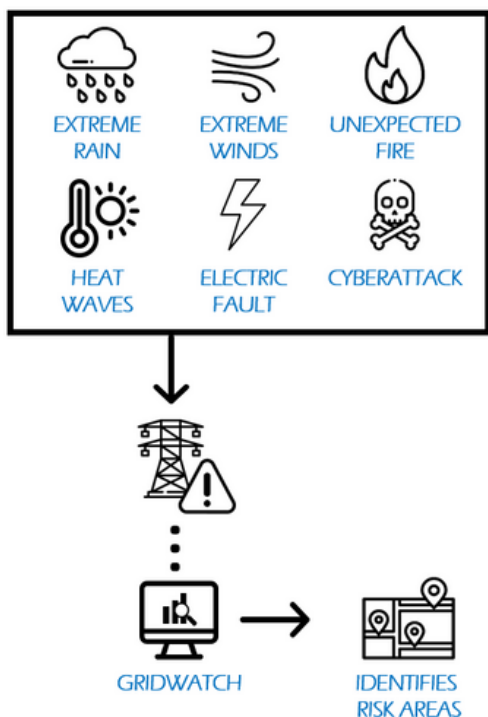




GRIDWATCH TOOL

ASSESSES RISKS IN THE ELECTRICAL NETWORK AND IMPROVES ITS RESILIENCE

THE CONCEPT



ADDED VALUE

- Maintains the energy supply on the grid
- Increases preparedness for future extreme events

TRL

7



CONTACT

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PRODUCT DESCRIPTION

- **Analytical tool** that deals with **risk areas of the power grid** under extreme weather events or external threats
 - **Detection of vulnerabilities** of the grid and assessment of potential future risks of network failure using available datasets
 - **Risk assessment in real time** using sensors and drones on-site
 - **Mitigation of the risk** using a self-healing approach, such as reconnection and sectorialization in microgrids
- Predicts certain weather impacts on elements of the grid
- **Fault location** of the electrical grid using **machine-learning** techniques
- Computes the **optimal electric scheme** of the grid to isolate problems and continue the operation
- Can be tailor-adjusted to any grid utility

APPLICATIONS

- Electrical distribution planning
- Risk prevention and awareness
- Reinforcement of the electrical grid
- Application of preventive measures
- Solving electrical faults, cyberattacks to grid elements and other emergencies affecting the grid

DESIRED PARTNERS

Electric utility companies

EXPECTED BENEFITS



Reduction of risks



Low cost of implementation



Versatile tool



Grid resilience

technical details

CURRENT FUNCTIONALITIES

Gridwatch integrates in one single tool, different functionalities that can be tailor-adjusted for each grid need, involving:

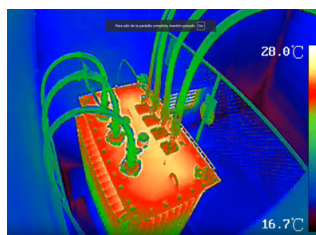
- Electrical system risk statistics
- Fault location of the electrical grid using machine-learning techniques
- Self-healing mechanism: minimizes the negative impact on energy supply and maximizes system resilience through grid reconnection and sectorialization in microgrids
- Assessment of electric assets at ground level exposed to flooding risks
- Electric lines assessment for high exposure to extreme wind currents, exposed to high potential breaking hazard
- Zonal assessment of extreme temperatures and dense vegetation conducted to forecast fire-prone areas
- Implementation of a fire alarm system to detect areas with major wildfire risk through the installation of fire detectors. It involves fire assessment, overheat and algorithm improvements
- Connection with external tools such as Copernicus, weather online, local meteorological stations, and other, to gather weather forecast data
- Weather impact to the elements of the grid such as Dynamic Thermal Line Rating and the calculation of the aerial line elongation
- Can incorporate new functionalities that could be of interest for users, such as integrations with REST APIs and MQTT connections

IMPLEMENTATION

Validated in pilot tests in **Barcelona, Bristol, Salzburg** and **Rhodes** (for the extreme weather events feature), in **IPTO grid**, Greece (healing in a large-scale islanding scenario), in **Estabanell grid**, Spain (healing cyber-attacks), and in **e-Distribución grid** in Doñana National Park, Spain (for heat waves feature)



Real-time data collection
(Doñana)



In-situ analysis of thermal
overheat in grid elements
(e-Distribución)



Cyber-attack feature
validated in Estabanell grid