MPE
Quality, Reliability, Performance

Company Bulletin

for EMC, EMP & TEMPEST Protection

Issue 14

MPE PEOPLE

Expanding production at Liverpool

To accommodate the present increase in demand, MPE has been consistently investing in its manufacturing facility and direct production staff, with its manufacturing team increasing by some 27% over the last 12 months. Additional production personnel have been added across almost all functions. Areas including MPE's proprietary capacitor winding facility, as well as the fabrication, inductor winding, assembly and dispatch functions, have been further augmented. Strengthening in these areas has been fundamental in MPE's ability to fulfil larger project and custom project requirements.

Click for more details

Spotlight on Satnam Singh

Satnam Singh conducts the design and development of new and existing products. He evaluates components and builds and tests prototype circuits. He has been heavily involved in MPE's continuous improvement strategy, working closely with shopfloor production to ensure that existing filter designs can be manufactured as efficiently as possible. His new product development work has included current overload testing for a high-profile export project, as well as assessing the requirements of DEF-STAN 59-411 (Land Class A) for a new filter in a UK defence application.

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MPE TECHNOLOGY

Maintaining MPE's strong pulse

In late 2017 MPE contracted the specialist US defence industry test house Jaxon Engineering & Maintenance of Colorado Springs to conduct further independent pulse current injection (PCI) testing of MPE's HEMP protection filters. In attendance and assisting throughout this period of testing was MPE Design Engineer John Lindsay, enabling a flexible approach to the testing program and maximising the use of laboratory resource and time. PCI testing of MPE's suite of commercial HEMP filters was conducted in line with the Standard IEC 61000-4-24.

Click for more details

HEMP expertise from MPE in demand

September 2017 saw the latest IEC SC77 Committee meeting take place in Kashiwa City, Japan. MPE design engineer John Lindsay participated as a technical expert representing the BSI and UK interests. Recent EMP and HEMP market activity was high on the agenda. Then, during October the annual EMSEC Workshop was hosted in Seoul by the Korean Institute of Electromagnetic Engineering and Science (KIEES): Paul Currie of MPE delivered a presentation entitled "Global Trends within EMP/HEMP Filter Solutions".

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MPE DISTRIBUTOR NEWS

New distribution partner for China

MPE has signed Xi'An Tech Crown as its territory distributor for mainland China. The company is a subsidiary of Xi'An Henderson Optoelectronics Technology Co Ltd, which was founded in 2010 and now numbers 70 staff, 50 of whom are directly involved in research and production. From its base at Xi'An, capital city of Shaanxi Province in central China, Xi'An Tech Crown provides the design and supply of turnkey EMC and EMP solutions along with comprehensive training.

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A decade of Israeli success

Aviem Systems Ltd of Netanya, near Tel Aviv, was appointed MPE's distributor for Israel back in 2007. Sales within the territory continue to increase, and Aviem features consistently as one of MPE's best performing distributors. The company provides marketing, sales and support for power electronic systems, including UPS systems, rectifiers, converters, filters and power supplies throughout Israel. Quality assurance is certified by the Israeli Standards Institute to ISO9001:2008 and also to Israel's Ministry of Defense requirements.

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MPE APPLICATIONS

Straight talking with MPE filtering

Based on a satellite constellation, Presidential and National Voice Conferencing (PNVC) will provide a voice conferencing capability for the President, Secretary of Defense and other senior national and military leaders of the USA. In support of this program, MPE has designed and developed a custom HEMP filtering solution for the protection of the air and ground, fixed and transportable, "command post terminals" within the system. Via territory distributor, Technical Sales Solutions (TSS), MPE has delivered filters for integration prior to testing and verification at Raytheon.

Click for more details

Intelligent vehicle test chamber in Korea

Championing MPE's interests in South Korea, one of MPE's top three sales territories last year, Eretec has completed a large anechoic chamber installation for testing intelligent automobiles at the INFAC Corporation. Eretec supplied and installed a complete turnkey chamber solution, including EMC shielding, EMC doors, EMC filters, waveguides and all internal equipment systems including pyramidal absorbers. Incorporated in this were power and dataline filters from MPE's standard ranges of high-performance EMC filters, featuring high attenuation performance levels across the full frequency spectrum.

