



EnergyVille

Polyline Medium-Voltage Smart Energy System Laboratory

Test your medium-voltage smart-grid equipment in a three-phase synthetic grid up to the 50th harmonic in realistic conditions

In the EnergyVille Medium-Voltage Smart Energy System Lab, our experienced team offers:

- measurement of voltage and selected current levels on a 36kV 3-phase / 100 kV 1-phase installation
- surge voltage measurements
- partial discharge measurements of components (AC + DC)
- custom measurements and experimental configurations for cases of out of the ordinary use
- pre-certification testing to the applicable standards

The PolyLine system consists of two synergetic facilities:

- a traditional, single-phase AC (50/60 Hz, 100 kV)/DC (100 kV) + impulse (200 kV) facility
- a three-phase synthetic grid up to 36 kV/1000A (5kVA per phase for voltage and current injection), with wide bandwidth (25Hz to 5 kHz) to capture complex system transient and non-ideal behaviours unavailable in traditional testing facilities. It allows equipment, sensors, and protection devices to be exposed to fully user-programmable situations of: unbalance, harmonics, transients, reproduction of recorded grid faults, fluctuations in fundamental frequency, interaction with simulations, etc.

Your experiment can be interconnected with our Matrix Lab, Smart Grid Infrastructure Lab, Home Lab, Battery Testing Lab and/or Thermo Technical Lab for all-round testing of multi-modal devices.

Applications

Test the efficiency and performance of industrial high-/medium-voltage components in our Medium-Voltage Lab under ideal, realistic and adverse circumstances.

This service is suitable for:

- manufacturers of traditional and smart medium-voltage equipment
- developers of traditional and smart medium-voltage equipment
- energy transport and distribution operators
- research organisations



Characteristics

Equipment:

- two mono-phase, partially discharge-free, Haefely transformers of 220V/100kV, 5kVA and 9kVA
- wide-band voltage transformer, 3*36kV/5kVA, separate cores, 25 Hz – 5 kHz
- wide-band current-injection transformers, 1000A, isolated to 36 kV, 5 kVA/core, 25 Hz – 5 kHz (3X)
- power amplifier, tri-phase, 10 Hz - 5 kHz bandwidth, 110 V output
- Marx multiplier for creation of surge voltages up to 200kV
- Saturn Flat isolated measurement system for multi-channel, wide-band registration of low-voltage sensor signals in the high-voltage section
- DMI 551 for measurement of DC, AC and peak voltages
- partial discharge measurement equipment (AC + DC, 3-phase multiplexed capability)
- wide selection of ancillary measurements, such as temperature, current, etc.
- the system can be fed from a local generator, offering exceptionally clean 50/60 Hz wave forms

Extra features

The EnergyVille Medium-Voltage Lab can be connected to EnergyVille's Matrix Lab, Smart Grid Infrastructure Lab, Home Lab and Thermo Technical lab.

Conditions

Access to the Medium-Voltage Lab can only be obtained when an EnergyVille representative is present. Access is also limited to persons familiar with (similar) Medium-Voltage infrastructure. The required test and set-up will always be designed in collaboration with an EnergyVille expert.



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*EnergyVille is an association of the Flemish research institutes KU Leuven, VITO and imec in the field of **sustainable energy and intelligent energy systems**. Our researchers provide expertise to industry and public authorities on energy-efficient buildings and intelligent networks in an urban environment. This includes, for example, smart grids and advanced district heating and cooling.*

This EnergyVille lab functions according to the international quality, environment and safety standards: ISO 9001, ISO 14001 and OHSAS 18001.

