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MAINTENANCE AND ENGINEERING | ME-008

Engineering Excellence in Electrical Equipment

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Course content

Why Attend

Modern electrical systems rely on the reliable operation of transformers, inverters, and uninterruptible power supply (UPS) systems to ensure continuous power, operational efficiency, and equipment protection. This course provides participants with the technical knowledge and practical skills required to select, operate, maintain, troubleshoot, and optimize critical electrical equipment while exploring emerging technologies that support intelligent power systems and digital transformation.

Course Methodology

The course combines instructor-led presentations, technical workshops, equipment demonstrations, troubleshooting exercises, engineering case studies, practical problem-solving sessions, and real-world industrial applications.

Course Objectives

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

- Understand the operating principles of major electrical equipment
- Evaluate the performance of transformers, inverters, and UPS systems
- Apply preventive maintenance and troubleshooting techniques
- Improve equipment efficiency, reliability, and lifecycle performance
- Integrate electrical equipment into modern power systems
- Evaluate emerging technologies including smart monitoring and IoT applications
- Develop maintenance and optimization strategies for critical electrical assets

Target Audience

- Electrical engineers
- Maintenance engineers and technicians



Course content

Target Audience

- Power system engineers
- Plant and facility engineers
- Operations and maintenance supervisors
- Reliability engineers
- Industrial automation professionals

Target Competencies

- Electrical equipment engineering
- Transformer technology
- Inverter systems
- UPS systems
- Equipment maintenance
- Fault diagnosis
- Power system integration
- Asset reliability

Course outline

Day 1: Fundamentals of Electrical Equipment

- Understanding the role of transformers, inverters, and UPS systems within modern electrical networks
- Reviewing the major components and operating principles of critical electrical equipment
- Applying fundamental electrical concepts related to power conversion and distribution
- Understanding equipment ratings, operating characteristics, and performance requirements
- Reviewing applicable electrical safety standards, regulations, and industry best practices



Course content

Course outline

• Identifying common operational challenges affecting electrical equipment reliability

Day 2: Transformer Engineering, Operation, and Maintenance

• Understanding transformer types, applications, and selection criteria

• Reviewing transformer construction, magnetic cores, winding arrangements, insulation systems, and cooling methods

• Evaluating transformer loading characteristics, efficiency, and thermal performance

• Understanding transformer losses and methods to improve operating efficiency

• Applying preventive maintenance strategies and condition monitoring techniques

• Diagnosing transformer faults using modern testing and diagnostic methods

• Practical workshop: Transformer inspection and maintenance planning

Day 3: Inverter Technology and Performance Optimization

• Understanding inverter technologies and their industrial applications

• Reviewing grid-connected, standalone, and hybrid inverter systems

• Understanding power conversion principles and inverter control strategies

• Optimizing inverter performance for improved efficiency and reliability

• Managing harmonics, power quality, and system stability

• Performing preventive maintenance and troubleshooting of inverter systems

• Practical exercise: Diagnosing common inverter operational problems

Day 4: Uninterruptible Power Supply (UPS) Systems

• Understanding the role and applications of UPS systems in critical power environments

• Comparing online, offline, and line-interactive UPS technologies

• Reviewing UPS architecture, battery technologies, and energy storage systems

• Evaluating load management, runtime performance, and system reliability



Course content

Course outline

• Applying preventive maintenance, battery management, and testing procedures

• Conducting performance verification and operational assessments of UPS installations

Day 5: Integrated Electrical Systems and Emerging Technologies

• Integrating transformers, inverters, and UPS systems within industrial power networks

