MPE
Quality, Reliability, Performance

Company Bulletin

for EMC, EMP & TEMPEST Protection

Issue 11

MPE PEOPLE

Celebrating four decades of service

MPE is delighted to have just presented 40-year service awards to John Parsons, Tony Robinson and Fred Baker. The world has witnessed so many changes since this trio of loyal and dedicated employees started work at the company back in 1976!

Click for more details

Spotlight on James Derby

The recruitment of James Derby as the new Technical Director of MPE is a key appointment at a senior level of the company. Reporting to the Managing Director David Seabury, James will lead MPE's team of design engineers and take responsibility for engineering resource allocations.

Click for more details

MPE TECHNOLOGY

High-voltage DC filters for power-hungry applications

Whilst much attention is often focussed toward AC mains filtering, requirements for high-voltage DC filters with equally high current ratings have become more and more commonplace. In response, MPE has extended and updated its existing range of DC filters to meet these increased requirements. This new MPE range now covers applications with supplies up to 1500V DC and includes filters with current ratings up to 2400A.

Click for more details

Gigabit Ethernet . . . another world first for MPE!

MPE is now manufacturing and has supplied to the UK and overseas the only EMP/EMI Gigabit Ethernet filter on the market. It is a surge-protected, low-pass EMI filter, for use on Gigabit Ethernet over-copper wiring in applications where optical fibre is not an option.

Click for more details

MPE DISTRIBUTOR NEWS

At the heart of the World's largest electronics trade fair

Electronica 2016, the 27th biennial international trade fair for electronics components, systems and applications, ran for four days last November at the Munich Exhibition Centre. MPE was pleased to co-exhibit again with its German distributor Electrade GmbH (www.electrade.com) and to display a broad spectrum of EMC, EMP, HEMP and TEMPEST filter products.

Click for more details

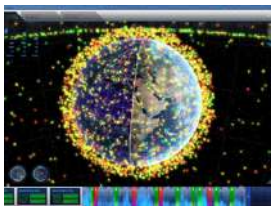
MPE makes waves with its US partners

In October MPE presented with its US partners at the two-day ECNE (Energy Council of the North-East) Fall Engineering & Operations Conference which took place at Danvers, Massachusetts. The session entitled "The Threat to United States Critical Infrastructure from Electromagnetic Pulse (EMP)" provided an educational overview of the threat of EMP/HEMP and IEMI and what should be considered to better protect against potential threats.

Click for more details

MPE APPLICATIONS

Space . . . the Final Frontier



MPE has recently manufactured and supplied a suite of custom high-current EMC protection filters for applications in the US Air Force's new Space Fence program. The Space Fence is a second-generation space radar system currently being built by prime contractor Lockheed Martin for the USAF, in order to track the increasing amount of space debris and artificial satellites in Earth orbit and avoid potential collisions.

Click for more details

High-voltage DC filters for vast chamber application

Back in 2015 MPE was asked to participate in the design stages of a new in-house test chamber for clients in the Midlands area of the UK. The suite of MPE filters supplied comprised both AC and DC filters of various current ratings and included custom 2500V DC 2000A units complete with end enclosures. These very high current (VHC) DC filter units are 3m high and 2m wide, weigh two tonnes and are a further extension of MPE's well established high-current DC filter ranges.

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. 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?

This email and any files transmitted with it are intended for the use of the individual or entity to whom they are addressed. If you have received the email in error, then please notify the sender and delete the message. The sender accepts no liability for any damage caused by this message, since email transmissions by their nature can never be guaranteed to be secure or error-free.
Copyright © MPE Ltd 2017. All rights reserved.

MPE
Quality, Reliability, Performance

Company Bulletin

for EMC, EMP & TEMPEST Protection

Issue 11

The three 40-year award recipients, pictured left to right, are Tony Robinson, John Parsons and Fred Baker

Celebrating four decades of service

MPE is delighted to have just presented 40-year service awards to John Parsons, Tony Robinson and Fred Baker. The world has witnessed so many changes since this trio of loyal and dedicated employees started work at the company back in 1976!

