



Maintenance & Reliability Management

Electrical Maintenance Fundamentals

Course Introduction

This is a practical training program in electrical maintenance, focusing on methods and techniques used in maintaining electrical equipment in industrial companies. Electrical equipment covered in this training program include switchgear and circuit breakers, transformers, motors, generators, capacitors, lighting circuits, protection relays, battery systems and other equipment.

The training program is designed to cover the most commonly performed electrical tasks a maintenance technician faces in their job every day. For the novice or experienced electrician, this training Program provides a practical and real world systematic approach to electrical maintenance.

Target Audience

- Electrical Engineers & Electrical Technicians.

- Maintenance Supervisors & Maintenance Technicians.
- Electricians.

Learning Objectives

- Understand the role of regular periodic inspection and planned maintenance in ensuring safe operation and longer life of electrical equipment.
- Perform the routine tests on electrical equipment including insulation resistance test (Megger) and contact resistance test.
- Use the partial discharge test in diagnosing the insulation of cables and busbars.
- Apply the dielectric insulation testing of transformer oil and performing Dissolved Gas Analysis tests.
- Be familiar with the procedures of preventive maintenance of switchgear and circuit breakers.
- Identify the hazards in operating and carrying out maintenance work in different parts of electrical substations.
- Be aware of the importance of record keeping.

Course Outline

- 01 DAY ONE

Basic Skills for Electrical Maintenance

- Safety First
- Requirements Regarding Maintenance and Qualified Persons
- Using Electrical Drawings and Symbols
- Why Perform Electrical Maintenance
- Overview of Types of Maintenance
 - Corrective (Reactive) Maintenance and Troubleshooting
 - Preventative (Planned or Routine) Maintenance
 - Predictive Maintenance
 - Condition Based Maintenance (CBM)
 - Reliability-Centered Maintenance (RBM)

Using Meters & Testers:

- Using multi-meters
- Insulation resistance (IR) or Megger
- Polarization index (PI)
- Infrared Thermography

- Partial Discharge Testing

- 02 DAY TWO

Maintenance of Circuit Breakers

- Maintenance of Low Voltage Circuit Breakers
 - Contacts
 - Arc Interrupters
 - Operating Mechanism
- Maintenance of Medium Voltage Circuit Breakers
 - SF6 Circuit Breakers
 - Vacuum Circuit Breakers

Maintenance of Transformers

- Transformer Types, construction & theory of operation
- Bucholz Relay & Silicagel Breather
- Transformer condition monitoring
- Transformer Oil Dielectric Insulation Test
- Dissolved Gas Analysis (DGA)

- 03 DAY THREE

Maintenance of Motors

- ° Visual Inspection
- ° Temperature monitoring of bearings and windings
- ° Vibration
- ° Winding resistance
- ° Stator visual Inspection
- ° Rotor / Shaft visual Inspection
- ° Rotor balance
- ° Broken rotor bar checks

Maintenance of Generators

- ° Common issues between Generators & Motors
- ° Automatic Voltage Regulator (AVR)
- ° Maintenance of Electrical & Mechanical Parts of the generator

• 04 DAY FOUR

Maintenance of Lighting System

- ° Lighting Fixtures
- ° Measuring Light: The Lux-meter
- ° Maintenance of Lighting Fixtures

- Maintenance of Lighting Controls

Maintenance of Battery System

- Battery Types
- Battery In-Service Operation
- Temperature and Battery Life
- Battery Safety Factors
- Battery Inspections
- Corrective Actions

• 05 DAY FIVE

Maintenance of Grounding (Earthing) System

- Reasons for Grounding or Bonding Failures
- Consequences of Ground Failures
- Consequences of Ground Failures
- Measuring Ground Resistance
- Corrective Actions

Computerized Maintenance Management System (CMMS)

- Scheduling & Work orders

- ° Safety & Documentation
- ° Spare Parts Inventory, Location & Purchasing
- ° System integration

Confirmed Sessions

FROM	TO	DURATION	FEES	LOCATION
April 13, 2025	April 17, 2025	5 days	4250.00 \$	Qatar - El Doha
Aug. 25, 2025	Aug. 29, 2025	5 days	4250.00 \$	UAE - Dubai
Dec. 29, 2025	Jan. 2, 2026	5 days	4250.00 \$	UAE - Dubai