

TRAINING TITLE

MANAGING ELECTRICAL EQUIPMENT VARIATIONS & DEFECTS

Training Duration

5 day

Training Venue and Dates

EE196	Managing Electrical Equipment Variations & Defects	5	14-18 July 2025	\$5,500	DUBAI, UAE
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In any of the 4 or 5-star hotels. The exact venue will be informed later.

Training Fees

- \$5,500 per participant for Public Training includes Materials/Handouts, tea/coffee breaks, refreshments & Lunch

Training Certificate

Define Management Consultants Certificate of course completion will be issued to all attendees.

TRAINING DESCRIPTION

This course is designed to equip participants with the knowledge and skills to manage electrical equipment variations, defects, and performance issues in industrial, commercial, and power generation environments. It covers the common causes of equipment failures, diagnostic techniques for identifying defects, and effective management strategies to mitigate and prevent issues that could lead to system downtime or safety hazards. Participants will also learn how to ensure compliance with safety standards and implement best practices for maintaining the reliability of electrical equipment.

TRAINING OBJECTIVES

By the end of the course, participants will be able to understand

- Identify and understand common electrical equipment variations and defects.
- Diagnose and troubleshoot issues with electrical systems and equipment.
- Implement effective preventive and corrective maintenance strategies.
- Ensure compliance with safety regulations and standards during maintenance activities.
- Utilize diagnostic tools and techniques to enhance equipment reliability and performance.

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- Develop procedures for reporting, managing, and mitigating defects in electrical systems.

WHO SHOULD ATTEND?

- Electrical engineers, technicians, and maintenance personnel working with electrical equipment.
- Supervisors and managers responsible for electrical system reliability.
- Safety officers and quality inspectors overseeing electrical equipment performance.
- Electrical engineers in charge of troubleshooting and maintaining electrical systems.

TRAINING METHODOLOGY

A highly interactive combination of lectures and discussion sessions will be managed to maximize the amount and quality of information and knowledge transfer. The sessions will start by raising the most relevant questions and motivating everybody to find the right answers. You will also be encouraged to raise your own questions and to share in the development of the right answers using your own analysis and experiences. Tests of multiple-choice type will be made available on daily basis to examine the effectiveness of delivering the course.

Very useful Course Materials will be given.

- 30% Lectures
- 30% Workshops and work presentation
- 20% Group Work & Practical Exercises
- 20% Videos & General Discussions

COURSE PROGRAM:

Day 1: Introduction to Electrical Equipment Variations and Defects

- Overview of electrical equipment and their common variations: transformers, motors, switchgear, and circuits.
- Understanding electrical defects and performance issues: overloading, overheating, wear and tear, and component failure.
- Common causes of equipment variations and defects: environmental factors, poor maintenance, design flaws, and electrical faults.
- Overview of electrical safety standards (e.g., IEC, NEC) and their role in preventing defects.
- Key terminology and concepts related to electrical defects and equipment performance.

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Day 2: Identifying and Diagnosing Electrical Defects

- Visual inspections and common signs of electrical defects: burn marks, discoloration, corrosion, and loose connections.
- Techniques for diagnosing electrical faults:
 - Using multimeters, clamp meters, and insulation resistance testers.
 - Techniques for measuring voltage, current, resistance, and continuity.
 - Fault-finding techniques for transformers, switchgear, and circuit breakers.
- Common defects in electrical equipment:
 - Motor defects: winding faults, insulation breakdown, rotor issues.
 - Transformer defects: core issues, insulation failures, oil leaks.
 - Switchgear defects: faulty breakers, contact wear, and faulty relays.
- Identifying causes of underperformance or erratic behavior in electrical systems.

Day 3: Preventive and Corrective Maintenance of Electrical Equipment

- Preventive maintenance strategies: scheduled inspections, condition monitoring, and performance checks.
- Corrective maintenance: identifying and repairing faulty equipment.
- Best practices for maintaining electrical equipment:
 - Proper cleaning, lubrication, and tightening of components.
 - Ensuring proper ventilation and cooling for electrical systems.
 - Testing insulation and protection systems for electrical devices.
- Condition-based monitoring: Understanding when to perform maintenance based on equipment condition rather than a fixed schedule.
- Creating maintenance schedules for electrical equipment to reduce defects and prolong service life.

Day 4: Tools and Techniques for Effective Troubleshooting

- Diagnostic tools and technologies for electrical equipment:
 - Thermal imaging cameras for detecting hot spots and faults.
 - Vibration analysis for rotating equipment (motors, pumps).
 - Oil analysis for transformers.
- Using data loggers and software for real-time monitoring of electrical equipment.
- Step-by-step troubleshooting techniques:
 - Power quality analysis (voltage dips, harmonic distortion).

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- Using circuit diagrams and electrical drawings to trace faults.
- Isolating and testing components in circuits (e.g., fuses, relays, switches).

Day 5: Managing Defects, Reporting, and Safety Compliance

- Defect management: Categorizing, reporting, and tracking defects in electrical equipment.
- Root cause analysis: Identifying the underlying causes of electrical failures and preventing recurrence.
- Corrective action plans: Developing and implementing solutions to resolve defects.
- Regulatory compliance and standards:
 - Understanding safety and industry standards related to electrical maintenance and defect management (e.g., OSHA, NFPA, IEC).
 - Electrical safety protocols during defect management and repair activities (lockout/tagout, arc flash protection, PPE).
- Emergency response planning: Handling critical failures and system shutdowns.
- Developing documentation and reporting systems to track defects, maintenance activities, and compliance.

NOTE:

Pre- & Post Tests will be conducted.

Case Studies, Group Exercises, Group Discussions, Last Day reviews, and assessments will be carried out.

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P.O BOX 45304
ABU DHABI, U.A.E

T +971 2 6264455
F +971 2 6275344

www.definettraining.com