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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. 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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The expansive assembly floor at MPE

Increased capacitor production

MPE's manufacturing team has increased by 27%

Expanding production at Liverpool

The demand for MPE's EMC, EMP, HEMP and TEMPEST solutions continues to grow around the globe. In part this is because of current defence instabilities in various territories, along with heightened awareness of the ever-increasing threat from terrorism. However, MPE's steady growth also stems from the expansion of its network of distributors within territories such as China and the Middle East and is as much the result of carefully targeted resource and "good, old-fashioned hard work" as anything else.

Necessarily, to accommodate this increase in demand, MPE has been consistently investing in its manufacturing facility and direct production staff, with its manufacturing team increasing by some 27% over the last 12 months. Additional production personnel have been added across almost all functions – along with the introduction of new apprentices as reported in previous Issues of the MPE Company Bulletin.

In specific terms, areas including MPE's proprietary capacitor winding facility, as well as the fabrication, inductor winding, assembly and dispatch functions, have been further augmented. Strengthening in these areas has been fundamental in MPE's ability to fulfil larger project and custom project requirements throughout 2017, such as the filtered cable harnesses delivered for the Indian Air Force and the suite of very high current filters delivered to chamber installations in Korea and the UK.

The implementation of two intakes of manufacturing apprentices – in both the fabrication and production assembly areas – has also added to MPE's flexibility. This flexibility is set to further increase as the apprentices' experience grows, spending periods of time across all areas of manufacture.

Going forward, with MPE's distribution partners further developing business in their territories and project demand steadily increasing, MPE's manufacturing recruitment and advancement are set fair to continue throughout 2018 and 2019.

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Satnam Singh

Spotlight on Satnam Singh

As a member of MPE's design engineering team, Satnam Singh conducts the design and development of new and existing products at MPE. In the course of this he evaluates components and builds and tests prototype circuits. He employs PSpice modelling for designing feedthrough capacitors, inductors and chokes so as to fulfil the performance required for each filter. Then he utilises various other CAD software tools to make sure that size and weight constraints are fully observed, for example simulating the measurements of capacitors to calculate their external dimensions.

In recent months Satnam has been heavily involved in MPE's continuous improvement strategy, working closely with shopfloor production to ensure that existing filter designs can be manufactured as efficiently as possible. In addition to this, Satnam's new product development work has included current overload testing for a high-profile export project, as well as assessing the requirements of DEF-STAN 59-411 (Land Class A) for the design and development of a new filter in a UK defence application.

Satnam obtained his HND in Electronic and Electrical Engineering at Loughborough Technical College and boasts over 35 years' experience in electronic engineering. He has extensive knowledge of EMC and EMI issues in circuit design and has supported test house accreditation of newly developed power control electronics products. Before joining MPE in 2017, he worked for three years on power electronics as an electronics hardware engineer in the research and development department of a division of energy company Flowgroup plc at Capenhurst on the Wirral peninsula.

In a long and varied career he was also employed for four years as an electronics test engineer within manufacturing, acquiring in-depth experience of FMEA and Root Cause Analysis for a range of electronic products at Comtek in Deeside, a provider of spares, repairs and support to the telecomms, datacomms and network service industry.

Previously Satnam was a technical support engineer at A1-CBISS in Tranmere, Birkenhead, a distributor of gas detection systems. Prior to that, he was engaged for five years at precision engineers Dieline Rykel in Bromborough, Wirral, variously as head of their electronics department, project manager and finally as quality manager running that department.

Satnam lives at Bebington, Wirral. His main leisure interest over the years has been world travel, chiefly to the Far East, Egypt, and the North and Central Americas, in line with his passion for studying ancient history and early civilisations.

He is also a keen participant in hill walking, badminton and swimming – such as scuba diving in Malaysia. For relaxation he enjoys listening to classical music, particularly Bach and Handel, and attending concerts of the Royal Liverpool Philharmonic Orchestra.

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From left to right, the testing team of MPE Design Engineer John Lindsay with Jim Youngman of Jaxon, at Jaxon's test facility in Colorado Springs

Maintaining MPE's strong pulse

In late 2017 MPE contracted the specialist US defence industry test house Jaxon Engineering & Maintenance of Colorado Springs to conduct further independent pulse current injection (PCI) testing of MPE's HEMP protection filters. The testing was completed at Jaxon's test facility in early December 2017.

