

Predictive Maintenance and Troubleshooting of Electrical Systems

COURSE OVERVIEW

This course offers a practical understanding of predictive maintenance principles, diagnostic methods, and troubleshooting for electrical systems and networks. The course covers AI-driven analytics, IoT sensors, and digital twin technologies that shift maintenance from reactive to predictive. Participants will learn to apply tools such as vibration analysis, thermal imaging, oil analysis, MCSA, ESA, and partial discharge testing. Through case studies, hands-on sessions, and global standards (IEC, IEEE, ISO 55000), delegates will build the skills to optimize maintenance strategies for safety, efficiency, and compliance.

WHO SHOULD ATTEND?

This course is designed for electrical engineers, technicians, maintenance and reliability engineers, power system engineers and operators, plant maintenance managers, and industrial automation engineers. It is equally valuable for assets management specialists, energy and utility engineers, safety inspection and compliance officers, technical supervisors, project engineers, engineering trainers and consultants.

COURSE OUTCOMES

Delegates will gain the skills and knowledge to:

- Understand the core principles and benefits of predictive maintenance in electrical systems.
- Identify key failure modes and degradation patterns in motors, switchgears, transformers, and cables.
- Implement predictive maintenance strategies using condition-monitoring tools and technologies.
- Analyze data trends to predict and prevent electrical equipment failures.
- Conduct root cause failure analysis (RCFA) and reliability-centered maintenance (RCM).
- Apply advanced troubleshooting methodologies to restore equipment performance efficiently.

KEY COURSE HIGHLIGHTS

At the end of the course, you will understand;

- The scientific principles and lifecycle approach behind predictive maintenance and reliability management.
- Failure patterns and degradation mechanisms in critical electrical assets such as motors, switchgears, and transformers.
- How to apply advanced diagnostic tools (thermography, vibration analysis, oil testing, and insulation monitoring)
- How to analyze electrical faults and anomalies using data from predictive maintenance systems.
- Methods for integrating AI and IoT-based predictive analytics to enable real-time monitoring.
- How to evaluate maintenance performance using KPIs such as MTBF (Mean Time Between Failures) and MTTR (Mean Time to Repair).

All our courses are dual-certificate courses. At the end of the training, the delegates will receive two certificates.

1. A GTC end-of-course certificate.
2. Continuing Professional Development (CPD) Certificate of completion with earned credits awarded.