Out of the three, Account Manager John Parsons was the first to start at MPE on 1st September 1976. John is an integral part of the Sales team and an important link between Sales and Engineering, providing significant onsite design and installation support to customers.

After fulfilling the role of Production Supervisor, he became a Design and Development Engineer and then Assistant Chief Engineer. John was then employed as Engineering Manager for almost 16 years, following which he switched to key functions in Sales, initially Sales Office Manager and subsequently Account Manager as now.

In those positions, his unique skillset and experience could be channelled into technical support of customers around the World. His problem-solving expertise across a broad spectrum of EMC, EMP and TEMPEST environments – building and equipment installations, military vehicles and mobile tactical shelters – is arguably second-to-none in the United Kingdom.

Next Tony Robinson, Product Development Technician, started on 1st October 1976. Tony is employed on the Production Engineering team, ensuring the smooth running of the production cells and providing specific support for legacy or accelerated manufacturing requirements.

Skilled operative Fred Baker began at MPE on 13th December 1976. Fred has been employed as a paint sprayer at MPE and, with over 75% of all MPE products being painted in some way, the vast majority of MPE products involve Fred's skills and the paint process.

In the past six months, as a result of increased production levels, MPE has taken on another employee to primarily focus on paint spraying, and so Fred is now using his years of experience to assist in the training of the new recruit on MPE's in-house processes.

MPE
Quality, Reliability, Performance

Company Bulletin

for EMC, EMP & TEMPEST Protection

Issue 11

James Derby

Spotlight on James Derby

The recruitment of James Derby as the new Technical Director of MPE is a key appointment at a senior level of the company. Reporting to the Managing Director David Seabury, James will lead MPE's team of design engineers and take responsibility for engineering resource allocations.

He will focus on developing and improving MPE's processes in design and new product development and implementation (NPD / NPI), in order to meet the increased demands placed upon the Engineering team as sales of MPE's EMC, EMP and TEMPEST filters and capacitors continue to grow worldwide.

Furthermore James will be engaging with Governmental, industry and regulatory bodies such as the IEC, continuing MPE's technical representation and input there. James' background and previous experience, particularly regarding high-voltage applications, will also be drawn upon, as MPE develops and expands its current product portfolio into new areas and markets.

James Derby has moved up to MPE from his previous position of Senior Bid Team member and Principal Engineer of the Californian company Kinetic Traction Systems, Inc (KTSi), based at its global design centre in Deeside, UK. KTSi designs, develops and manufactures clean technology products for energy storage, power regeneration and waste heat recovery.

Over the 11 years 2005 to 2016 James held a number of senior management positions at the Chester-based domestic energy and smart boiler supplier Flowgroup plc, rising to Technical and Project Director of its Flow Products Division. At Urenco Power Technologies Ltd from 1999 to 2004, also in Chester, he fulfilled the roles of Power Electronics Engineer – and later Project Manager UPS with responsibility for embedded / renewable power generation projects worldwide as well as traction applications in the Far East.

His initial employment, after graduating from Liverpool University in 1998 with a first-class Honours degree (BEng) in Electrical and Electronic Engineering, was on high-voltage transmission systems – as a Power Systems Engineer with PB Kennedy & Donkin Ltd of Manchester. The work included assessing the EMC performance of overhead lines to confirm compliance with FCC and NRPB electromagnetic radiation guidelines.

Prior to his University course, James Derby successfully completed his Construction Industry Training Board (CITB) apprenticeship in electrical installation with Nelson Group Services of Kirkby, Merseyside.

Among world-class milestones in his qualifications are the ENBIS Six Sigma Green and Black Belts and PRINCE2 project management certification.

MPE
Quality, Reliability, Performance

Company Bulletin

for EMC, EMP & TEMPEST Protection

Issue 11

He is also a Member of the Institution of Engineering & Technology (MIET) and Chartered Engineer of the Engineering Council (CEng) and holds a Higher National Certificate in Electrical and Electronic Engineering as well as a City & Guilds diploma in Electrical Installation.