In attendance and assisting throughout this period of testing was MPE Design Engineer John Lindsay, enabling a flexible approach to the testing program and maximising the use of laboratory resource and time.

PCI testing of MPE's suite of commercial HEMP filters was conducted in line with the Standard IEC 61000-4-24. Accordingly Electromagnetic Compatibility (EMC) Part 4-24 relates to testing and measurement techniques – test methods for protective devices for HEMP conducted disturbance. This Standard was published by the IEC in November 2015.

In addition, testing of several novel proprietary designs, not yet released to market by MPE, was carried out against the current revision of MIL-STD-188-125. Finally, a group of filters, including MPE's 250A HEMP powerline filter, were tested in line with the changes being proposed to the current Military Standard.

The testing undertaken demonstrates once again MPE's continued commitment to ensuring the full compliance and functional performance of all new designs.

With every MPE filter passing well within the limits defined by the current Military Standard or IEC publication as applicable, the test results are a resounding success and further testament to MPE's rigorous design philosophy and manufacturing processes. PCI certificates for all the units tested will be published on the website www.mpe.co.uk in the coming months.

IEC

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Paul Currie of MPE speaking at EMSEC 2017 in Seoul, Korea

Paul Currie of MPE, fourth from left in the front row, with the members of the KIEES Committee

HEMP expertise from MPE in demand

The SC77C Committee of the International Electrotechnical Commission (IEC) 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. As such it is the global steering group for HEMP protection.

September 2017 saw the latest SC77 Committee meeting take place in Kashiwa City, Japan. The meeting was hosted by the Japanese National Committee at the Kashiwa-no-ha Conference Centre to coincide with the TC77 plenary session. MPE design engineer John Lindsay participated as a technical expert representing the BSI and UK interests.

During the four-day meeting which ran from 26th to 29th September, recent EMP and HEMP market activity was high on the agenda, with a detailed discussion of the current situation on the Korean Peninsula and the wider adoption of HEMP protection within the UK and Europe.

The Committee also gave an update on the proposed changes to Mil-Std-188-125, the network security objective to be introduced within the UK by May 2018, and NATO's AECTP 250 – Leaflet 257 on high-power magnetics, which refers to certain IEC documents developed by the SC77C Committee.

With the IEC community now numbering 170 member countries, the next meeting of the SC77 is planned to coincide with the eagerly awaited AMEREM 2018 Conference, to be held at the University of California at Santa Barbara (UCSB), California, in August 2018.

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

Paul Currie of MPE was one of only two non-Korean nationals invited to speak at the Workshop by the event organiser, Mr Tae-Heon Jang of the Korean Test Laboratory (KTL).

Again, given the current situation within the Korean Peninsula, developments in HEMP protection are very high on the Korean Government's agenda and, speaking to an audience of well in excess of one hundred, Paul delivered a presentation entitled "Global Trends within EMP/HEMP Filter Solutions".

During the forty-minute presentation, as well as describing the investments in HEMP protection made by other nations, Paul also provided an update on the work being conducted by the IEC SC77 Committee and a non-ITAR update on the proposed change to Mil-Std-188-125. Of particular interest to the audience, Paul also spoke in detail about common HEMP protection concerns and the reasons for widespread "infant mortality" failures being experienced internationally in HEMP protection installations.

IEC

KIEES

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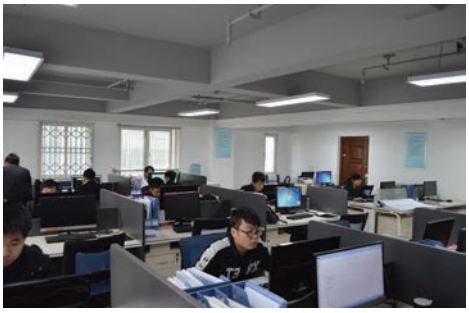
The reception area of Xi'An Tech Crown



A view across the busy office at Xi'An Tech Crown

New distribution partner for China

Further augmenting and expanding its well-established team of international distribution partners, MPE is pleased to announce the signing of Xi'An Tech Crown Electromagnetic Compatibility Engineering Technology Co Ltd (Xi'An Tech Crown) as its territory distributor for mainland China from 1st October 2017.

