

Course Name: Effective Maintenance Routine for Electrical Equipment

Reference Code: ELEC 104

About the course:

This training 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

Course Objective:

By the end of this training 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 Should attend?.

- This training 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 training course will greatly benefit:
 - Electricians
 - Electrical supervisors
 - Plant electricians
 - Operations & maintenance engineers, supervisors & technicians
 - Maintenance technicians

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Course Methodology:

This training course is designed to be a hands-on, stimulating experience. The training course is highly interactive with many discussion and practice sessions.

- ☐ Relevant computer simulations and videos .
- ☐ Copies of all presentation material.
- ☐ Variety of Learning Methods.
- ☐ Pre-test and final test.
- ☐ Case Study
- ☐ Training Groups.
- ☐ Presentation.
- ☐ Lectures

Course Outline:

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

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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

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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

Time: 08:00 AM -03:00 PM **Numbers of hours:** 35 Hours

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