

GE
Grid Solutions



MATERIALS & ECO-DESIGN STUDIES

Expert Services to
Accelerate Innovation
for High Voltage
Solutions



TODAY'S ENVIRONMENT

The dynamic and evolving power environment has become increasingly complex and challenging, steered by decarbonization and efficiency drivers. Utilities and equipment manufacturers in the electricity transmission and distribution industry are seeking to deliver solutions with the optimal cost, lowest carbon footprint and greater reliability.

Innovation is one of the powerful ways to remain competitive, compliant with latest technical standards and environmental regulations and maintain a prevailing technological advantage.

GE'S SOLUTION

GE delivers materials and eco-design studies accelerating insulation and environmental innovation for high voltage solutions.

GE's services provides expertise and methods to enable new value to support customer innovation, engineering, sourcing, quality control and EHS activities.

The technical studies, tests and impact evaluations support for high voltage applications:

- Development of all types of insulation material
- Analysis of corrosion and metallic material
- Reduction of environmental footprint



COMPLIANT
WITH CUSTOMERS AND
INTERNATIONAL
STANDARDS



REDUCING
ENVIRONMENTAL
FOOTPRINT



DIVERSIFYING
SOURCING

Benefit of Working With The “Disruptive” Team With Extensive Expertise

Studies are delivered by GE’s Subject Matter Experts based in the Global Technology Center. The team is active in international working groups and delivers lectures at technical conferences including Cigre, Matpost, IEEE, CEIDP, IEC.

The GE materials and eco-design team members have filed over 35 patents in the last 15 years and bring disruptive technologies to the industry, examples include:

- g³, the environmental friendly gas to replace SF₆ in high voltage switchgear
- Biodegradable and vegetable oil for power transformers which improves safety
- Recyclable thermoplastic for gas-insulated substation

Material and Eco-Design Activities



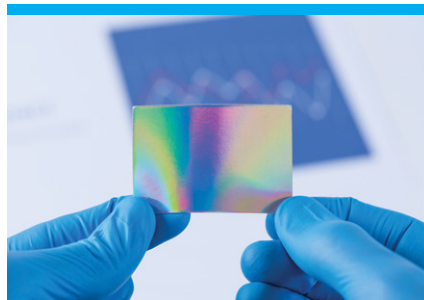
REDUCING ENVIRONMENTAL FOOTPRINT

Eco-Design

- Life cycle assessment
- Environmental regulations studies
- End-of-life manuals
- Eco-design methodology training

Inspections & Homologations

- Characterization of solid, liquid and gaseous materials
- Compatibility tests
- Supplier homologation
- Material homologation
- Post event analysis



ANALYZING CORROSION & METALLIC MATERIALS

Investigation

- In-depth investigation of corroded parts and corrosive material
- Moist heat cycling, salt fog tests
- Mechanical tests, microscopy

Anti Corrosion

- Selection of the anti corrosion coating including paint and grease

Material Selection

- Selecting the correct material class based on atmosphere corrosivity



SUPPORTING DEVELOPMENT OF INSULATION MATERIALS

Solid Insulation

- Mechanical characterizations
- Thermal and electrical aging studies
- Lifetime study

Liquid Insulation

- Development of mineral and ester oils
- Diagnostic techniques
- Composite systems

Gaseous Insulation

- Development of environmentally friendly gas and mixture
- Gas analysis: new and arced SF₆ and g³



To access GE's R&D Services, visit:
www.GEGridSolutions.com/EcoDesign

Or contact
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