsible for production liaison with French sister company DH Desgranges & Huot of Paris.

Leaving Budenberg in the wake of rationalisation in 2010 after 37 years' loyal service, Rob took a course at Liverpool Hope University and so gained his Certificate with credits from the National Examination Board in Occupational Safety and Health (NEBOSH).

Rob lives at Appleton, south Warrington, Cheshire, with his daughter who is a qualified journalist. His principal leisure activities in recent years have been cycle road riding – and motorcycling on his prize Triumph TT600 middleweight sports bike. Indeed he enjoys visits to British Superbike and Premier Class MotoGP championship races around Britain, as well as to Goodison Park as a fan of Everton FC. Other hobbies have included playing squash (now superseded by badminton) and chess to competition standard. Rob was also previously a keen canoeist and sailor of Osprey and Laser Class dinghies.

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Commercial HEMP equipment filter

Commercial HEMP powerline filter

MPE's World first sets tongues wagging

In a World first, MPE launched at the EuroEM 2016 Conference at Imperial College, London, in July its ground-breaking new range of HEMP protection filters designed specifically to address the needs of the commercial market. Both powerline and equipment variants from the range were on display and generated a high level of interest throughout the event.

Prior to late 2015, only the very onerous Mil-Std-188-125 had been available to verify any installed HEMP protection system and, whilst it was widely accepted that the level of protection for commercial uses need not be as great as for military applications, the requirement to meet this military standard demanded filters whose performance, and therefore cost, could often far outweigh their practical requirement.

The publication in late 2015 of the new Standard IEC/EN 61000-4-24 ("Test Methods for Protective Devices for HEMP Conducted Disturbance"), which details two lesser Severity Levels – Industrial Level 1 and Critical Infrastructure Level 2, allowed for HEMP protection systems to be verified more exactly for their intended application.

In response, MPE's revolutionary new range of commercial HEMP protection filters was launched in order to directly address the threat to public utilities, telecommunications, transportation, computer networks, datacentres, control rooms, the emergency services and other key national infrastructure within the framework of homeland security.

The filters have been designed with just the same integrity and reliability as the existing wide range of MPE HEMP filters. However, from its long experience, MPE has been able to utilise alternative materials and manufacturing techniques, making the commercial HEMP filters a much more attractive and cost-effective option.

As the first and only manufacturer globally to have designed and developed a range of commercial HEMP filters to specifically meet the requirements of Severity Levels 1 and 2, MPE is already busy producing filters to fulfil advance orders.

MPE presented its commercial HEMP protection filter range at the 2016 ECNE (Energy Council of the North-East) Fall Engineering & Operations Conference which took place at Danvers, Massachusetts (www.ecne.org/events/calendar).

The session on October 27th entitled "The Threat to United States Critical Infrastructure from Electromagnetic Pulse (EMP)" provided an educational overview of the threat of EMP/HEMP and IEMI, what protection the current infrastructure offers, and what should be considered to better protect against potential threats.

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A panel of experts discussed what are EMP/HEMP and IEMI, the types of threats, shielding, filtering and monitoring.

You can download here the 12-page MPE product brochure “Commercial HEMP Protection Filters”.

ecne

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New 250A HEMP filter fills a gap in the market

Historically within its range of HEMP protection filters, MPE has offered 200A and 400A variants to address powerline applications. However it has become apparent, particularly in the US defence and homeland security marketplace, that there are many applications which call for 225A as a requirement.

To address this with an MPE filter would have previously meant either derating the application or stepping up to a 400A variant which would incur size, weight and cost impacts. In response, MPE has now designed and launched a 250A HEMP variant to meet the needs of those specific applications.

Accordingly this new, high performance, four-line powerline HEMP filter fulfils the PCI requirements of Mil-Std-188-125-1 and -2 and Def Stan 59-188 Parts 1 and 2 for E1 and E2 pulses. All lines are fitted with high-energy transient suppressors. Lines are individually filtered and feature inductive input to offer both good continuous wave EMC performance and superior transient handling performance, even on supplies with low source impedance.

