MPE
Quality, Reliability, Performance

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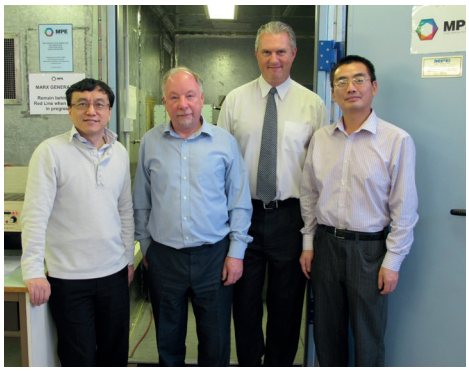

Pictured from left to right at the formal handover of the Marx pulse generator are Professor Yi Huang, Jan Nalborczyk – Technical Director, MPE Ltd, David Seabury – Managing Director, MPE Ltd and Dr Jiafeng Zhou.

The new Marx pulse generator installed within MPE's in-house screened room test facility

In-house pulse generator to test & optimise new filter designs

In late October 2015 MPE took receipt of a prototype Marx generator, capable of delivering electromagnetic pulses up to 25kV and 2.5kA and with a wave shape representative of that used to test HEMP filters against the pulse current injection (PCI) requirements of MIL-STD-188-125.

The Marx generator was designed and built for MPE in an 18-month collaboration between the company and the Department of Electrical Engineering and Electronics at the University of Liverpool. This collaboration commenced with MPE producing a requirements brief that enabled Professor Yi Huang, Chair of Wireless Engineering in the Department of Electrical Engineering, to initiate research and development into methods of delivering such a generator.

The project was led by Dr Jiafeng Zhou, with much of the practical work being carried out by a small team of specialists. As the development progressed, MPE was closely involved, providing its own procurement contacts and manufacturing experience to ensure that a practical and robust prototype generator could be realised.

The development furthered the understanding of Professor Huang's University team by providing a platform for in-depth analysis of the challenges in producing such high current pulses and in exploring the most appropriate methods to deliver them, within safe and practical conditions of working.

At present the generator is undergoing a thorough commissioning and calibration period at MPE and, going forward, whilst the generator is not intended to replace any testing now conducted by independent test houses, MPE will utilise the unit alongside its current PSpice tools in the development of any new or custom HEMP filter solutions. This will enable MPE to have an even more accurate prediction of filter PCI results prior to submitting units for independent test, which can be a very costly and lengthy process.

Professor Huang remarked: "We are very pleased to have taken this great opportunity to work closely with MPE, allowing us to put our knowledge into practice. The successful production of this new Marx generator is another good example of how we can work effectively and efficiently with industry to benefit both sides."

Jan Nalborczyk, Technical Director of MPE, commented: "Relying solely on computer modelling of filter circuits under pulse conditions is never ideal, due to non-ideal behaviour of filter components. This pulse generator will enable MPE to test and optimise new designs before committing to independent approval testing, which in turn may speed up future developments and provide even more confidence in those filter designs."