James lives with his wife and three daughters in Aintree, Liverpool. For five years he was a Reservist with what is now the Duke of Lancaster's Regiment of the British Army. His present hobbies and keen interests include studying different epochs of military history, cross-country running, gardening and regular exercise at the local gym.

MPE
Quality, Reliability, Performance

Company Bulletin

for EMC, EMP & TEMPEST Protection

Issue 11

A high-voltage, high-performance, powerline filter from the new MPE range

A typical datacentre application

A monitoring centre application

High-voltage DC filters for power-hungry applications

With the unprecedented number of sophisticated equipment systems being integrated into critical civil and defence facilities such as communications hubs, control rooms, emergency response centres, datacentres, banks, stock markets and finance houses, power requirements have increased significantly, and so nowadays it is not uncommon to find high-voltage applications demanding in excess of 2000A. Accordingly, there is a definite trend and need for ever higher power ratings of EMC and EMP protection filters.

Whilst much attention is often focussed toward AC mains filtering, requirements for high-voltage DC filters with equally high current ratings have become more and more commonplace. In response, MPE has extended and updated its existing range of DC filters to meet these increased requirements.

This new MPE range now covers applications with supplies up to 1500V DC and includes filters with current ratings up to 2400A.

The DC models accord with the same rigorous manufacturing standards – and utilise the same field-proven components and design values – as MPE's AC ranges and other DC ranges of powerline filters supplied for many and varied applications over more than 25 years.

You can download here your copy of the product catalogue for MPE's high-voltage, high-performance, 1500V DC powerline filters.

MPE
Quality, Reliability, Performance

Company Bulletin

for EMC, EMP & TEMPEST Protection

Issue 11

MPE's EMP/EMI Gigabit Ethernet filter is easily and conveniently bulkhead mounted on – for example – enclosures and EMC chamber doors, with connection via a standard RJ45 socket as shown here.

Gigabit Ethernet . . . another world first for MPE!

As reported in Issue 8 of the MPE Company Bulletin, back in 2016 MPE launched its ground-breaking Gigabit Ethernet (GbE) filter. Fast forward to 2017, and MPE is now manufacturing and has supplied to the UK and overseas the only EMP/EMI Gigabit Ethernet filter on the market. It is a surge-protected, low-pass EMI filter, for use on Gigabit Ethernet over-copper wiring in applications where optical fibre is not an option.

In computer networking, GbE is a term describing various technologies for transmitting Ethernet frames at a rate of a gigabit per second (1000 million bits per second), as defined by the IEEE 802.3 Standard 2008.

For use on 10/100/1000BASE-T twisted pair cabling of Cat-5, Cat-5e and Cat-6 up to 100 metres long, the new MPE filter incorporates an ultra-low capacitive surge arrestor with fast response time. There are eight lines in total, comprising four differential pairs.

Unique technical features include matched common-mode chokes for rejection of differential noise, thereby improving signal symmetry.

Full electrical, pulse and surge arrestor, mechanical and environmental specifications for MPE's new EMP/EMI Ethernet filter are included with engineering drawings on a datasheet downloadable from here

MPE
Quality, Reliability, Performance

Company Bulletin

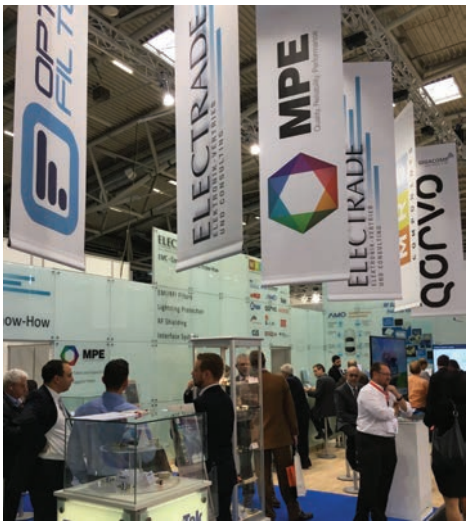
for EMC, EMP & TEMPEST Protection

Issue 11

At the heart of the World's largest electronics trade fair

Electronica 2016, the 27th biennial international trade fair for electronics components, systems and applications, ran for four days last November at the Munich Exhibition Centre. Electronica is the World's largest electronics trade fair, with more than 2,900 exhibitors presenting their products and services this time to some 73,000 visitors from 88 countries.

