

# Power transformers

## Purpose

The goal is, firstly, to review fundamental concepts of power transformers, following with an overview of the protective techniques against external and internal faults and perturbations. Next the installation and erection of the transformers are dealt with, providing some guides for the suitable maintenance of the equipments. Also chapters on accesories and on insulating oils and their treatment are included.

## Intended to

Engineers and technicians interested in knowing the principles, structure and operation of the power transformers.

## Duration

4 days (24 hours)

## Contents

- TRANSFORMERS GENERAL CONCEPTS
  - Classification
  - Rated voltages and powers
  - Service conditions
  - Cooling methods. Heating and loading guide
  - Insulation levels
  - Efficiency and regulation coefficients
  - Tests
  - Parallel coupling
  
- MAIN COMPONENTES DESCRIPTION AND MANUFACTURING STEPS
  - Column type transformes
  - Core type transformers
  
- TRANSFORMERS PROTECTION
  - General
  - Protection against external perturbations
  - Protection against internal faults
  - Detection and control of incipient faults



- ACCESORIES: DESCRIPTION AND MAINTENANCE
  - Temperature detectors
  - "BUCHOLZ" relay
  - Cooling equipment
  - Tap changers
  - Others accesories
  - Bushings and terminals
  
- ERECTION AND INSTALLATION OF POWER TRANSFORMERS
  - Object
  - Safety standards and rules
  - Unloading and handling
  - Mounting and installation
  - Treatment and oil filling
  - Checking, setting and preliminary test before powering
  
- MAINTENANCE GUIDE FOR POWER TRANSFORMERS
  - Object
  - Inspection conditions
  - Inspection periodicity
  - Control and follow-up of the inspections
  - Maintenance operations
  - Bushings and terminals
  - Cooling systems
  - On load tap changers
  - Protection and measurement devices
  - Other elements
  - Insulating oils

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- INSULATING OILS
  - General
  - Mineral oils
  - Oil treatments
  - Synthetic oils
  
- REPLACEMENT OF COMPONENTS
  - Replacement of bushing and terminals
  - Replacement of radiators, coolers, fans and pumps
  - Replacement of protection devices.

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