MAWA EVENTS

Address: No. 857, Block A2. Leisure Commerce Square - No 9., 46150 Petaling Jaya, Selangor, Malaysia

Phone: +601116373203 | **Email:** info@mawaevents.net

ELECTRICAL FAULTS - CAUSES, ANALYSIS, DETECTION & REMEDIES

"Improve System Reliability by Identifying and Resolving Electrical Faults Efficiently"

Schedule

Date	Venue	Fees (Face-to-Face)
11 – 15 Oct 2026	Doha, Qatar	USD 3495 per delegate

► **Available delivery methods:** Face-to-Face & Online Training

Introduction

Electrical faults in industrial and utility systems can lead to equipment failure, safety hazards, production downtime, and substantial financial losses. Understanding the root causes of faults and deploying effective detection and mitigation techniques are critical to maintaining system reliability and operational continuity.

This comprehensive 5-day course provides participants with the practical and analytical skills required to identify, diagnose, and resolve electrical faults across various power systems. It covers fault types, protection systems, condition monitoring, insulation issues, and modern diagnostic tools to improve safety and reduce downtime.

Objectives

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

- Understand the types, causes, and consequences of electrical faults
- Analyze fault conditions using system modeling and data interpretation
- Apply testing and diagnostic tools for fault detection and location
- Develop preventive maintenance strategies to reduce fault risks
- Ensure compliance with safety standards and improve protection schemes

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Why Attend

- Learn to detect early warning signs of electrical failure
- Reduce costly downtime and unplanned outages
- Improve safety and performance through fault diagnosis and response
- Apply advanced tools for insulation testing, thermography, and system analysis
- Enhance your understanding of circuit protection and fault clearance

Target Audience

This program is designed for:

- Electrical and maintenance engineers
- Power system technicians and supervisors
- Asset reliability and protection engineers
- Industrial plant and utility operations staff
- Anyone responsible for electrical system performance and safety

Individual Benefits

Key competencies that will be developed include:

- Fault type classification (short circuits, ground faults, overloads, etc.)
- Use of diagnostic tools such as TTR, insulation resistance, and thermal imaging
- Root cause analysis and fault modeling techniques
- Knowledge of relay coordination and protective device settings
- Best practices for corrective and preventive maintenance

Organizational Benefits

Upon completing the training course, participants will demonstrate:

- Improved power system stability and reliability
- Enhanced protection coordination and fault response times
- Reduced asset damage, downtime, and operational losses
- Better compliance with electrical safety standards and regulations
- Increased organizational resilience to electrical failure risks

Instructional Methodology

The course follows a blended learning approach combining theory with practice:

- Strategy Briefings – Principles of fault analysis, protection, and diagnostics
- Case Studies – Review of fault events and lessons learned from real incidents
- Workshops – Fault simulation, breaker coordination, and relay setting exercises
- Peer Exchange – Sharing of common fault challenges and responses
- Tools – Fault analysis checklists, maintenance templates, and diagnostic reports

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Course Outline

DETAILED 5-DAY COURSE OUTLINE

Training Hours: 7:30 AM – 3:30 PM **Daily Format:** 3–4 Learning Modules | Coffee breaks: 09:30 & 11:15 | Lunch Buffet: 01:00 – 02:00

Day 1: Fundamentals of Electrical Faults

- Module 1: Introduction to Fault Types and Causes (07:30 – 09:30) • Types of faults: line-to-line, line-to-ground, 3-phase, etc. • Common causes: insulation failure, aging, overloads
- Module 2: Fault Impact and Safety Considerations (09:45 – 11:15) • Effects on equipment, safety, and power quality
- Module 3: Workshop – Fault Case Identification (11:30 – 01:00) • Identify and classify faults from provided scenarios
- Module 4: Standards & Regulatory Guidelines (02:00 – 03:30) • IEC, IEEE, and OSHA perspectives on fault management

Day 2: System Protection and Coordination

- Module 1: Protection Schemes and Components (07:30 – 09:30) • Relays, fuses, circuit breakers, and their roles
- Module 2: Relay Coordination and Fault Clearing (09:45 – 11:15) • Selective coordination and time-current curve analysis
- Module 3: Workshop – Relay Settings & Coordination (11:30 – 01:00) • Configure basic settings for fault isolation
- Module 4: Case Study – Protection System Failures (02:00 – 03:30) • Analyze real-life cases where protection failed

Day 3: Fault Analysis and Modeling

- Module 1: Power System Modeling for Fault Analysis (07:30 – 09:30) • Per unit system, symmetrical components, and system modeling basics
- Module 2: Manual and Software-Based Fault Calculations (09:45 – 11:15) • Short circuit analysis using impedance and software tools
- Module 3: Workshop – Fault Simulation Using Excel/Software (11:30 – 01:00) • Perform sample fault calculations
- Module 4: Load Flow and Fault Current Impact (02:00 – 03:30) • Understanding system responses to fault conditions

Day 4: Detection and Diagnostic Techniques

- Module 1: Fault Detection Methods (07:30 – 09:30) • Use of thermal imaging, IR scanning, partial discharge detection
- Module 2: Insulation Testing and Monitoring (09:45 – 11:15) • IR tests, dielectric analysis, TTR, and polarization index
- Module 3: Workshop – Instrumentation and Diagnostics (11:30 – 01:00) • Hands-on interpretation of test reports
- Module 4: Trending and Predictive Maintenance (02:00 – 03:30) • Using data for early fault prediction

Day 5: Root Cause Analysis and Remediation Strategies

- Module 1: RCA Techniques for Electrical Failures (07:30 – 09:30) • 5 Whys, fishbone, and fault tree analysis
- Module 2: Maintenance Planning and Mitigation (09:45 – 11:15) • Corrective vs. preventive maintenance planning
- Module 3: Workshop – Failure Case Study & RCA Exercise (11:30 – 01:00) • Group activity: investigate and resolve a fault scenario
- Module 4: Wrap-Up – Continuous Improvement Strategies (02:00 – 03:30) • Post-fault review procedures and future prevention

Certification

Participants will receive a Certificate of Completion in Electrical Faults – Causes, Analysis, Detection & Remedies, validating their technical proficiency in managing electrical fault incidents and implementing systems to improve reliability and safety.

Why Choose MAWA Events

- **Global Expertise:** More than 17 years of experience in professional training and consulting.
- **Industry-Leading Faculty:** Courses delivered by seasoned professionals with hands-on experience.
- **Practical Insights:** Learn to turn theory into actionable strategies for real-world business impact.
- **Client-Focused Solutions:** Customized programs designed to achieve your organisation’s unique goals.

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