

CIGRÉ STUDY COMMITTEES AND WORKING GROUPS



CIGRÉ, the International Council on Large Electric Systems, brings together a global network of technical experts, executives, industry practitioners, educators and government representatives to share real-world experience and expertise, policy and regulatory insight and proven best practices from around the world.

Through its 58 National Committees, CIGRÉ creates a collaborative platform for expert practitioners to learn and strengthen personal networks, assist in skill development across their organizations, improve technology implementation and process transformation, understand and influence policy and gain practitioner insight from across the globe.

CIGRÉ members are able to participate in specialized working groups within their areas of expertise, composed of national and international peers. With over 250 active groups worldwide, and new ones forming on a regular basis, CIGRÉ working groups have produced over 6,000 reports, papers, proceedings, symposia and technical brochures developed across 16 worldwide Study Committees.

CIGRÉ membership includes a subscription to Electra

CIGRÉ's bi-monthly publication highlights information on results and progress of the technical activities of CIGRÉ's 250 Working Groups and 16 global Study Committees. With over 14,000 readers across 90



countries, Electra is the platform for the national and worldwide contributors of CIGRÉ Working Groups and Study Committees to disseminate their work. Electra provides an access point to experiential, practitioner-based information from across the globe, as well as valuable opportunities to personal contacts and professional networks.

CIGRÉ STUDY COMMITTEES

CIGRÉ's technical activities are organized across 16 Study Committees and are anchored to four interconnected objectives: designing and deploying the power system of the future, optimizing existing equipment and power systems, respecting the environment and offering access to information to key international players in the electrical power systems industry.

Strategic Objectives:

- **Prepare the “strong and smart” power system of the future:**

Design and implement a system capable of wheeling bulk power over long distances from carbon-free sources; interconnect the local grid to compensate for the geographic and temporal variability or lack of flexibility of these sources; interface with local energy networks (microgrids) to allow the optimized operation of distributed generation, intelligent loads and storage; and adopt new techniques including UHV, DC and Power Electronics, ICT and emerging technologies and solutions

- **Make the best use of existing equipment and systems:**

Improve the use of full built-in capacity, operate systems nearer to their limits, operate assets up to the end of their useful lives, optimally assess their condition; maintain, refurbish, extend system life; and replacement

- **Improve environmental impact:**

Develop environmentally friendly materials, less intrusive techniques; improve asset efficiency; reduce carbon footprint of electricity

- **Develop knowledge and information:**

Continue to cultivate technical expertise, cooperation of worldwide experts and access to information

The Study Committees (SC) and the Technical Committee (TC) orchestrate the technical activities of CIGRÉ and have two basic responsibilities: carry out studies on topical issues of their domain and play a leading part in the Sessions and Symposia organized by CIGRÉ. This includes definition of topics, selection of papers, meeting management and organization of group-specific colloquia, tutorials and workshops.

The activities of the Study Committees are coordinated by the Technical Committee and led by the Technical Committee Chairman, who represents the Administrative Council of CIGRÉ. The primary role of the Technical Committee is to review, validate and guide the orientation of Study Committee work, and to monitor operations. The 16 Study Committees are listed below, and the scope of each is described within the bulleted information.

CIGRÉ STUDY COMMITTEES:

SC A1 Rotating Electrical Machines

- Life management
- Machine monitoring and diagnosis
- Renewable generation
- Large generators
- High efficiency electrical machines

SC A2 Transformers

- Design and manufacture
- Application of material
- Utilization, e.g., maintenance and operation, condition monitoring, life management, repair and refurbishment, disposal
- Safety and environmental aspects, e.g., noise, oil spill, fire hazard, explosion
- Economic and commercial aspects
- Quality assurance and testing

SC A3 High Voltage Equipment

- Design and development
- New and improved test techniques
- Maintenance, refurbishment and lifetime management
- Reliability assessment and condition monitoring
- Requirements presented by changing networks
- Equipment-related subjects

SC B1 Insulated Cables

- Power cables in all phases of life
- Submarine, underground, ducts, tunnels
- HVDC and HVAC cable system

SC B2 Overhead Lines

- Increase acceptability of OHL
- Increase capacities of existing OHL
- Increase reliability and availability of OHL

SC B3 Substations

- New substation concepts
- Substation management issues
- Life cycle management and maintenance
- Impact of new communication standards and smart grids on existing and new substations

SC B4 HVDC and Power Electronics

- Economical, technical and environmental matters related to HVDC and power electronics
- Target audience includes engineers in electrical supply industry, standardization bodies, investors and regulators

SC B5 Protection and Automation

- Improved concepts of Substation Automation Systems
- Technical recommendations for IEC 61850
- Application of numerical protections and substation automation systems
- Methods to improve performance of protection systems
- Protection implications of new generation technologies

SC C1 System Development and Economics

- Planning for rapid development, uncertain generation and desired reliability
- Newly and rapidly developing countries, system performance, contingency planning, mass penetration of renewables, greenfield approach
- Investment drivers, planning criteria, grid codes and the role of new technology, new investment decision processes, new tools and methods for increasing uncertainty
- Asset management practices including risk assessment now and in the future
- Risk management, broad trends and practices, new solutions for changing power system designs

SC C2 System Operation and Control

- Control and switching for reliability: voltage, frequency, capacity limits
- Reserves and emergency strategies
- Management of fault and restoration situations
- Short-term planning and coordination of system capacity needs
- Requirements and use of power system analysis and security assessment functionalities
- Requirements, methods, tools for training of operators
- Impact on system operation from institutional structures: regulators, trading and contracted ancillary services

SC C3 System Environmental Performance

- Environmental impacts of power system development and operation
- Global environmental changes and power system
- Public acceptance of power system infrastructures
- Stakeholders engagement and communication
- Power system efficiency and environment

SC C4 System Technical Performance

- Power quality
- Electromagnetic Compatibility and Electromagnetic Interference (EMC/EMI)
- Insulation coordination
- Lightning
- Power systems performance models and numerical analysis

SC C5 Electricity Markets and Regulation

- Consequences of regulatory changes for the electric power sector
- Regulatory incentives for investment
- System implications of new generation technologies
- Markets design's impact on transmission system operation
- Market design for integration of intermittent generation

SC C6 Distribution Systems and Dispersed Generation

- Dispersed Energy Resources connection and integration
- Dispersed Energy Resources concepts in distribution systems operation and planning (microgrids and active distribution networks)
- Demand management and active customer integration
- Rural electrification

SC D1 Materials and Emerging Test Techniques

- Electrical insulating materials
- Electrical conducting materials
- High voltage and current test and measuring techniques
- Diagnostic tools

SC D2 Information Systems and Telecommunication

- ICT applied to the networks of the future
- Telecommunication networks in electric power utilities (e.g., architectures, media, protocols)
- New ICT architectures to control the bulk power systems (e.g., smart meter, smart grid, intelligent grid, control centers EMS, MMS)
- ICT governance within utilities: in-house versus outsourced
- Information security within the electric power utilities

The Study Committees act as a Managing Board made of representatives from the National Committees. They select the studies to be addressed, specify their Terms of Reference (TORs) and monitor and manage the progress of the work and approve the publications.

To carry out its work, a Study Committee relies on two types of working bodies: Advisory Groups (AGs), which advise the Chairmen of the Study Committees, and Working Groups (WGs), which perform the studies, in accordance with the TORs that have been approved by the Technical Committee Chairman.

How to Join:

If you have questions about CIGRÉ membership, please contact:



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