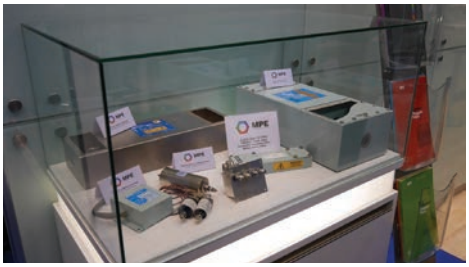
MPE was pleased to co-exhibit again with its German distributor Electrade GmbH (www.electrade.com) and to display a broad spectrum of EMC, EMP, HEMP and TEMPEST filter products, ranging from feedthrough capacitors to equipment, military vehicle and powerline filters to HEMP protection units.



MPE shares the Electrade stand at Electronica 2016 in Munich

The Electrade stand was busier than ever and provided a perfect location to meet up with many of MPE's territory distributors and customers, with a large number of meetings being held during the week. MPE also spent valuable time with the Electrade team and attended events in the evenings organised by Electrade as well as by MPE's French distributor Euromip.

Additionally, John Lindsay from MPE's Engineering team toured the exhibition, to spend time with existing and new potential material suppliers and also update on new technology and techniques that may be of interest to MPE. Although MPE do not necessarily see the generation of new leads as the primary reason to attend, the development of a significant new potential during the show was a real bonus.



A cabinet on the stand displaying examples of MPE's filter and capacitor products

MPE is already looking forward to participating at the 28th Electronica, which will take place at Munich over the four days from November 13th to 16th 2018. The company's upcoming exhibition and event programme for 2017 is as follows:

DPRTE, 28th March, Cardiff – a single-day defence procurement exhibition at which MPE will exhibit on stand 101.

EMV (Elektromagnetische Verträglichkeit or EMC) 2017, 28th to 30th March, Stuttgart – Europe's leading event dedicated to electromagnetic compatibility. Paul Currie and John Jephcott will be attending for MPE and have meetings arranged with territory distributors, customers and prospects.

The 13th international defence industry fair IDEF 2017, 9th to 12th May, Istanbul – a biennial event at which MPE's Turkish representatives IMCA Elektronik have a large stand again. Accordingly MPE will be sharing their stand 304A in Hall 3 and displaying a wide selection of filter and capacitor products for defence applications.

electronica 2016
inside tomorrow
Messe München, 8.–11. November 2016

ELECTRADE
ELEKTRONIK-VERTRIEB
UND CONSULTING

MPE
Quality, Reliability, Performance

Company Bulletin

for EMC, EMP & TEMPEST Protection

Issue 11

The panel of speakers are introduced at the ECNE's Fall Engineering & Operations Conference: Paul Currie of MPE is second from the left.

