



Company Bulletin

for EMC, EMP, HEMP & TEMPEST Protection

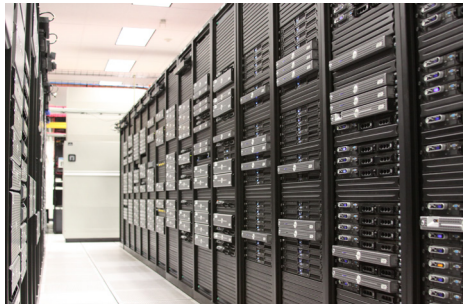
Issue 34



Protecting Europe's Critical Infrastructure with New Directive

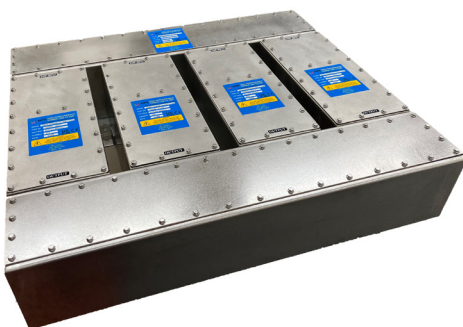
In January 2023, the EU member states published the Critical Infrastructure Resilience Directive, which ensures critical entities can prevent, resist, absorb and recover from disruptive incidents, including those caused by natural hazards, terrorism, insider threats, sabotage, or public health emergencies. The Directive covers eleven key sectors:

- Energy
- Transport
- Banking
- Financial market infrastructure
- Health
- Drinking water
- Wastewater
- Digital infrastructure
- Public administration
- Space
- Production, processing and distribution of food



Datacentres form part of critical infrastructure and as such fall under the Directive's requirements for protection

From October, Governments will adopt the Directive into their legislation. Critical Infrastructure industries must publish plans on how they intend to protect and improve the resilience of critical entities operating any infrastructure, which is vital for modern societies. Without reliable energy supplies, safe drinking water, health services, banking and financing services, or predictable transportation, life would not be able to continue as it does now. For this reason, the European Commission has been supporting the protection of critical infrastructure and the resilience of critical entities, aiming to reduce vulnerabilities and strengthen physical resilience.



MPE's award winning HEMP filters will play a vital role in protecting critical entities from attack

One such threat to critical infrastructure is an Electromagnetic pulse (EMP). For decades, Electromagnetic pulse (EMP) attacks have been an enduring and severe menace to the operation of Critical Infrastructure systems for military and government facilities designed for Command, Control, Communications, Computer and Intelligence (C4I). However, with 80% of Europe's Critical Infrastructure privately owned, the impetus for these industries to adopt a national framework for the protection, improvement and safeguarding of such has led to the publication of the Directive.

Electromagnetic pulses (EMPs) can inflict extensive damage across various sectors of society. These high-energy bursts of electromagnetic radiation can wreak havoc on electronic devices and infrastructure, rendering them dysfunctional or permanently impaired.



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In the event of a significant EMP event, through one of three primary sources:

- Natural Threats, including Solar Storms and Atmospheric Electrical Storms.
- A High-altitude electromagnetic pulse (HEMP) is emitted from a nuclear detonation approximately 30 km above sea level and covers a large area.
- Intentional electromagnetic interference (IEMI) is the malicious generation of electromagnetic energy that introduces noise or signals into electric and electronic systems, thus disrupting, confusing, or damaging them for terrorist or criminal purposes.

Vital systems, including communication networks, power grids, and transportation systems, could suffer crippling disruptions. This disruption could lead to widespread power outages, communication breakdowns, loss of data, and logistical challenges, severely hampering emergency response efforts and exacerbating social and economic instability. Moreover, the damage inflicted by EMPs may extend beyond immediate technological failures, impacting critical services such as healthcare, financial systems, and national defence. Understanding the potential consequences of EMPs and implementing robust mitigation strategies are imperative to safeguarding against the far-reaching devastation they can cause.

How are these risks mitigated? In the first instance, most engineers and architects would consider shielded environments; metallic structures dissipate EMP across the structure and down a ground connection. For effective shielding, there cannot be gaps or openings allowing the electromagnetic pulse to travel across into the interior.

However, in an everyday societal situation, there are more practical solutions than this, as specialist equipment is required, and wiring, HVAC, personnel, and equipment must be able to enter for it to be helpful.

MPE's range of HEMP powerline and control filters is designed for the protection of critical infrastructure. Originally, designed for military facilities, the filters are being adopted by power plants and data centres. They are designed with three main components:

Varistors, Capacitors, and Inductors.

Varistors divert pulse energy to the ground, while inductors delay the pulse. Finally, capacitors divert unwanted frequencies to the ground.

For more information on MPE's world leading range of HEMP filters, please visit our website's HEMP product range www.mpe.co.uk. To discuss requirements, please get in touch with sales@mpe.co.uk.