

*Your press contact is: Oliver R Haines, Impressive Marketing, Shrewsbury, UK, tel +44 (0)1743 369 611, fax +44 (0)1743 369 612, mob +44 (0)7786 967 960, email [impressive.marketing@virgin.net](mailto:impressive.marketing@virgin.net)*

---

## **Quality, reliability & performance characterize MPE's solutions for filtering out EMI, EMP & TEMPEST threats**

On its Electronica Stand 362 in Hall B6, MPE Ltd of Liverpool is majoring on the quality, reliability and performance of its filters and metallised plastic film feedthrough capacitors, which protect against conducted EMI, EMP and TEMPEST threats in high-frequency applications. Over half of the company's production is exported from the UK to the EMEA region, the Indian Subcontinent, the Far East and the Americas, with a dedicated distributor network in many territories to ensure that standard product requirements and design requests are met quickly and efficiently.

Trading for 85 years and 100% privately owned since 2002, the company has been totally rebranded in 2012, to better support engineers and specifiers around the World. This new look is embodied in the new and far more clearly structured website and pack of technical literature with greater depth of information on MPE's core products and bespoke design and manufacturing capabilities. In conjunction with this rebranding, MPE has made a substantial investment in its internal resources to meet increased global demands, strengthening all of its Sales, Production, Engineering and Accounts teams: that recruitment process is ongoing.

To ensure reliability and consistency of product, all of MPE's capacitors and other critical components are made in its 4000 m<sup>2</sup> manufacturing facility under an ISO 9001 quality regime, meet UK and US military standards where required, and carry a 12-month warranty. New designs are evaluated in-house with specialist test capabilities such as EMC pre-compliance, pulse current injection, insertion loss DC to 3GHz, shielding effectiveness and high current.

Over the past 30 years, MPE has designed, manufactured and shipped more than eight million filter and capacitor products. Many of them have been in field service for more than 20 years and, from the analysis of customer return data, product return level is shown to be minimal at 0.012%. In general the health condition of thousands of installed EMC and EMP filters becomes highly significant when most cannot be accessed easily to survey or replace – having been installed deep within the fabric of buildings and equipment systems.

For example, in 2011 the High-altitude ElectroMagnetic pulse (HEMP) protection at a Ministry of Defence site in the UK was upgraded to become compliant with the internationally applied US

Standard MIL-STD-188-125-1. This gave MPE the opportunity to analyse their 42 HEMP power line filters that had been in continuous service there since 1990: all were found to be operating still within their original specification.

Whilst defence applications encompassing vehicle equipment systems, tactical shelters, C4ISTAR and communications facilities, satellite ground stations and shielded rooms constitute much of MPE's business, MPE products are deployed through technology transfer into many mainstream commercial areas requiring high-frequency protection. These range widely from telecomms, base stations, data centres, control rooms and airport radar towers to EMC test chambers, medical scanners, fire safety, process control and mass transit.

The coupled circuit design featured by MPE creates a far more compact unit for installation – down to a quarter of the size of conventional systems in which each line is wired up to a separate filter – whilst supporting easy inspection and maintenance.

## **MPE filter solutions for automotive applications**

Above and beyond installation filters and feedthrough capacitors, for half-a-century MPE has been one of the World's major providers of EMC filter solutions for shielding equipment on vehicles. That equipment includes alternators, HVAC, power supplies and power management systems, generators, motors for windscreen wipers, washers and blowers, oil cooler fans and communications systems.

## **EMP & HEMP filters**

Whilst the majority of MPE's applications are for continuous wave filtering, they also deal with pulses. Accordingly MPE is featuring at Electronica 2012 its ranges of power line, data line, telephone line and control line filters to provide high-performance Electromagnetic Pulse (EMP) protection for vulnerable fixed or mobile, digital or analogue, equipment of all types.

All lines in these multi-line systems feature high-energy varistor transient suppressors at the input end. The purpose of the primary protector is to shunt the bulk of the incoming pulse energy to earth. Secondary protection is provided by a transient suppressed filter to clean up and reduce the remaining pulse voltage to a safe level. To provide delay to the incoming pulse, the filter is either mounted at a distance from the primary protector or separated by a discrete inductor.