Whilst the new model incorporates the same field-proven components and circuitry integral to MPE's other HEMP filters and thus guarantees an ultra-reliable filter with very low temperature rise, it does offer significant size, weight and cost benefits against the 400A solution.

The 250A filter has been independently tested against the PCI requirements of Mil-Std-188-125 by specialist test house and US Department of Defense (DoD) contractor Jaxon Engineering & Maintenance (www.jaxon-em.com) at their Colorado Springs location.

You can download your personal copy of MPE's comprehensive datasheet on the new 250A four-line HEMP filter from here

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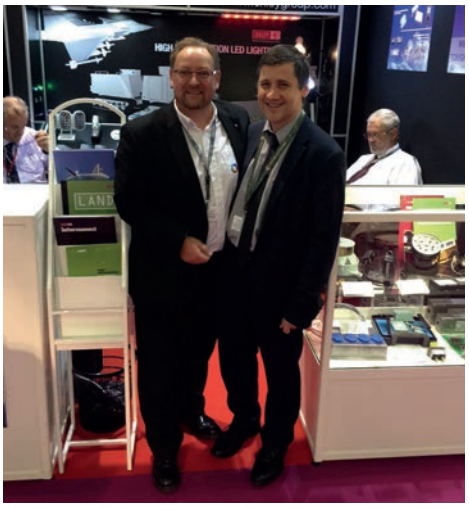

John Jephcott of MPE (left) with Fréderic Morelli of Euromip on their stand

Product display on the Euromip stand

Fréderic Morelli in discussion with visitors to the Euromip stand

MPE supports Euromip as first-time exhibitor at Eurosatory

Over four days in June MPE's French distributors Euromip exhibited at Eurosatory 2016 for the first time. Eurosatory, held every two years at the Paris Nord Villepinte convention centre near Paris Charles-de-Gaulle airport, is regarded as one of the world's premier land and air-land defence exhibition and conference events, with a special emphasis on military vehicles.

Ever since their foundation in 1991, Euromip have worked with MPE and are among MPE's most active and effective distributors to the defence sector, consistently demonstrating a high level of technical understanding of RFI, EMI, EMP and TEMPEST solutions.

The company is based at Vélizy-Villacoublay, 14km south-west of the centre of Paris. Euromip count among their customers blue-chip accounts such as Thales Air Defence, Thales Air Systems for military radar shelters, Cegelec, Daher and Ineo Défense for tactical shelters, and Panhard and Renault Trucks Défense for military vehicles.

Statistics show that the 25th biennial Eurosatory in June was the largest yet, with over 1,500 exhibitors from 56 nations and a footfall of more than 57,000 visitors from 151 countries including 213 official delegations, many led by Defence Ministers, Defence Secretaries or Army Chiefs of Staff.

Although regular attendees at the event, Euromip were taking an exhibition space at Eurosatory for the first time. On their busy stand, alongside their LED lighting offerings Euromip majored on MPE's range of EMC and EMP filtering solutions, with John Jephcott, Key Account Manager of MPE, participating alongside the Euromip team.

Whilst providing an ideal platform to host meetings with established customers, the Euromip stand also attracted a high level of interest from new names among electronics specifiers, installers and end-users. Showcased on the stand were samples of MPE's standard military vehicle filter and capacitor solutions, feedthroughs and CleanPower, powerline and TEMPEST pluggable filters.

The EMC Product Manager of Euromip, Fréderic Morelli, commented: "Whilst an obvious cost to the business, the decision to take an exhibition stand was a logical step given Euromip's increasing business opportunities within this field and the growing number of Euromip's customers, new and existing, who visit the event. Euromip welcomed MPE's support for our initiative, which greatly assisted in ensuring that the exhibition was successful for us."

John Jephcott of MPE responded: "MPE was pleased to see Euromip exhibit at Eurosatory, and we were happy to extend our support with not only marketing and product collateral but also

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personnel. During the week I myself thoroughly enjoyed the opportunity to see a host of French-based customers and end-users.

