



# MV/HV Insulation Equipment Design

*A comprehensive service:  
from customer's specifications to qualification tests*

*SuperGrid Institute supports you in developing MVDC and HVDC products and solutions thanks to its technical expertise, cutting edge research results, exclusive technologies and state of the art test platforms.*

## OVERVIEW

Over the last decade, considerable research has been carried out to characterise the properties of insulating materials under DC voltage in order to fine tune electrical field distribution models.

### *Designing MV/HV DC insulated components*

SuperGrid Institute supports you at every stage of the design process, from drafting specifications to designing mock-ups and performing investigation and qualification tests. We draw on our expertise, research results and intellectual property in MV and HV DC simulations to assist our clients in designing equipment such as bushing or substation insulation parts, and in testing equipment such as HV power supply components, amongst others.



### *Redesigning equipment for SF<sub>6</sub> alternative gas*

SF<sub>6</sub> is currently the most common gas used in high voltage power equipment. However, industrial players are looking to replace it with alternative gases because of the serious impact it has on global warming. SuperGrid Institute redesigns HV equipment using SF<sub>6</sub> alternative gases and conducts qualification tests to ensure their performance and reliability.



## DESCRIPTION

Developing a new insulator part? SuperGrid Institute is by your side every step of the way.

Your project might start with the characterisation of a new insulation material (solid or gaseous). Then you might want to design various components using numerical computation, completed with multiphysics software. From there, we can develop prototypes and prepare numerous sensors to measure the desired electrical and material values. Finally, we can offer you various services to investigate the performance of the Device Under Test (DUT) thanks to our test platforms, resulting in the final qualification tests on your new component, to make sure it meets your specifications.

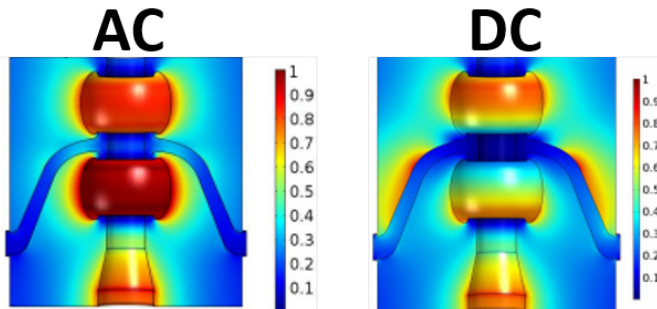
## AVAILABLE SERVICES

- Support customers in writing product specifications
- Studies of solid or gaseous insulation materials
- Numerical simulations
- Develop prototypes
- DUT monitoring set-up
- Investigation or qualification tests

## MATERIAL CHARACTERISATION

We perform dielectric material casting for sampling and prototyping in our chemical laboratory. We are capable of measuring the following main characteristics:

- Dielectric spectroscopy
- DC conductivity (IEC 62631-3-2) with up to 4 samples at a time
- Breakdown
- Erosion rig
- Partial discharge
- Space charge (PEA)



## PROTOTYPING AND TEST SET-UP

SuperGrid Institute will build prototypes and prepare test set-ups on your behalf, based on your specifications.

Our services include but are not limited to:

- Prototyping
- Test set-up
- Partial discharge measurements
- Controlled environment
- Voltage measurements
- Leakage current measurements



### CONTACT

For additional information or to ask for a quote please contact: [sales@supergrid-institute.com](mailto:sales@supergrid-institute.com)

## SIMULATION & DESIGN PHASE

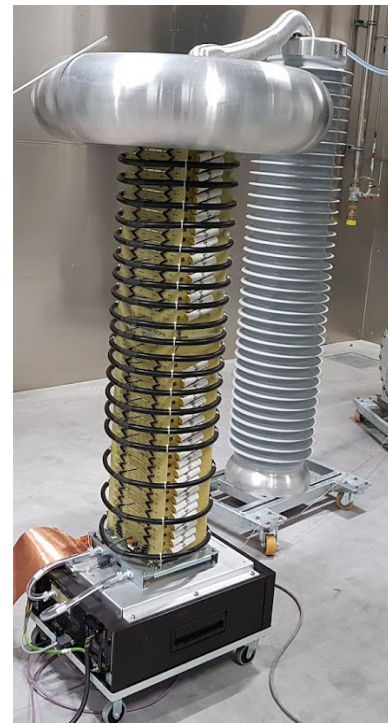
We design parts using our Creo® 3D CAD software based on our customers' specifications. We then use COMSOL Multiphysics® to perform the relevant simulations and ensure the client's performance requirements are met.

We have developed a high-end in-house computational methodology for modelling DC electrical field distribution.

## INVESTIGATION & QUALIFICATION TESTS

SuperGrid Institute is equipped with several HV laboratories for performing investigation and qualification tests on MV or HV insulated components:

- A 700 m<sup>2</sup> faraday cage, with the possibility of creating two separate test areas. These test fields are designed for GIS, AIS and cable system tests.
- An outdoor platform for ageing tests on GIS and AIS equipment.
- Two 20 m<sup>2</sup> shielded rooms for lower voltage tests (up to 400 kV).



## ADDED-VALUE

Being part of a research and innovation centre that covers a wide scope of advanced research projects, our team has the possibility of collaborating with other colleagues; sharing competences and platforms within the institute to produce avant-garde design and superior performance.