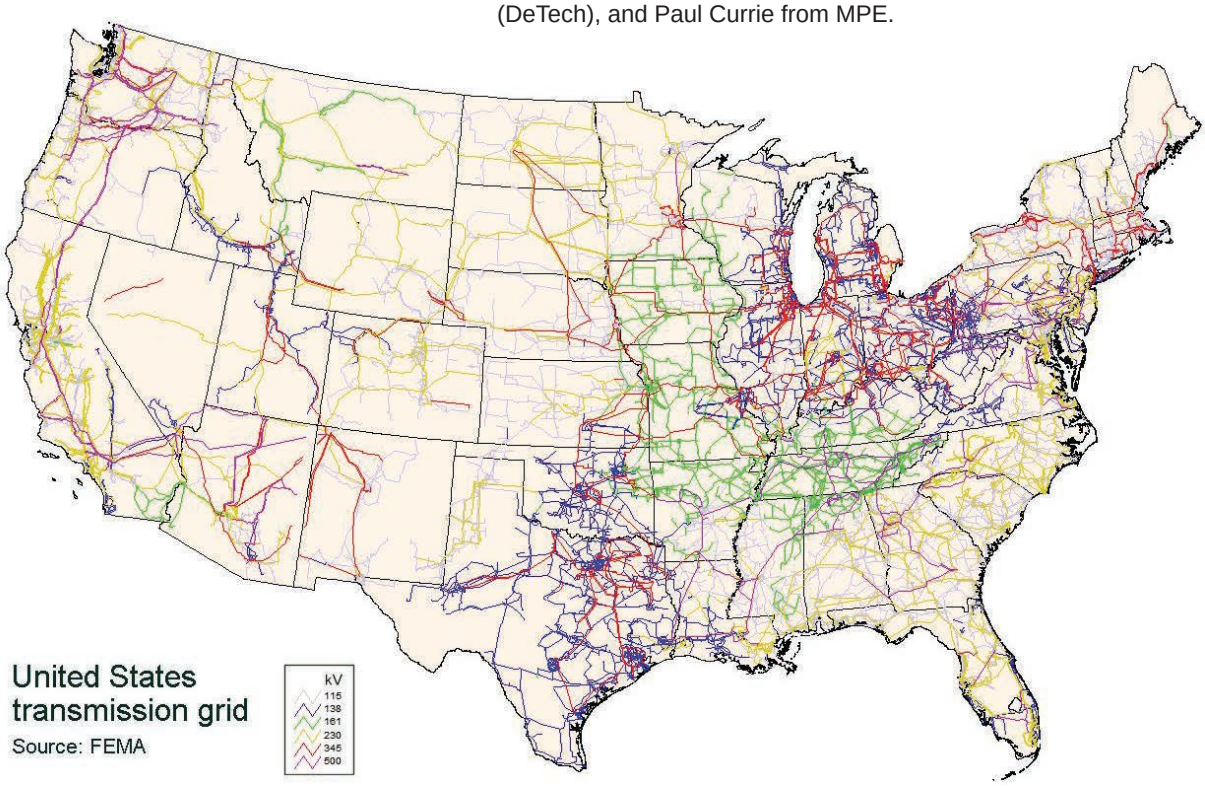
MPE makes waves with its US partners

ecne

In October MPE presented at the two-day ECNE (Energy Council of the North-East) Fall Engineering & Operations Conference which took place at Danvers, Massachusetts.

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

The presentation was made to about 100 people representing the power sector in the New England / North-East region of the USA, with particular focus on the emerging IEMI threat. The 90-minute talk was delivered by an expert panel – Terry Murch of Technical Sales Solutions (TSS), Randy White of Jaxon Engineering & Maintenance, Bruce Benwell of Directed Energy Technologies (DeTech), and Paul Currie from MPE.