“But I was equally delighted to meet with many visitors from other European territories such as Germany, Switzerland, Netherlands and the UK, along with visitors from farther afield like India. Euromip were certainly displaying a niche range of product innovations and solutions which particularly attracted this truly international audience to the Show.”

The 26th Eurosatory will be held at the same venue from 11th to 15th June 2018.

www.euromip.com

www.eurosatory.com

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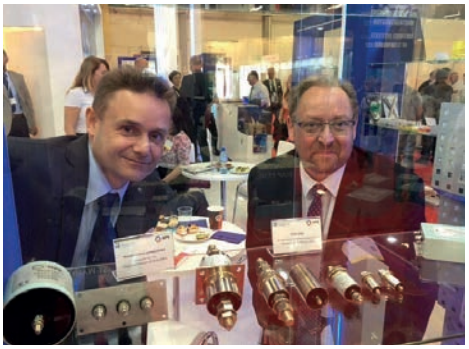
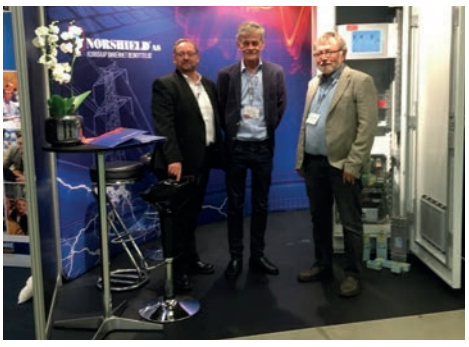
The Radiotechnika Marketing stand at MSPO 2016



John Jephcott (right), Key Account Manager of MPE, busy on the stand at MSPO with Marcin Hamberg, EMC Product Manager of Radiotechnika Marketing Sp. z o.o.

The Qube, Oslo Airport, venue for Achilles Live 2016



John Jephcott (left) with Roy Sørum and Torstein Hernes, Directors of Norshield AS, at Achilles Live

Dedicated in territory support for distributors

MPE continues to keenly support its distributors at major trade exhibitions and conferences. Accordingly, in September MPE participated first with Radiotechnika Marketing at the 24th annual MSPO international defence industry exhibition at Kielce, central Poland, and then with Norshield at the 3rd biennial public utilities exhibition and conference Achilles Live, held at the Qube convention centre, Oslo Airport, Gardermoen, Norway.

22,000 visitors, including the Republic of Poland's President Andrzej Duda and official foreign delegations from some 50 nations, came along to MSPO to check out over 600 companies from 30 countries exhibiting their products and services.

Following Radiotechnika's marked success at MSPO in 2015, they again had a large and impressive stand showing MPE's filter and capacitor solutions. A particular emphasis was on MPE's ability to customise EMC, EMP and TEMPEST filters for wide-ranging defence applications – all the way from military vehicles, weapons platforms, tactical shelters and radar stations through to C4ISTAR battlefield management technologies, Eurofighter, stealth ships and anechoic EMC test chambers.

Later in September, Norshield were first-time exhibitors at the Achilles Live Northern European public utilities show (www.achilles-live.com), supported by MPE personnel. The highlight of the displays on their stand was a cabinet solution produced for Norway's largest power and utility company: in this case Norshield supplied an EMP-shielded bespoke cabinet fitted with MPE HEMP filters.

Achilleslive
the utilities conference & exhibition

Over the last five years MPE has seen business in both territories, Norway and Poland, expand continuously and significantly, and both national distributors have won special awards from MPE in recognition of their achievements.

So MPE's next event supporting a country's distributor will be on behalf of Electrade GmbH at Electronica, running from November

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8th to 11th at the Munich Exhibition Centre (http://electronica.de). Come and see MPE's German distributor Electrade on stand 337 in Hall B5.