• Optimizing load management and equipment coordination for reliable operation

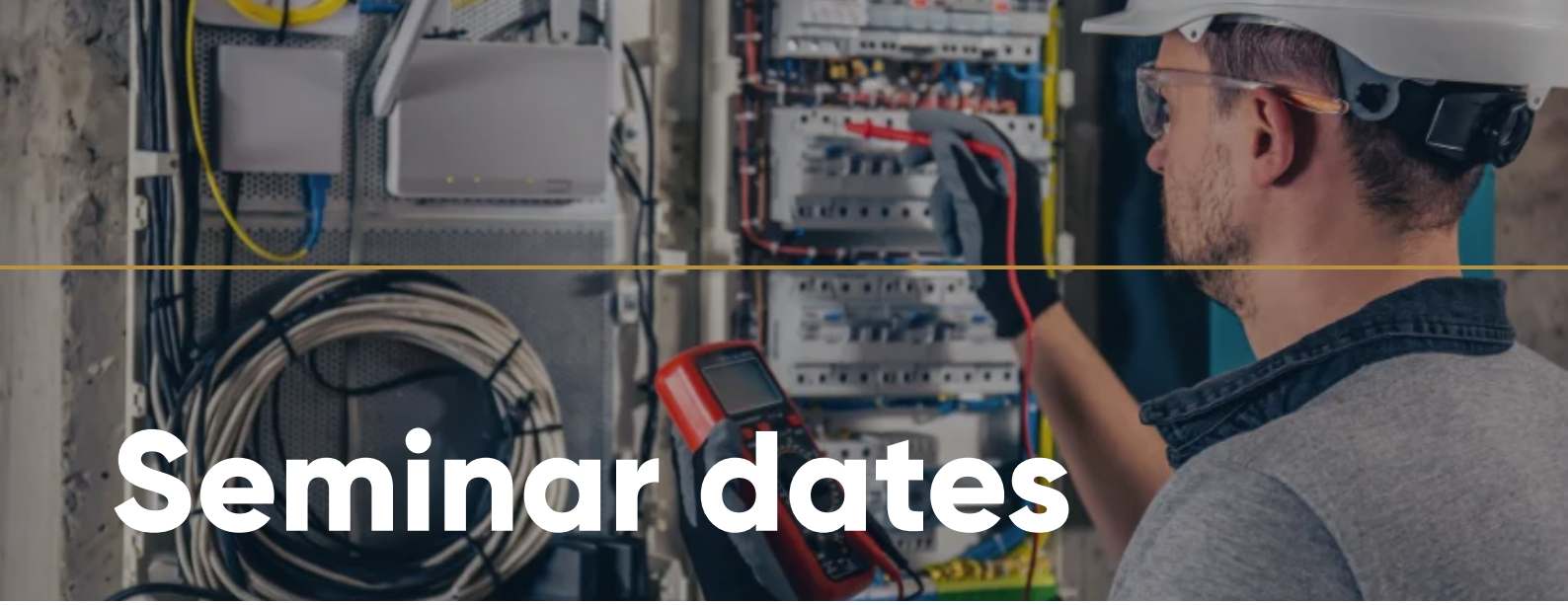
• Exploring emerging technologies in electrical equipment and intelligent power systems

• Understanding smart grid integration, IoT-enabled monitoring, and predictive maintenance

• Reviewing industry case studies and engineering best practices

• Practical workshop: Developing an integrated maintenance and equipment optimization strategy

• Course review, lessons learned, implementation planning, and final Q&A



Seminar dates

Available seminar dates

Live dates and pricing for Engineering Excellence in Electrical Equipment generated from the course details page.

Date	Location	Format	Fee
18 - 22 January 2027	Amsterdam - Netherlands	Classroom	**€3,040.-**
15 - 19 February 2027	London - U.K	Classroom	**€3,360.-**
15 - 19 March 2027	Barcelona - Spain	Classroom	**€3,080.-**
19 - 23 April 2027	Frankfurt - Germany	Classroom	**€2,600.-**
17 - 21 May 2027	Istanbul - Turkey	Classroom	**€2,280.-**
21 - 25 June 2027	Barcelona - Spain	Classroom	**€3,080.-**
19 - 23 July 2027	Vienna - Austria	Classroom	**€3,840.-**
16 - 20 August 2027	Amsterdam - Netherlands	Classroom	**€3,880.-**
20 - 24 September 2027	Istanbul - Turkey	Classroom	**€2,280.-**
18 - 22 October 2027	Paris - France	Classroom	**€3,600.-**
15 - 19 November 2027	Barcelona - Spain	Classroom	**€3,080.-**
20 - 24 December 2027	Paris - France	Classroom	**€3,600.-**

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