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Course Name

Electrical Maintenance Fundamentals

Sector Name

Maintenance & Reliability Management

Document Type

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Electrical Maintenance Fundamentals

Course Introduction

The Electrical Maintenance Fundamentals course is a practical training program designed to provide learners with essential knowledge and skills required to install, maintain, troubleshoot, and repair electrical systems in industrial, commercial, and residential environments.

This course focuses on the basics of electrical systems, including electrical circuits, wiring principles, voltage, current, resistance, and power distribution. Participants will gain a strong foundation in understanding how electrical equipment operates and how to maintain it safely and efficiently.

A key part of the program is electrical maintenance techniques, including preventive maintenance, corrective maintenance, and predictive maintenance. Learners will understand how to inspect electrical systems, identify faults, and take corrective actions to avoid system failures and downtime.

The course also covers electrical troubleshooting skills, enabling participants to diagnose problems in motors, control panels, transformers, and industrial electrical equipment. It introduces the use of testing tools such as multimeters, clamp meters, and insulation testers.

Safety is a major focus of the course, with emphasis on electrical safety standards, hazard identification, and safe working procedures

to prevent accidents and ensure compliance with industry regulations.

In addition, the course explores basic industrial electrical systems, circuit protection devices, grounding systems, and maintenance documentation practices. Participants will also learn how to interpret electrical diagrams and technical drawings.

This course is ideal for technicians, maintenance engineers, electricians, and individuals seeking to build a career in electrical maintenance and industrial operations.

By completing this course, learners will develop the technical skills and safety awareness required to maintain electrical systems efficiently, reduce equipment failures, and support smooth industrial operations

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Target Audience

✓ Electrical Engineers & Electrical Technicians.

✓ Maintenance Supervisors & Maintenance Technicians.

✓ Electricians.

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Learning Objectives

- ✓ Understand the role of regular periodic inspection and planned maintenance in ensuring safe operation and the longer life of electrical equipment.
- ✓ Perform the routine tests on electrical equipment, including the insulation resistance test (Megger) and the 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 perform 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.

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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

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Course Outline

✓ 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)

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Electrical Maintenance Fundamentals

Course Outline

✓ 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

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Electrical Maintenance Fundamentals

Course Outline

✓ 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

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Course Outline

✓ 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

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Confirmed Sessions

FROM	TO	DURATION	FEES	LOCATION
April 25, 2027	April 29, 2027	5 days	4250.00 $	Qatar , Doha
Jan. 4, 2027	Jan. 8, 2027	5 days	4250.00 $	UAE , Dubai
Sept. 6, 2027	Sept. 10, 2027	5 days	4250.00 $	UAE , Dubai
March 15, 2027	March 19, 2027	5 days	4250.00 $	UAE , Abu Dhabi

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