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MAINTENANCE AND ENGINEERING | ME-011

Protection of Low Voltage Power Systems

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Course content

Why Attend

Reliable protection of low voltage (LV) power systems is essential for ensuring personnel safety, maintaining system reliability, protecting electrical equipment, and minimizing operational downtime. This course provides participants with practical knowledge of low voltage protection principles, protective devices, fault analysis, coordination studies, safety standards, and emerging technologies that support modern electrical distribution systems.

Course Methodology

The course combines instructor-led presentations, technical workshops, engineering calculations, practical case studies, protection coordination exercises, fault analysis demonstrations, and real-world industrial applications.

Course Objectives

By the end of this course, participants will be able to:

- Understand the architecture and operation of low voltage power systems
- Select and apply appropriate protection devices for different applications
- Perform fault analysis and implement effective fault mitigation strategies
- Coordinate protective devices to improve system reliability and selectivity
- Apply international safety standards and electrical protection requirements
- Evaluate automation and digital monitoring solutions for LV protection
- Develop protection strategies for modern and renewable-integrated power systems

Target Audience

- Electrical engineers
- Electrical maintenance engineers and technicians

Course content

Target Audience

- Power system engineers
- Protection and control engineers
- Plant maintenance supervisors
- Facility and operations engineers
- Industrial automation professionals

Target Competencies

- Low voltage protection
- Protection coordination
- Fault analysis
- Electrical safety
- Protective relays and circuit breakers
- Power system reliability
- Electrical system troubleshooting
- Distribution system protection

Course outline

Day 1: Fundamentals of Low Voltage Power System Protection

- Understanding the architecture and operation of low voltage electrical distribution systems
- Reviewing the major components of LV power networks and their functions
- Identifying common operational challenges affecting low voltage systems
- Understanding fault types and their impact on electrical equipment and personnel safety
- Reviewing the objectives and principles of electrical protection systems

Course content

Course outline

• Establishing the foundation for reliable and selective protection schemes

Day 2: Protective Devices and Coordination Techniques

• Understanding the operating principles of circuit breakers, fuses, relays, and protective devices

• Selecting appropriate protection equipment based on system requirements

• Applying protection coordination and selectivity principles

• Optimizing protection device settings for improved system performance

• Evaluating discrimination between upstream and downstream protection devices

• Practical case studies on protection device selection and coordination

Day 3: Fault Detection, Analysis, and System Reliability

• Identifying electrical faults within low voltage distribution systems

• Applying fault calculation and analysis techniques

• Utilizing modern testing equipment and diagnostic tools for fault detection

• Developing strategies for fault isolation and service restoration

• Evaluating equipment performance following fault events

• Practical workshop: Fault investigation and corrective action planning

Day 4: Safety Standards and Regulatory Compliance

• Understanding international standards governing low voltage protection systems

• Applying electrical installation and operational safety requirements

• Ensuring compliance with protection, grounding, and isolation practices

• Reviewing inspection, testing, and verification procedures

• Implementing safe work practices during operation and maintenance

• Practical exercises on applying protection standards within industrial facilities

Course content

Course outline

Day 5: Advanced Protection Technologies and Future Developments

- Applying intelligent protection systems and automation technologies
- Utilizing remote monitoring and digital protection platforms
- Integrating renewable energy systems within low voltage distribution networks
- Evaluating smart protection devices and intelligent electrical infrastructure
- Understanding emerging trends in low voltage protection and digital power systems
- Practical workshop: Developing a comprehensive protection strategy for a modern low voltage network
- Course review, implementation planning, lessons learned, and final Q&A

Seminar dates

Available seminar dates

Live dates and pricing for Protection of Low Voltage Power Systems generated from the course details page.

Date	Location	Format	Fee
Dates on request	Venue on request	Classroom	**Contact us**

Live online option	Online delivery is available at €1,850.-.