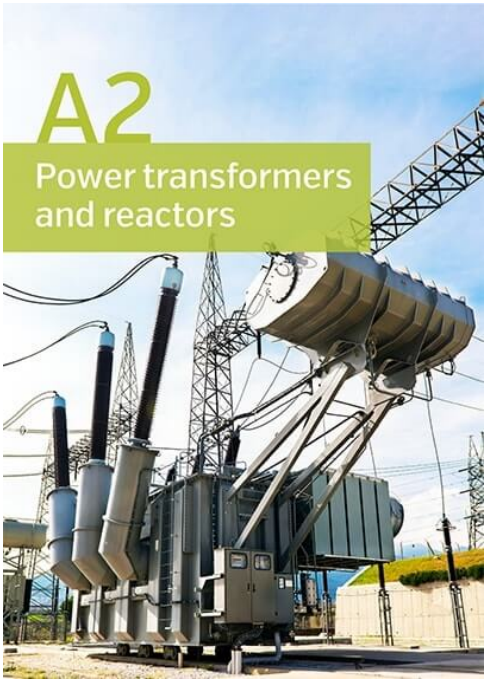
A2 - Power transformers and reactors



Mission

To facilitate and promote the progress of engineering and the international exchange of information and knowledge in the field of Power Transformers and Reactors. To add value to this information and knowledge by means of synthesizing state-of-the-art practices and developing recommendations.

Scope

Within its technical field of activity, Study Committee A2 addresses topics throughout the asset management life-cycle phases; from conception, through research, development, design, production, deployment, operation, and end-of life. At all stages, technical, safety, economic, environmental and social aspects are adressed as well as interactions with, and integration into, the evolving power system and the environment. All aspects of performance, specification, testing and the application of testing techniques are within scope, with a specific focus on the impact of changing interactions and demands due to evolution of the power system. Life cycle assessment techniques, risk management techniques, education and training are also important aspects.

Within this framework, additional specific areas of attention include:

- Theory, principles and concepts, functionality, technological development, design, performance and application of materials, efficiency;
- Manufacturing, quality assurance, application guidance, planning, routing and location, construction, erection, installation;
- Reliability, availability, dependability, maintainability and maintenance, service, condition monitoring, diagnostics, restoration, repair, loading, upgrading, uprating;
- Refurbishment, re-use/re-deployment, deterioration, dismantling, disposal.

Working groups
View a list of CIGRE's current working groups including for A2 here.

Publications

View all publications for Study Committee A2 on eCIGRE

Main areas of attention

Responding to the changes in the Electric Power Industry Study Committee A2 pursues mainly two strategic directions (SD) based on the

needs and requirements of their customers. The first addresses business and commercial considerations and concerns and is labelled "Services to Customers", while the second is related to "Technology Issues"

Services to Customers

Life management of transformers and reactors, e.g.:

- Maintenance philosophies and practices;
- Management of monitoring and diagnostic methods;
- Management of transformer fleet ranking, development of health indexes;
- Installation procedures, oil treatment, on-site drying, on-site testing;
- Determination of remaining life;
- Decisions to repair (on-site or in factory) or to scrap;
- Failure codes and statistics;
- Guide for failure investigations and post-mortem;
- Oil preservation systems;
- Types of oil available, use of inhibitors and additives, reclaiming of oil
- Alternatives to oil, e.g. esters;
- Environmental aspects, especially audible noise;
- Disposal of failed or redundant transformers, including component and materials.

Economic issues, e.g. first cost versus total costs of ownership, models for cost evaluation;

Reliability and availability information on power transformers in service determined by surveys of equipment performance on an international basis with periodical up-dating;

Impact of accessories on transformer reliability, e.g. bushings, tap-changers and cooling equipment;

Promotion and dissemination of Study Committee A2 work, in particular by the organization of workshops.

Technology Issues

Application of new materials, e.g. alternatives to oil (with Study Committee D1 participation), amorphous steel, new insulation materials, hybrid systems, Solid State Transformers, etc;
Better energy efficiency and lower environmental impact
New concepts, e.g.

- FACTS and the application of power electronics, e.g. electronic;
- Tap changers for phase-shifting transformers and Variable Shunt Reactors;
- Integration of DER;
- Digitalization;
- Superconducting transformers and current limiters;
- Site assembled transformers.
- Analysis of electric, magnetic and thermal fields: modeling and validation through benchmarking, etc;
- Electrical environment of transformers, e.g. service under different climatic conditions;
- Interaction with the system;
- Safety issues for transformers, e.g. tank rupture, fire hazard, explosion of bushings.

Key contacts

Chair
Pascal MUELLER

Secretary
Marc FOATA

Webmaster
Stefan JAUFER