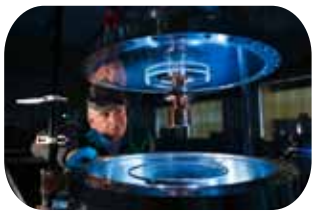



An institute for energy transition

SuperGrid Institute is a collaborative research platform in the field of low-carbon energy, bringing together the expertise of industry and public research in the logic of public-private co-investment and close cooperation between all stakeholders of the sector.

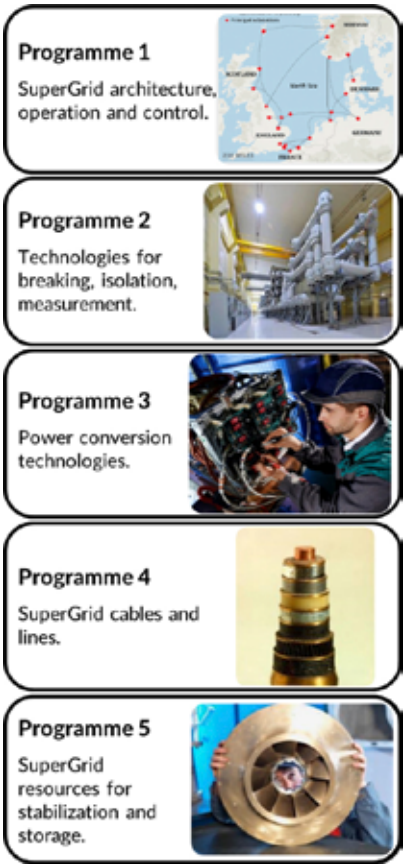
The institute aims to develop technologies for the future electricity transmission network, using direct current and alternating current at very high voltages to transport energy from renewable sources to distant load centres. With flexible storage solutions the intermittent nature of renewable energy can be managed while ensuring the stability and security of the network.

Research programmes

The activity of the institute is organized in several research axes.

Programme 1: Study and deliver hypothesis on how to design and control a HVDC grid. Grid architectures and protections, normal and degraded operation.

Programme 2: Development of breaking technologies for HVDC grids, HVDC substation technologies including insulation and SF6 free technologies for HVAC switchgear.



Programme 3: Power converter topologies and controls to address the needs of future DC grids. Enabling technologies for power electronic converters (medium frequency transformer, SiC semiconductors, etc).

Programme 4: HVDC cables, ageing monitoring, new technologies for off-shore cable nodes and new advanced materials.

Programme 5: Hydro pump storage. Variable speed technology contribution to power system stability.

Competences at a glance

- New grid architecture principles, off-shore HVDC grids.
- HVDC grids protection.
- Hybrid AC-DC grid control.
- Off-line and real-time grid simulation.
- Breaking and protection technologies for HVDC grids.
- SF6 free breaking technology for HVAC grids.
- Ultra-high voltage technologies.
- Power conversion technologies for high voltage and medium voltage.
- High power semi-conductor technologies.
- Power cables for HVDC on-shore and off-shore.
- High performance insulating materials.
- Variable speed water pump-storage.