The US power transmission grid

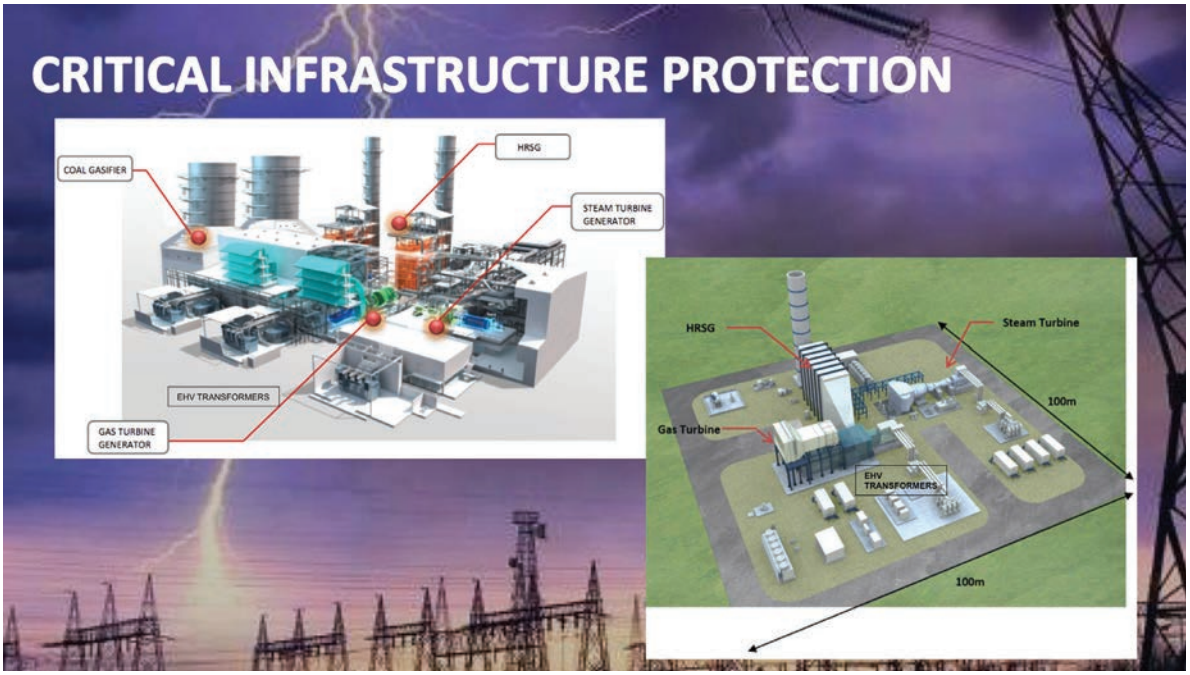
MPE
Quality, Reliability, Performance

Company Bulletin

for EMC, EMP & TEMPEST Protection

Issue 11

The reception they received from the knowledgeable conference audience was very positive, with many questions being asked and follow-on meetings being held throughout the event. MPE and the other panel members will next be presenting on the IEMI and HEMP threat to the US power transmission grid during a forthcoming InfraGard event being organised for the last week of April 2017 in New England.



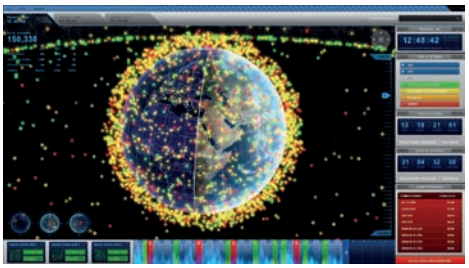
Critical infrastructure protection

MPE
Quality, Reliability, Performance

Company Bulletin

for EMC, EMP & TEMPEST Protection

Issue 11



Current construction of the sensor site on Kwajalein Atoll

Custom high-current EMC protection filter with integral busbar as supplied for the Space Fence program

Space . . . the Final Frontier

Almost 60 years after the first satellite was launched, space is becoming ever more cluttered with defunct satellites, spent rocket boosters and sundry stray pieces.

To help deal with the problem, MPE has recently manufactured and supplied a suite of custom high-current EMC protection filters for applications in the US Air Force's new Space Fence program. The Space Fence is a second-generation space radar system currently being built by prime contractor Lockheed Martin for the USAF, in order to track the increasing amount of space debris and artificial satellites in Earth orbit and avoid potential collisions.

Richard F Ambrose, Executive Vice-President of Lockheed Martin Space Systems, emphasizes the point: "Ground-based situational awareness is a growing priority for government and commercial organisations around the world who need to protect their investments in space."

The new system will track a larger number of small objects than previous space radars, about 200,000 objects, and make 1.5 million observations per day, about 10 times the number made by existing or previous US assets.

