POWER & ENERGY SOCIETY
SUBSTATIONS COMMITTEE Annual Meeting
Subcommittee K2 Tutorials and Panels

Tutorial

Gas Insulated Substations (GIS), Gas Insulated Transmission Lines (GIL) and Sulfur hexafluoride (SF_6)

May 16, 2010

Montreal, Canada

The tutorial covers Gas-Insulated Substations (GIS), Gas-Insulated Transmission Lines (GIL) and Sulfur hexafluoride (SF6). Presentations are given by experts of the IEEE Substations Committee involved in Gas Insulated Technology since many years. The tutorial will give an overview on the design of GIS and GIS technologies, its applications and the world-wide experiences made since more than 30 years.
The steps of technical development, changes of technical design, state of the art in the production, and quality insurance are explained with practical examples. Focus is given to applications world-wide with typical projects shown, including on-site works, sequences of erection, testing, and civil works.
Explanations are given about the operational primary equipment (switching, grounding, disconnecting), secondary system, gas handling, maintenance, and monitoring. Guidelines for specification of GIS and GIL are given.

On GIL an overview is given about the design of GIL technology, manufacturing and laying, gas mixture, applications and experience. The steps of development, technical changes, state of the art manufacturing, on-site works, and testing of long lengths are some topics in focus. Also design, world-wide experiences, and applications for the typical laying methods and on-site works including prefabrication, assembly, laying methods, testing, and gas handling with filling, reuse, storage of the gas or gas mixture are explained.
On SF_6 basic information, practice of handling with high voltage applications in GIS and GIL, insulating and switching advantages, and the environmental impact are presented and discussed. The SF_6-closed cycle including filling, cleaning, reuse, and, if needed, final burning is explained. A life cycle assessment based on a German study, which indicates savings of GWP with SF_6 will be discussed.

The presenters of the panel discussion are representing users, international manufacturers and consultants. The goal of the panel discussion is to give an overview about the GIS, MTS, GIL and SF_6 technologies including experiences from applications and to allow participants to ask their actual questions.