A very specific area of EMP is High-altitude Electromagnetic Pulse or HEMP caused either by space weather (solar flares and geomagnetic storms) or by the detonation of a nuclear missile. MPE's High-altitude ElectroMagnetic Pulse (HEMP) filters have been designed, independently tested and fully meet the pulse current injection (pci) requirements of MIL-STD 188-125.

As with EMP filters, MPE HEMP filters incorporate metal oxide varistors as a front-end transient suppressor, giving an ultra high-speed response to arrest the incoming pulse. Then, with secondary and tertiary suppressors separated by inductors at later stages, these fully integrated units give highly effective protection to the cable entry points of AC mains power, telephone and data control lines against induced pulse currents. They prove far more effective than adapted catalogue EMI filters in terms of residual pulse performance, size and weight.

## **TEMPEST filters prevent the covert interrogation of conducting lines**

A longstanding concern of governments, armed forces, municipal authorities and companies has been the fact that electrical and electronic equipment such as computers and peripherals give off unintended electromagnetic emanations, which can then be reconstructed beyond the building boundary as intelligible data. So, to maximise information security, countermeasures for TEMPEST – often regarded as an acronym for “Transient ElectroMagnetic Pulse Emanation Standard” – are aimed at preventing eavesdropping on data radiated as signals via conducting lines (such as power, telephone or control line cables).

Hence MPE mains supply filters meet the industry standard for TEMPEST EMI filter performance (insertion loss) of 100dB in a frequency range from 10kHz to 10GHz, with a secondary level of TEMPEST protection of 60dB from 100kHz to 1GHz on individual pieces of equipment. Available in current ratings from 6A to 2400A in both single- and three-phase versions, significantly these MPE filters can amalgamate TEMPEST, EMP and EMC applications in a single, high-performance filter unit that meets all relevant international standards.

The evidence in the 21st Century is that TEMPEST countermeasures are becoming as important for information security in the civilian world as in the military arena. Examples of sites at risk would be Western embassies in hostile parts of the world, and data centres handling sensitive personal and financial information, where power line cables are vulnerable to electronic eavesdropping.

In particular, vast, electronically secure, data centres are nowadays commonplace, crunching big numbers for Government offices, local authorities, public utilities, banks, healthcare providers, insurance companies and online retailers.

Paul Currie, Head of Sales & Marketing at MPE Ltd, explains: “High-speed information-bearing signals are the ones most likely to couple onto the copper power line cables trailing through a data centre, and then be most vulnerable to interception beyond the building boundary. Accordingly, to be effective, the electrical filters designed for TEMPEST anti-eavesdropping applications have to perform across the full frequency spectrum to Super High Frequency or SHF (3GHz to 30GHz), and above. MPE filters with incorporated feedthrough suppression capacitors do just that. Commercial-grade equipment filters, employing two-terminal capacitors and designed for suppression of EMI up to typically 30MHz, will fall into resonance well before the SHF band, and are therefore unsuitable for TEMPEST uses.”

## **In-house engineering & test facilities**

MPE’s Engineering Department in Liverpool provides a rapid prototyping service employing specialist test facilities, a dual-chamber screened room, and proprietary filter and capacitor design software. MPE’s portfolio of over 20,000 custom product designs on the common industry platform AutoCAD includes application-specific mounting and cable entry options.

Such comprehensive engineering and test facilities underpin the quality, reliability and performance of MPE products, which are meeting more and more of the World’s EMC, EMP and TEMPEST protection needs.

So, for further details of MPE’s products and services, visit Stand 362 in Hall B6 at the 25th Electronica, 13th-16th November 2012 at the Munich Exhibition Centre. Alternatively contact Paul Currie, Head of Sales & Marketing, MPE Ltd, Hammond Road, Knowsley Industrial Park, Knowsley, Liverpool, L33 7UL, U.K. Tel +44 (0)151 632 9111. Fax +44 (0)151 632 9112. Cell +44 (0)7850 200 705.

Email [pcurrie@mpe.co.uk](mailto:pcurrie@mpe.co.uk). Website [www.mpe.co.uk](http://www.mpe.co.uk)



**MPE**  
Quality, Reliability, Performance