



*Training Course:  
Electrical Motors & Equipment: Troubleshooting,  
Operation, and Maintenance*

*4 - 15 May 2025*

*Cairo (Egypt)*

*Holiday Inn & Suites Cairo Maadi, an IHG Hotel*

## Training Course: Electrical Motors & Equipment: Troubleshooting, Operation, and Maintenance

Training Course code: SC235652 From: 4 - 15 May 2025 Venue: Cairo (Egypt) - Holiday Inn & Suites Cairo Maadi, an IHG Hotel Training Course Fees: 6000 € Euro

### Introduction

Electrical motors and equipment are integral to the operations of industries ranging from manufacturing to energy, utilities, and transportation. They power machines, drive production lines, and ensure the seamless operation of critical processes. However, the complexity of these systems requires thorough knowledge and expertise to maintain peak performance, minimize downtime, and enhance operational efficiency.

With advancements in technology, electrical equipment and motors have evolved significantly, incorporating features like smart monitoring, energy-efficient designs, and advanced automation. Yet, these innovations also demand more sophisticated skills in troubleshooting and maintenance. Improper handling or delayed diagnosis of faults can lead to significant losses in productivity, safety risks, and increased operational costs.

This 10-day intensive training program is designed to address these challenges by equipping participants with a comprehensive understanding of electrical motor technology, operational principles, and maintenance best practices. From the fundamentals of motor operation to advanced troubleshooting techniques and cutting-edge maintenance strategies, this program offers a blend of theoretical knowledge and hands-on practical experience. Participants will explore the latest tools and diagnostic technologies, learn how to optimize motor performance, and develop preventive and predictive maintenance plans tailored to their organizational needs.

By the end of the program, participants will not only be skilled in maintaining and troubleshooting electrical motors and equipment but will also be equipped to adopt modern practices that enhance efficiency, ensure safety, and align with energy sustainability goals. Whether you are a seasoned professional or a newcomer to electrical systems, this training will empower you to excel in managing the lifecycle of electrical motors and equipment in your workplace.

This course is ideal for individuals looking to build or upgrade their expertise in managing the technological, operational, and maintenance aspects of electrical systems in today's dynamic and fast-evolving industrial landscape.

### Target Audience

- Electrical engineers and technicians
- Maintenance personnel responsible for electrical systems
- Plant and facility managers overseeing electrical operations
- Industrial operators and supervisors working with electrical motors
- Professionals in energy, manufacturing, or utilities seeking advanced knowledge in electrical equipment
- Anyone involved in troubleshooting and maintaining electrical systems

## Objectives

- Understand the fundamental principles of electrical motors and equipment.
- Explore key operational features, types, and applications of electrical motors.
- Develop skills in diagnosing and troubleshooting electrical motor faults.
- Learn preventive and predictive maintenance strategies for electrical equipment.
- Master the use of modern diagnostic tools and technologies.
- Gain insights into common operational challenges and effective solutions.
- Ensure safety in maintenance and troubleshooting activities.

## Outlines

### Day 1:

#### Fundamentals of Electrical Equipment and Motors

- Introduction to electrical equipment and motor technology
- Key components and operating principles of electrical motors
- Types of motors: AC, DC, synchronous, and asynchronous
- Basics of electrical circuits and motor connections
- Safety standards and precautions in motor maintenance

### Day 2:

#### Motor Construction and Functionality

- Detailed overview of motor construction: stator, rotor, windings
- Working principles of induction and synchronous motors
- Torque, speed, and power characteristics
- Common applications of various motor types
- Case studies: Selecting the right motor for specific applications

### Day 3:

### Troubleshooting Electrical Motors

- Introduction to troubleshooting techniques
- Identifying motor faults: electrical, mechanical, and operational
- Diagnostic tools for motor troubleshooting
- Hands-on exercise: Fault identification in motor systems
- Interactive discussion: Common motor failure scenarios

### Day 4:

#### Preventive and Predictive Maintenance of Motors

- Importance of preventive maintenance PM and predictive maintenance PdM
- Inspection routines and maintenance schedules
- Vibration analysis and thermography for motor health monitoring
- Practical workshop: Developing a maintenance plan
- Group activity: Creating checklists for motor inspections

### Day 5:

#### Advanced Troubleshooting Techniques

- Motor testing methods: insulation resistance, continuity, and winding tests
- Using multimeters and megohmmeters in diagnostics
- Troubleshooting motor control circuits
- Hands-on session: Advanced motor diagnostic exercises
- Group discussion: Troubleshooting strategies and best practices

### Day 6:

#### Electrical Equipment Maintenance

- Overview of key electrical equipment in industrial systems
- Maintenance of switchgear, transformers, and circuit breakers
- Diagnosing electrical faults in power distribution systems

- Hands-on activity: Testing and maintaining electrical components
- Case study: Enhancing the reliability of electrical systems

#### Day 7:

##### Energy Efficiency in Motors and Equipment

- Understanding motor efficiency and energy losses
- Energy-saving practices for motor operations
- Variable frequency drives VFDs for motor efficiency
- Hands-on exercise: Analyzing energy performance in motors
- Workshop: Developing an energy efficiency improvement plan

#### Day 8:

##### Advanced Motor Technologies

- Introduction to smart motors and IoT integration
- Monitoring motor performance using digital tools
- Exploring motor protection systems and automation
- Hands-on session: Setting up motor control systems
- Group activity: Evaluating new motor technologies

#### Day 9:

##### Motor Rewinding and Repairs

- When and why to rewind a motor
- Step-by-step motor rewinding process
- Cost analysis: Repair vs. replacement
- Workshop: Demonstrating the rewinding process
- Case study: Successful motor repair projects

#### Day 10:

### Comprehensive Review and Practical Application

- Reviewing key concepts and troubleshooting techniques
- Practical sessions: Troubleshooting and maintaining electrical motors and equipment
- Creating a personalized maintenance and troubleshooting plan
- Final assessment and certification ceremony
- Wrap-up discussion: Lessons learned and next steps

## Registration form on the Training Course: Electrical Motors & Equipment: Troubleshooting, Operation, and Maintenance

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Complete & Mail or fax to Global Horizon Training Center (GHTC) at the address given below

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- Please find enclosed a cheque made payable to Global Horizon
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