



MAINTENANCE AND ENGINEERING

Engineering Excellence in Electrical Equipment

Course code: ME-008

SPARK TRAINING

Professional training courses for leaders, specialists, and organizations seeking practical capability development.

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— Workshop Overview

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.

Why Attend

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

Who Should Attend

Electrical engineers
Maintenance engineers and technicians
Power system engineers
Plant and facility engineers
Operations and maintenance supervisors
Reliability engineers
Industrial automation professionals

— Learning Objectives

- 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

— 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
- 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
- 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

— Upcoming Classroom Dates

DATE	LOCATION	FEE
18 - 22 January 2027	Amsterdam - Netherlands	€1,900
15 - 19 February 2027	London - United Kingdom	€2,100
15 - 19 March 2027	Barcelona - Spain	€1,925
19 - 23 April 2027	Frankfurt - Germany	€1,625
17 - 21 May 2027	Istanbul - Türkiye	€1,425
21 - 25 June 2027	Barcelona - Spain	€1,925
19 - 23 July 2027	Vienna - Austria	€2,400
16 - 20 August 2027	Amsterdam - Netherlands	€2,425

— Certificate and Registration

Participants who attend and complete the full programme receive a SPARK Training Certificate of Completion. For registration, in-house delivery, or availability questions, contact info@sparktraining.eu or +31 85 115 0004.