



High voltage testing laboratory

Performing AC & DC investigation and type tests

SuperGrid Institute's high voltage testing laboratory is a unique set of capabilities to perform DC and AC tests.

OVERVIEW

It comprises an indoor 700m² Faraday cage for ultra high voltage (UHV) tests and several shielded areas to perform medium voltage, high voltage and ageing tests.

The set of equipment, including generators and monitoring assets, is mobile to adapt at best to specific requests.

THE CAPABILITIES

- HVDC cables and HVDC GIS electrical type tests
- Low signal measurements including partial discharges
- Dielectric DC and AC tests (combined with thermal conditioning)
- Switching (SI) and lightning (Li) impulse tests
- Transient overvoltage (TOV) tests
- Dielectric combined voltage tests (BIAS)
- Superimposed tests (SUIMP)
- Breakdown tests
- Long-term thermal and electrical ageing tests
- Characterisation of gas, liquid and solid insulation

Other tests upon request.



HIGH VOLTAGE TESTING SERVICES

- Definition of test protocols & test set-ups
- Test execution
- Test reports
- Test result analysis & expertise

Field of application:

- MVDC
- MVAC
- HVDC
- MVDC

Tested equipment include:

- Model-scale equipment & prototypes
- Cable systems
- AIS and GIS

THE SET OF PLATFORMS

- An indoor Ultra High Voltage (UHV) test platform
- Two indoor 20m² shielded rooms for lower voltage tests (up to 400kV)
- An outdoor platform dedicated for long-term ageing tests on GIS / AIS



700m² Faraday cage for ultra high voltage (UHV) tests.

GENERAL MAIN FEATURES OF THE HIGH VOLTAGE TEST PLATFORMS

Equipement	Specification	Other features
DC Sources	Up to 200kV Up to 400kV	<ul style="list-style-type: none"> • Easy use and handling • Direct cable connection up to 200kV • Polarity reversal • Well-suited for R&D basic tests
HVDC Sources	Up to 800kV, 30mA Up to 1200kV, 20mA	<ul style="list-style-type: none"> • With polarity reversal • Slope adjustment from 1 to 20 kV/s • Low partial discharge level, below 800fC at rated voltage
HVAC source	Up to 660kV	<ul style="list-style-type: none"> • Slope adjustment from 1 to 16 kV/s • Fast switch-off unit available • Possibility to test cable length up to 15m with compensation systems
HVAC & HVDC metal clad source	Up to 750kV AC Up to 850kV DC	<ul style="list-style-type: none"> • Well-suited for long-term / ageing tests • Low PD level • Access to outdoor test field (L 11m x W 11m x H 15m)
Impulse generator	Up to 2000kV 200kJ	<ul style="list-style-type: none"> • Possibility to adjust the generator to deliver impulses from 20kV to 2000kV • BIAS and Super Imposed compliant

ULTRA HIGH VOLTAGE TEST PLATFORM

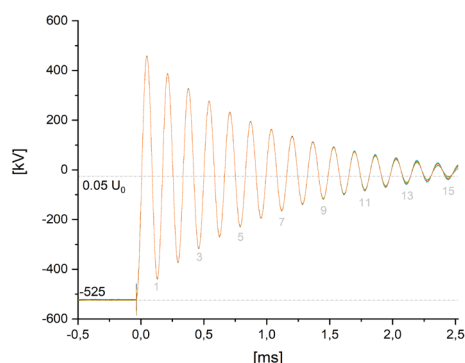
Our high voltage test platforms are among the most advanced in Europe and can be adapted to specific applications for cable manufacturers.

- **Faraday cage:**
 - 700 m², separable into two test areas (GIS, AIS, cable systems).
 - Ultra-low PD levels, leakage current monitoring, UHF/UV/ultrasound instruments.
- **HVDC sources:** up to 1200 kV, 20 mA, low partial discharge levels.
- **HVAC sources:** up to 750 kV AC
- **Impulse generator:** up to 2000 kV, with flexible adjustment.

OUR REFERENCES

TOV tests for DC cables – up to 525 kV

SuperGrid Institute is one of the few institutes in Europe performing Transient Over Voltage (TOV) tests on DC cable systems up to 525 kV.



Damped oscillations TOV testing at 525 kV / 6000 Hz.

- Unique test capabilities validated with Nexans on a 525 kV DC cable system.
- Guarantee your HVDC cables withstand disruptive events such as converter station faults or grounding failures.
- Strengthen the reliability and durability of your DC cables in real operating conditions.

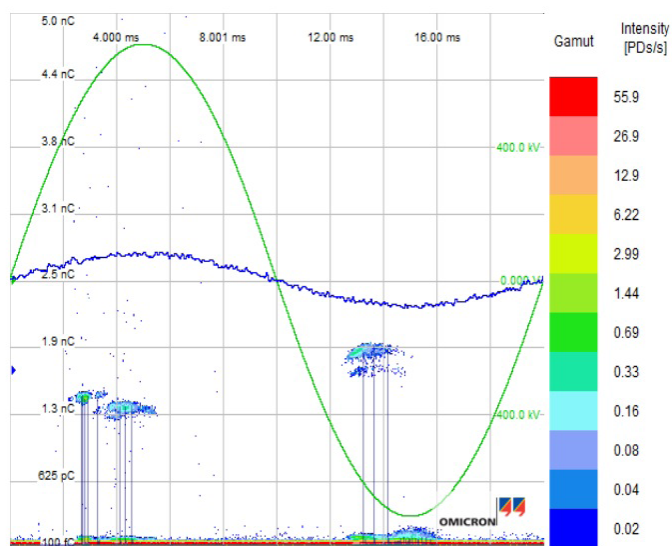
MEASUREMENTS & MONITORING

Voltage measurements are performed with factory calibrated dividers. All our HVDC generators have embedded RC dividers.

Two additional PD-free dividers can be positioned to accommodate different test set-ups:

- Universal RC divider, up to 2000kV LI, 1800kV SI, 1000kV DC, 700kV DC
- Capacitive divider up to 800kV AC, with embedded PD measuring impedance
- GIS RC divider up to 850kV DC.

Specific measurements can be carried out with scientific instruments available in the laboratory (UHF systems, UV systems, Ultrasounds, electrometers, high speed camera...)



Example of a PD measurement on a defective AC system © SuperGrid Institute

For additional information or to ask for a quote, please contact us via our website.