Despite several filter manufacturers being indigenous to China, in recent years MPE has received numerous requests for filter design and supply and has previously delivered EMC and EMP filter products for China on a case-by-case basis. For these reasons MPE had long considered the appointment of a distributor for this territory.

Xi'An Tech Crown is a subsidiary of the well-established Xi'An Henderson Optoelectronics Technology Co Ltd, which was founded in 2010 and now numbers 70 staff, 50 of whom are directly involved in research and production. From its base at Xi'An, capital city of Shaanxi Province in central China, Xi'An Tech Crown provides the design and supply of turnkey EMC and EMP solutions, along with comprehensive EMC / EMP training.

Paul Currie, MPE's Sales & Marketing Director, commented on the appointment: "A distribution partner within China has long been viewed as a natural progression for MPE, but the selection of the correct partner was crucial. In Xi'An Tech Crown, MPE has found a young, dynamic and well-connected partner to take the MPE product portfolio to the market within China. I am confident that this new appointment will be a successful addition to the MPE distribution family."

The Vice General Manager of Xi'An Tech Crown, Ocean Lee, remarked: "The addition of a high-quality filter manufacturing company was key to our business. Filter design and supply were the elements missing from our capability to provide complete EMC and EMP solutions, and I am very pleased to have MPE on board with us now."

Only one month into this new working relationship, first project sales have already been made and the Xi'An Tech Crown team will be visiting MPE at Liverpool during the next two months to receive detailed product training.

For information on Xi'An Tech Crown, visit the company's website www.kg-e3.com or, for product enquiries in the Chinese market, email Ocean Lee direct: oceanlee@kg-e3.com.

KEGUAN
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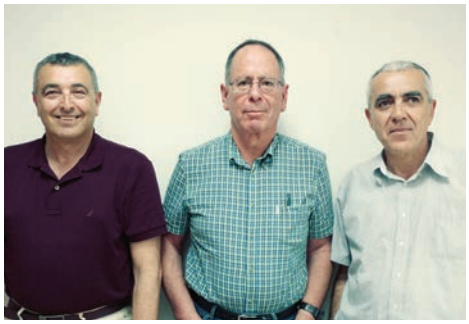

The Aviem Systems account management team are, from left to right, Motti Grinblatt, Avi Pines and Meir Turgeman

A decade of Israeli success

Aviem Systems Ltd of Netanya, near Tel Aviv, was appointed MPE's distributor for Israel back in 2007. Sales within the Israeli territory continue to increase as MPE work ever closer with the team at Aviem, who is consistently one of MPE's best performing distributors.

Ever since its formation in 1997, Aviem has being providing marketing, sales and support for power electronic systems, including UPS systems, rectifiers, converters, filters and power supplies throughout Israel. Specialising in high-power, engineering-orientated projects, the company's quality assurance is certified by the Israeli Standards Institute to ISO9001:2008 and also to Israel's Ministry of Defense requirements.

The company is managed by a team of vastly experienced electronics engineers, with well over 60 years' power electronics experience between them. Avi Pines, General Manager at Aviem, holds an MSc degree in Electrical Engineering and an MBA in Business Administration. Avi Vashdi, the Operations Manager, is an electrical engineer with over 25 years' experience in power electronics. Then, completing the senior management team at Aviem, Sales Manager Motti Grinblatt has also worked within the power electronics market for over 20 years.

Since 2007 much of MPE's business in Israel has been derived from the mobile or tactical shelter market and fixed military installations, and requirements in Israel have often necessitated MPE's development of custom filters.

In recent times, through Aviem, MPE has been engaged in an increasing number of TEMPEST applications to meet perceived threats in both the defence and commercial markets. Demand has also been high for MPE's MIL-STD-188-125 compliant HEMP filter range – to upgrade the protection of critical infrastructure to the latest Standard.

Paul Currie, Sales and Marketing Director of MPE, commented: "Raising EMP awareness and knowledge within the Israeli market has been key to this success. The close working relationship that both John Jephcott and John Parsons of MPE have developed with the senior team at Aviem has presented numerous opportunities to do so.

