

## Medium Voltage & High Voltage Switchgear Operations & Maintenance

Date

15 December -19  
December 2024

Istanbul

(\$)Fees

3500

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### Why Choose this Training Course?

This course will present a comprehensive capsule of all the knowledge essential for the medium voltage and high voltage switchgear operations and walk the participants through the switchgear design process using a set of interlinked case studies. The course focuses mainly on the operation and maintenance of distribution equipment namely transformers, circuit breakers, contactors, isolators and disconnectors (this will also include the auxiliary peripherals and control circuits).

Medium and high voltages switchgears are the integral component of any electrical distribution system; hence, the selection and installation of these switchgears are vital so as to provide protection and safe distribution of electrical power. The equipment needs to be operated in a safe manner securing continuity of supply to consumers.

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#### This course will feature:

- Understanding the types of medium voltage and high voltage switchgears
- Operation principle of medium voltage circuit breakers
- Identification of the various types of high voltage switchgears
- Maintenance of testing of switchgears
- Construction and operations of high voltage transformers

### What are the Goals?

#### By the end of this course, participants will be able to:

- Understand the role and importance of switchgears
- Determine the components and operations of medium voltage circuit breakers
- Explain the different types of maintenance and testing for switchgears
- Analyse the common faults and short circuit current
- Design and components of high voltage transformers

### Who is this Training Course for?

This course will benefit all levels of professional in an electrical installation. It will enable them to understand

operations and maintenance of medium and high voltage circuit breakers and switchgears.

**This course is suitable to a wide range of technical professionals but will greatly benefit:**

- Electricians
- Electrical supervisors
- Plant electricians
- Operations & maintenance engineers, supervisors & technicians
- Maintenance technicians

## **How will this Training Course be Presented?**

This course will utilise a variety of proven adult training techniques to ensure maximum understanding, comprehension and retention of the information presented. This includes presentation and discussion of latest videos and technologies on medium and high voltage switchgears.

Questions are encouraged throughout, particularly at the daily wrap up sessions. This provides opportunities for participants to discuss with the Presenter specific issues and, if possible, find appropriate solutions. Specific goals of each participant will be discussed to ensure that their needs are fulfilled whenever practicable.

## **The Course Content**

### **Day One: The Role and Importance of the Switchgear in Power Systems**

- Circuit breakers, auto reclosers, disconnectors and sectionalisers operations
- Earth switches construction and applications
- Switchgear symbols on single-line diagrams
- Substation switchgear layouts
- Types of current situation
- Fault clearing process

### **Day Two: Sulphur HexaFlouride (SF6) and Vacuum Circuit Breakers**

- Compression principles
- SF6 hazards and test equipments
- Dead and Live tank HV circuit breakers
- Operation mechanisms of HV circuit breakers
- Vacuum interrupters operation and maintenance
- Automated circuit breaker monitoring

### **Day Three: Maintenance and Testing of Switchgears**

- Manufacturer testing
- Installation and commissioning
- Documentation requirements
- Importance of maintenance & testing
- Maintenance strategies
- Infrared testing

## Day Four: Short Circuit Currents and Calculations and Working Safely

- Introduction to types of relay
- Relay selection, basic concepts and characteristics
- Types of distress and protection modes
- Introduction to safety in HV Substations
- Switchgear numbering and nomenclature
- Switchgear mechanical and electrical interlocking

## Day Five: HV Transformer

- HV current transformers construction, operation and maintenance
- HV potential transformers features and operation
- Power transformer construction and operation
- Buchholz relay, pressure relief device
- Protective relay, conservator and breather operating principles
- Maintenance of power transformers



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