

With EW at the forefront for many militaries, demand is rising for solutions that combat the effects of electromagnetic pulse events. UK-based MPE specialises in the manufacture of high-performance electromagnetic compatibility filters.

Paul Currie, director at the company, spoke to *Shephard* about the changing threat environment.



Rising pulse rate

MPE has a long history of providing electromagnetic compatibility (EMC) filters to militaries to protect capabilities such as communications against interference from other signals within close proximity.

There is now another focus for the company, Currie explained. 'More recently, in the last ten or 15 years, there has become this electromagnetic pulse (EMP) phenomenon. This is where either due to natural causes or solar storm or intentional action – somebody firing a missile high into the atmosphere – an EMP would be radiated that couples onto any exposed cable and delivers too much power very, very fast in a high power surge. We're talking nanoseconds, and [it can] destroy any electronic equipment that was unprotected,' he said.

Currie noted that there had been talk of a large-scale attack of this type in the past. Since the first Gulf War, a number of national strategies have been developed that outline methods to achieve a 'blackout', which would completely switch off an adversary's power, via cyber, kinetic or EMP.

MPE manufactures power line filters that have a wide application in the EMC field where high performance is required. (Photo: MPE)



Focused attack

However, the probability of state-level attacks is considered to be relatively low. Instead, the consensus within the EMC community is that concentrated and directed attacks are likely, whereby tactical EMP events specifically target certain infrastructure in the military domain as well as commercial enterprises.

'The effects might not be as widespread or as totally crippling, but the likelihood of that happening is probably far [greater],' Currie confirmed. 'We have seen various terrorist organisations stating that they are now looking at EMP as a method of delivering their threat.'

Such targeted EMP events – known as intentional electromagnetic interference – are becoming increasingly prevalent.

For a small cost and not a huge amount of knowledge or experience, it is possible for hostile entities to create something that could deliver an EMP attack. Currie explained that although these devices might not take down an entire military base, they can disrupt communications, which is critical when missions are being carried out.

This type of threat is also affecting the commercial sphere, in which data regarding the effects are easier to come by than in defence. According to Currie, from publicly available information on US power and utilities providers, it is estimated that the cost of power outages has grown to \$60 billion per year. While 25% of these outages are because of 'undefined reasons', it is believed that another 25% are the result of EMC- and EMP-type activities.

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Necessary protection

One nation that has led the way in EMP protection is the US. South Korea also has a good understanding of its needs in this arena, said Currie. However, some nations are still playing catch-up, including the UK.

'It would be true to state that everybody is aware of the threat. Everybody knows how to protect [against it], but – probably because of budget constraints – so far they have not really invested in the protection of critical assets,' he told *Shephard*.

The UK may have been held back in this regard, because until very recently, the nation did not have an authority with the ability to test EMP protection filters.

'We can see already that over the next three or four years, the UK and Europe are going to play catch-up... They are going to go through a programme of upgrading their sites to this protection, because they can now test it and now realise it is a credible threat,' Currie noted.

Furthermore, he predicts that the development of EMC filters and associated technologies going forward will see some customisation. Whether that entails 'slightly different electrical specifications or whether it's a different mechanical look and feel, there'll be something different', Currie concluded.

Currie spoke to Beth Maundrill