"Most notable has been a day-long HEMP seminar delivered at Netanya by MPE. This seminar was attended by an audience of over 100 consultants, engineers and specifiers involved in the protection of defence electronics, and the excellent attendance is a great testament to the established and mature connections of the Aviem team."

Avi Pines, General Manager of Aviem Systems, declared: "EMC and EMP filtering has become an increasingly important part of Aviem's business, and I can only see this increasing again, as we continue to invest in and expand our team at Aviem. MPE's ability to develop and deliver custom filters for varied applications has been key to our success so far, and I look forward to continuing to work closely with MPE in the years to come."

For further information on Aviem Systems, follow the hyperlink here

AVIEM SYSTEMS

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Based on a satellite constellation, PNVC will provide a worldwide, survivable, secure and near toll-quality voice conferencing capability for the President, Secretary of Defense and other senior national and military leaders of the USA

The fixed and transportable “command post terminals” in which the MPE HEMP filters are installed constitute a key part of the PNVC system

Straight talking with MPE filtering

Presidential and National Voice Conferencing (PNVC) is a second-generation follow-on communications capability with roots in the Milstar Survivable Emergency Conferencing Network (SECN).

Ultimate responsibility for all aspects of the program reside within the FAB-T Terminal Program Office and, with PNVC set to play a critical role in the future of the US nuclear command and control infrastructure, PNVC has received the highest visibility within the Department of Defense and US Air Force.

PNVC is considered to be a System-of-Systems, which uses hardware including: Defense Red Switch Network (DRSN) switches, Audio Conferencing Equipment (ACE), Multi-stream Summing Device III (MSD-III), Baseband Interface Group (BIG), Family of Advanced Beyond Line-of-Sight Terminals (FAB-T), Very Important Person / Special Airlift Mission Protected SATCOM Communications Terminal (VPS), Secure Mobile Anti-jam Reliable Tactical Terminals (SMART-T) with Baseband Kit (BBK), and the Advanced Extremely High Frequency (AEHF) satellite constellation.

In support of this program, MPE has designed and developed a custom HEMP filtering solution for the protection of the air and ground, fixed and transportable, “command post terminals” within the system.

The achievement of specific size and weight objectives – along with the capability to withstand shock and vibration – were critical and, within its custom design, MPE has employed a number of new techniques and material selections. Ultimately this has resulted in a design that is smaller and lighter than these critical limits, whilst still exceeding the specified electrical performance levels.

Via its territory distributor, Technical Sales Solutions (TSS), MPE has delivered several filters to Telecore, Inc in Texas who, following integration, have in turn delivered their integrated solution offering to prime contractor Raytheon, as part of the current testing and verification phase, which is expected to complete within the next 12 months.

Once operational, the satellite-based system will provide a worldwide, survivable, secure and near toll-quality voice conferencing capability for the President, Secretary of Defense, Chairman, Joint Chiefs of Staff, and other senior national and military leaders of the USA.

tss
Technical Sales Solutions

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Anechoic automotive test chamber installation by specialist local MPE distributor Eretec for the INFAC Corporation in Korea

Intelligent vehicle 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.

Eretec has recently completed a large anechoic chamber installation for testing intelligent automobiles at the Japanese-owned INFAC Corporation (www.infac.com:8080/en). Eretec supplied and installed a complete turnkey chamber solution, including EMC shielding, EMC doors, EMC filters, waveguides and all internal equipment systems including pyramidal absorbers.

A suite of MPE's filters were installed as part of Eretec's solution, with both power and dataline filters being selected from MPE's standard ranges of high-performance EMC filters. The high attenuation performance levels of the MPE filters, across the full frequency spectrum, ensured that the electrical immunity and integrity requirements of this advanced chamber installation were fully satisfied.

Founded in 1969 at Sungsoo-dong, Seoul, INFAC, which three years later in 1972 was already manufacturing control and ignition cables for Hyundai Motor, has grown to become the supplier of choice for solenoid valves, electronic parking brakes and other components and assemblies to major automotive OEMs such as Hyundai Kia Motor, Hyundai Mobis, General Motors, Mazda and Ssangyong.

Testing is at the heart of INFAC's research programme developing future practical solutions towards increased intelligence in automobiles.

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