XCELERATE TRAINING INSTITUTE

your learning & development partner

ELECTRICAL ENGINEERING

Electrical Equipment Control & Monitoring System

DURATION	LANGUAGE	FORMAT
5 days	**English**	**Classroom / Online**

Upcoming dates

Dates	Venue	Format	Fee
8 – 12 Feb 2027	Live online	Online (live)	**€1,200**
15 – 19 Mar 2027	Bahrain	Classroom	**€4,800**
16 – 20 Aug 2027	Live online	Online (live)	**€1,200**

Register or ask a question

Online: x8ti.com/course/electrical-equipment-control-monitoring-system/

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Electrical Equipment Control & Monitoring System

Introduction

This course by Xcelerate Training Institute focuses on the operation, testing, and commissioning of electrical equipment such as motors, variable-speed drives, and transformers. The primary goal is to enhance the reliability and efficiency of electrical power systems by identifying issues and providing reference values for ongoing tests. Various testing and measuring instruments ensure that electrical equipment functions accurately. The course covers essential aspects of electrical equipment, including design, operating features, specifications, fault detection methods, critical components, and maintenance issues.

Learning Objectives

Upon completing this course, participants will be able to:

- Identify, select, install, operate, test, troubleshoot, and maintain different types of electrical equipment.
- Understand the testing process and perform investigative testing and inspection of critical components.
- Plan and prepare for testing and perform on-load and off-load tests.
- Use calculated selection criteria for commissioning, maintenance, and cost estimation.
- Consider safety aspects during testing.
- Implement maintenance techniques to minimize operating costs and maximize productivity, reliability, and durability of electrical equipment.

Training Methodology

This interactive training program includes:

- Lectures
- Audio & Video Presentations
- Group Discussions
- Assignments
- Case Studies
- Workshop Exercises Following the ‘Do-Review-Learn-Apply’ model.

Benefits for Your Organisation

Organizations that send employees to this course will benefit from:

- Professionally trained staff to conduct testing and commissioning.
- Improved understanding and appreciation of equipment testing in power systems.
- Enhanced awareness of safety during testing and commissioning.
- Opportunities for participants to network and learn from shared experiences.
- Reduced capital, operating, and maintenance costs with increased efficiency.

Benefits for You

Participants will gain:

- Knowledge of the testing process and independence from reliance on external expertise.
- Understanding of first energization and commissioning processes.
- Comprehensive knowledge of testing high voltage (HV) and low voltage (LV) equipment.
- Awareness of safety aspects in commissioning and testing.

Who Should Attend

This course is ideal for individuals involved in commissioning and testing electrical equipment, including:

- Safety Professionals
- Project Engineers
- Managers of Engineering Departments
- Testing Engineers/Technicians
- Maintenance Engineers/Technicians
- Consulting Engineers/Technicians

Course Outline

Essentials of Electric Systems

- Current and Resistance
- The Magnetic Field
- Capacitors and Inductance
- Faraday’s Law of Induction and Lenz’s Law
- Alternating Currents and Three-Phase Systems

Introduction to Machinery Principles

- Electric Machines and Transformers
- Common Terms and Principles
- Core Loss Values and Permanent Magnets
- Production of Induced Force on a Wire

Transformers

- Introduction and Classification
- Types and Construction
- Voltage Ratio and Magnetizing Current
- Transformer Failures and Ratings
- Equivalent Circuit and Autotransformers
- Three-Phase Transformers and Insulation Features

AC Machine Fundamentals

- Rotating Magnetic Field
- Induced Voltage and Torque in AC Machines

- Winding Insulation and Power Flow

Induction Motors

- Concepts and Starting Induction Motors
- Equivalent Circuit and Construction
- Power-Flow Diagram and Torque-Speed Characteristics

Control of Induction Motors

- Speed Control by Changing Frequency, Rotor Resistance, and Line Voltage
- Induction Generators and Solid-State Drives
- Motor Protection

Maintenance of Motors

- Refurbishment, Enclosures, and Cooling Methods
- Diagnostic Testing and Insulation of AC Motors
- Predictive Maintenance and Troubleshooting

Power Electronics, Rectifiers, and Inverters

- Introduction to Power Electronics
- Rectifier Circuits and Filtering
- Pulse Circuits and Inverters

Variable Speed Drives

- Input Power Converters and Inverters
- Principles of AC Variable Speed Drives
- Regeneration, Transients, and Harmonics
- Application Issues and Cabling Details

Synchronous Machines

- Physical Description and Pole Pitch
- Windings and Field Excitation
- Machine Losses and Tests

Synchronous Generators

- Construction and Phasor Diagrams
- Power and Torque
- Parallel Operation and Capability Curves

Generator Inspection and Maintenance

- On-Load and Off-Load Maintenance
- Generator Testing

Generator Operational Problems and Refurbishment

- Rotor Modifications and Updates
- High-Speed Balancing and Flux Probe Tests

Vibration Analysis

- Resonance and Filtering
- Vibration Instrumentation and Analysis
- Severity and Frequency Domains

Power Station Electrical Systems and Design Requirements

- System Requirements and Description
- Performance and Faults
- Uninterruptible Power Supply (UPS) Systems and DC Systems

Power Station Protective Systems

- Generator Protection and Design Criteria
- DC Tripping Systems

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Registration Form

Electrical Equipment Control & Monitoring System

Preferred dates: ..... Venue or online: .....

Duration: 5 days Language: .....

Please complete and email this form to us, or register online. We confirm your place and send the invoice within one working day.

Delegate information

Full name (Mr / Ms / Dr / Eng): .....

Position: ..... Telephone / mobile: .....

Official email: ..... Personal email: .....

Company information

Company name: .....

Address: .....

City / country: ..... VAT / tax number: .....

Person responsible for training & development

Full name (Mr / Ms / Dr / Eng): .....

Position: ..... Telephone / mobile: .....

Email: .....

Payment

☐ Please invoice me ☐ Please invoice my company

Signature: ..... Date: .....

Call
+491631686678

Email this form
info@x8ti.com

Register online
Open the course page