

Demonstration & Experimentation Unit UDEX

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Real configurable MV/LV network prepared to tackle all challenges facing the electrical distribution network due to the energy decarbonization and digitalization transition.

Flexible and digitalized network to research, develop and evaluate new technologies and solutions, which resolve current and future problems that may appear under the most realistic conditions.

Provides the possibility of testing systems over the different inter-related and interconnected layers of physical systems, digital infrastructures, and communications relevant to market and business strategies.



Singularity

- Unique experimentation network able to be energized by multiple sources including a short circuit generator for up to 20 kA fault conditions
- Recognized as part of the European Digital Innovation Hub



Facilities

- Test bay
- Control, measuring and comms
- Underground cable galleries (15 km)
- Overhead line (450 m)
- Five MV substations (36 kV)
- MV grid connection (2 MVA)
- Connection to HPL (2,5 GVA)
- 50/60 Hz generator (630 kVA)
- PV roof plant (100 kW)
- Digital network emulators and controllable loads (2x50 kVA)
- Battery storage (BESS)
- EV fast charging station
- AMI's with programmable loads and distributed generation capabilities
- IIoT infrastructure
- IoG platform
- Smart transformers
- Digital twin with network simulation



Capabilities

- Controlled variable network voltage up to 36 kV
- Flexibility in connections between substations and in neutral configurations
- Network simulation capabilities
- Remote monitoring and operation
- Ready to adapt to future applications



Applications

- Electrical protections and grid automation
- Network diagnostic systems
- Distributed Energy Resources grid integration
- Energy storage applications
- Sensors, data generation and analytics, edge and cloud computing
- Digital twin generation
- Dynamic configuration of the distribution network
- Power quality, efficiency and grid stability
- Communications channels
- Advanced metering infrastructure
- Active demand management
- Electrical Vehicle integration (distribution network)
- Testbed for power electronics
- Impact on the safety (EMF, step and touch voltages, short circuit behaviour of real networks, harmonics, noise)



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Technology for a new
electric world

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More info

