Course description

CHS501
Transformers I

Course goal
To study and to improve the knowledge on the specific characteristics, data and application of power transformers, protection and tests. To study the new methods of the power flow control and its operational and economic consequences.

Learning objectives
To know the interactions between the transformers and the environment.

Participants
Design and planning personnel, engineering and application personnel and consultants from the Electricity Supply Industry. Technical personnel from ABB companies.

Prerequisites
Electrical or mechanical engineering degree, technical college qualifications or equivalent. Basic knowledge about Power Transmission and Distribution.

Topics
- Network Transformer, Generator Transformer
- Design Parameters, Construction Rules, Basic Design, Operation Rules, Overloading, Cooling, Economical aspects for replacement, Tests etc.
- Optimization and Management of the Energy Flow
- Regulation of Active and Reactive Power Flow with Power Transformers, Economical Aspects.
- Future solutions
  - New Trends and Developments, Dry Type Transformer, Gas Insulated Transformer, Supraconductive Transformer
  - Power Transformer and Environment
    - Water Protection, Noise Reduction, Fire Safety,
  - Protection of Transformer
    - Electromechanical Protection Devices, Buchholz relay, Tank Protection Overpressure Protection, Thermal Image etc.
- Overvoltage protection, Surge arresters
  - Origin and types of overvoltages in the electrical power supply, Travelling waves, Temporary overvoltages, Function, selection and application of surge arresters, Testing of surge arresters, Relevant standards.
- Protection techniques
  - Network types, installations and power devices, faults and disturbances, protection functions overview, basic technology etc., differential, thermal overload, restricted earthfault, etc.

Methods
Lectures and practical examples

Duration
The duration is 3 days.