

Reliability Engineering and Operational Excellence in Power Plants

COURSE OVERVIEW

This course provides an advanced understanding of how to design, operate, and maintain power generation systems for maximum reliability, availability, and performance. It integrates engineering principles, data analytics, and organizational excellence frameworks such as Total Productive Maintenance (TPM), Reliability-Centered Maintenance (RCM), Six Sigma, and Lean Operations. Participants will learn how to minimize downtime, reduce maintenance costs, and improve asset performance through predictive and preventive strategies.

WHO SHOULD ATTEND?

This course is designed for power plant engineers, operators' reliability and maintenance engineers, plant managers, operations supervisors, mechanical, electrical, and instrumentation engineers. It is equally valuable for asset Integrity and performance managers, energy Efficiency specialists, maintenance planners and analysts, risk and quality assurance managers, process improvement and operational excellence professionals, policy makers and regulators in power and energy sectors.

COURSE OUTCOMES

Delegates will gain the skills and knowledge to:

- Understand the core principles and methodologies of reliability engineering in power generation systems.
- Identify and analyze critical failure modes using FMEA and reliability modeling tools.
- Implement predictive, preventive, and condition-based maintenance strategies.
- Apply key performance indicators (KPIs) and benchmarking to monitor asset health and operational effectiveness.
- Conduct root cause failure analyses and develop corrective/preventive actions.
- Build a culture of operational excellence through continuous improvement frameworks.

KEY COURSE HIGHLIGHTS

At the end of the course, you will understand;

- How to perform Reliability-Centered Maintenance (RCM) to ensure maximum equipment uptime.
- Techniques for using predictive analytics and IoT-based condition monitoring to anticipate failures.
- The integration of reliability data into digital dashboards and performance management systems.
- Methods for conducting Root Cause Analysis (RCA) and Failure Mode and Effects Analysis (FMEA/FMECA).
- How Lean and Six Sigma methodologies enhance operational efficiency and reduce waste.
- Strategies for optimizing spare parts, maintenance planning, and lifecycle asset management.
- How to link maintenance performance to business KPIs availability, MTBF, MTTR, and OEE.

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.