Contracts were issued for development and construction in 2014, and the Space Fence is expected to come into service in 2018. The first Space Fence facility is located at Kwajalein Atoll in the Marshall Islands, with an option for a second ground-based, space scanning radar site to follow in Western Australia.

One of the highest profile projects in the USA, in 2014 Lockheed Martin awarded the contract for Space Fence ground structures to General Dynamics. These include the receiving array, cooling equipment, radomes and other buildings. Space Fence will use gallium nitride (GaN) powered, S-band ground-based radars to provide the USAF with uncued detection, tracking and accurate measurement of space objects, primarily in low-earth orbit.

The geographic separation and higher wave frequency of the new Space Fence radars will allow for the detection of much smaller microsatellites and debris than current systems. Furthermore Lockheed Martin's Space Fence design will significantly improve the timeliness with which operators can detect space events that could present potential threats to GPS satellites or the International Space Station. The flexibility and sensitivity of the system will provide coverage of deep space geosynchronous orbits while maintaining the surveillance fence.

The custom EMC filters provided by MPE have been designed to meet the demanding performance specification flowed down from prime contractor Lockheed Martin. Supplied via MPE's USA representative Technical Sales Solutions (TSS), they are being installed on site by ATEC Industries (ATEC) of Elkridge, Maryland, USA. All units have been manufactured in their entirety at MPE and individually tested and certified ahead of shipping to ATEC in Maryland for subsystem integration.

MPE
Quality, Reliability, Performance

Company Bulletin

for EMC, EMP & TEMPEST Protection

Issue 11

Alongside the demanding performance criteria, of particular importance was the space envelope taken by the EMC filters and the mechanical design to allow ease of integration to the subsystems on site. The custom filter suite delivered by MPE comprised a wide range of units for use within low current through to very high current applications.

Construction is well under way, with the new system's initial operational capability scheduled for 2018, and Lockheed Martin looks forward to supporting the USAF on the first Space Fence, as well as the future second site planned to operate in Western Australia in 2021.

www.lockheedmartin.co.uk/us/products/space-fence.html

MPE
Quality, Reliability, Performance

Company Bulletin

for EMC, EMP & TEMPEST Protection

Issue 11

High-voltage DC filters for vast chamber application

Back in 2015 MPE was asked to participate in the design stages of a new in-house test chamber for clients in the Midlands area of the UK. They were constructing a very large volume EMC chamber to facilitate the testing of their own specialist equipment systems.

After meetings with the clients, the major challenges faced by MPE proved to be electrical and involved high current and high voltage requirements, but in particular the need for the EMC filters to tolerate very high levels of ripple, harmonics and transients that would be encountered. The filters were also expected to maintain electrical integrity and performance across the full frequency range from 1KHz to 18 GHz.

Accordingly MPE utilised PSpice modelling and laboratory testing to provide levels of assurance that the design of critical components such as capacitors and inductors would meet the demanding electrical requirements prior to the commencement of any build.

Following the sign-off of electrical and mechanical design by the clients and an 18-month design and manufacturing process, MPE provided a suite of EMC filters for installation by the Microwave Vision Group. With headquarters in Paris, MVG is a global provider of EMC and antenna test solutions whose 34,000 ft^2 UK site is Rainford EMC Systems Ltd at Haydock, St Helens, Merseyside.

The suite of MPE filters comprised both AC and DC filters of various current ratings and included custom 2500V DC 2000A units complete with end enclosures, as pictured. These very high current (VHC) DC filter units are 3m high and 2m wide, weigh two tonnes and are a further extension of MPE's well established high-current DC filter ranges.

The MPE EMC filters have been integrated by MVG into their major chamber installation which is now nearing completion. Physically, this is one of the largest UK test chamber installations in which MPE has been involved, and the requirement for high-voltage DC filters is certainly a growing trend being witnessed by MPE.

Download the catalogue here to check out the technical specifications of MPE's standard range of high-voltage DC powerline filters.