



Defending the European Energy Infrastructures

DEFENDER addresses the emerging challenges associated with the proactive protection and fast restoration to mitigate physical or cyber incidents or attacks and most importantly combined cyber-physical attacks of the power transmission and distribution grid network infrastructure, which lies at the heart of any Critical Energy Infrastructure (CEI).

STRATEGIC CHALLENGES

DEFENDER protects legacy CEI and designs a new generation of more resilient and self-healing European Energy Infrastructure able to:

- survive large scale, combined, cyber-physical-social incidents and accidents
- guarantee the continuity of operations while minimizing their cascading effects in the infrastructure, the environment, the citizens in vicinity and the energy end-users.

VISION

DEFENDER will adapt, integrate, upscale, deploy and validate a number of different technologies and operational blueprints with a view to develop a new approach to safeguard existing and future European CEI operation over cyber-physical-social threats, based on:

- novel protective concepts for lifecycle assessment, resilience and self-healing offering "security by design"
- advanced intruder inspection and incident mitigation systems.
- a culture of security, where trusted information exchange between trained employees and volunteers will complement cyber-physical protection, while preserving the privacy of the citizens involved.

TRIALS

DEFENDER results will be validated on a state of the art CEI laboratory emulator (RWTH, Germany) and 4 real life trials (Belgium, Italy and Slovenia), to evaluate, validate and demonstrate how and to what extent the DEFENDER framework enables an effective holistic cyber-physical security along the principal installations, whose CEI consists of generation plants, transmission power network, distribution power grid and industrial prosumer.

APPROACH

To achieve its vision DEFENDER will implement the four strategies:

- **Assess Risk.** Providing to the CEI stakeholders a thorough understanding of their current security posture and enabling them to continually assess evolving threats and vulnerabilities, their risks and potential countermeasures.
- **Protective measures.** New protective (proactive) measures will be developed to reduce system risks (including vulnerabilities and emerging threats).
- **Manage Incidents,** when protective measures are not applied or fail to prevent an incident, countermeasures minimize the impact.
- **Build a culture of Security.** Post-incident analysis and forensics enable CEI stakeholders to learn from the incident.

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