Visit MPE on Electrade stand 337 in Hall B5

Radiotechnika marketing sp. z o.o
http://radiotechnika.com.pl/en

NORSHIELD AS
http://norshield.no/en

ELECTRADE
www.electrade.com

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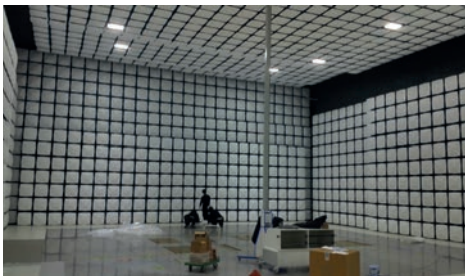
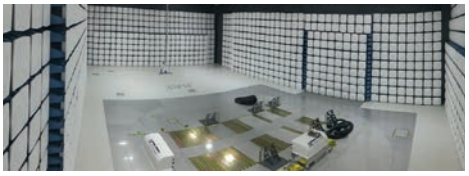


The new test chamber in the course of construction at JIAT

MPE filters during their installation by Eretec at JIAT

The MPE filters in situ at JIAT



Bird's eye view of the new test chamber

Truck under test

MPE supplies largest test chamber in Korea

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Accordingly the company has recently completed a large anechoic test chamber installation for automotive NVH (Noise, Vibration, Harshness) testing, performance testing and hardware-in-the-loop (HIL) simulation. The location is the Jeonbuk Institute of Automotive Technology (JIAT) in the city of Gunsan, North Jeolla province, in the south-west of the country.

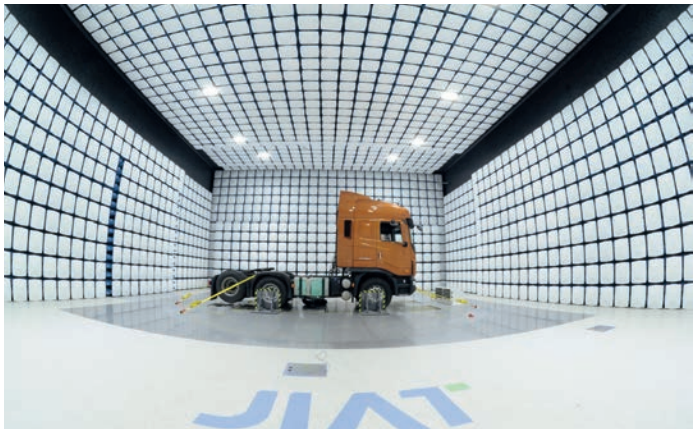
Established in 2003, JIAT is a Governmental test organisation for vehicles and vehicle systems and components which assists research and development by small and medium-sized enterprises (SMEs) who do not have a test facility of their own. The institute also provides consulting, research and training services in a large facility of over 33,000m^2. It is the biggest test house in Korea, except for those operated exclusively by automotive manufacturers such as the Hyundai Motor Co.

So Eretec provided an entire, new, screened room test chamber. The turnkey solution supplied and installed by Eretec included EMC shielding, EMC doors, EMC filters, and all internal equipment systems including absorbers, turntable and dynamometer.

Working under the supervision of Eretec, five installation engineers were contracted by Eretec specifically for the duration of the project, for seven months from August 2014.

12 MPE powerline filters were specified and installed comprising five different models from MPE's catalogue range, rated at 16A, 32A, 63A and 100A.

www.eretec.com



Truck under test

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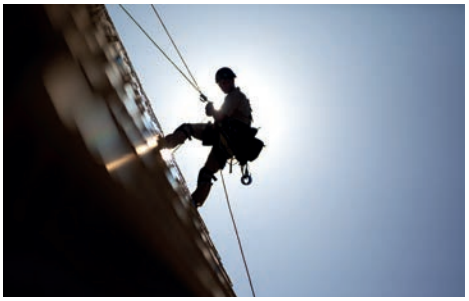
RAF Fylingdales

Original MPE filters in situ prior to removal



Installation via rope access

MPE helps protect against ballistic missiles & military satellites

RAF Fylingdales, located at Snod Hill, near Pickering on the North Yorkshire Moors, is an integral part of the Ballistic Missile Early Warning System (BMEWS) for UK and US defence, with a secondary duty of detecting, reporting and tracking satellite activity, given that many currently in orbit are of a military nature and able to gather intelligence using diverse covert techniques.

All radar equipment on the site is US designed and manufactured and was originally installed by Raytheon. Fully operational from September 1963, Fylingdales has witnessed substantial and ongoing upgrade work over the years, and nowadays its significance to the international community has never been greater, as technology is ever increasing the strike range of ICBMs. In fact RAF Fylingdales provides a vitally important capability by fulfilling its mission to provide continuous ballistic missile early warning and space surveillance services to the UK and US Governments.

Accordingly, MPE has had an ongoing relationship with RAF Fylingdales dating back over 25 years, having designed and supplied EMP protection filters for its solid-state radar array system originally back in the late 1980s and then throughout the intervening years. More recently Fylingdales made the decision to upgrade its facility to meet the present, internationally applied, US Standard Mil-Std-188-125, including upgrades to the previously installed EMP filters.

In 2013, following a competitive tendering process, MPE was awarded the contract to supply a complete suite of HEMP powerline, control line and telephone line filters. This suite of filters included a number of MPE's unique, high-current HEMP filters up to 800A. MPE was awarded the contract based on a number of important criteria, including technical, mechanical and experiential.

MPE HEMP powerline filters consist of a single circuit with no current-sharing elements, thus avoiding the problems inherent in high-current filters which are based on the paralleling of multiple lower current filters. The paralleling of filters may lead to significant overheating and possible failure in the lowest-resistance filter, unless it has an appreciable safety margin in terms of temperature rise. If a parallel element fails, then the increased load placed on the remaining interconnected filters can potentially cause a cascade failure of the entire HEMP protection system. With MPE's single-circuit design there is no danger of that happening.

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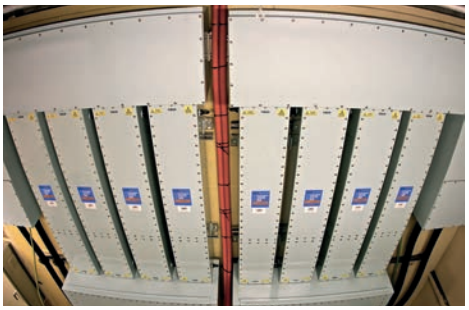

Filters may be difficult to access

Another important factor was MPE's ability to design and supply custom filters mechanically identical to the filters being replaced, simplifying the installation work and reducing installation time and cost. The filters were installed by MPE's project partner – the US Department of Defense (DoD) contractor Jaxon Engineering & Maintenance of Colorado Springs (www.jaxon-em.com) – in the early part of 2014, were fully commissioned and signed over later the same year following complete site acceptance tests, and have now been in service for over two years.

Of particular interest was the opportunity to test the MPE EMP filters replaced following 25 years of active service. The original EMP powerline filters were designed and manufactured by MPE in 1990-1991 and tested to an earlier NATO EMP specification. They had been in continuous service ever since.

42 original MPE powerline filters were removed from the site to undergo a full inspection and testing process to check for any degradation or deterioration in performance. In detail the filters comprised 10A three-phase; 15A single-phase; 30A single-phase and three-phase; 60A single-phase and three-phase; and finally 100A three-phase.

Upon testing all were found to be operating completely within their original manufacturing parameters, with no degradation in capacitor performance.

Such long life reduces costly plant maintenance and system downtime. The costs of filter replacement are often substantial – in terms of dismantling much of the equipment system to retrieve faulty filters from relatively inaccessible locations. That procedure may put a critical defence facility at risk for a period, with unknown consequences.

Hence such "fit-and-forget" MPE products can show a clean bill of health that reassures contractors, installers and defence customers old and new.

Looking to the future, MPE continues to work closely with RAF Fylingdales, designing and supplying its high-current HEMP filters and providing expert advice on site where necessary.

www.mpe.co.uk/downloads/hemp-filter-datasheets