QUEST
Professional Center

PROFESSIONAL TRAINING COURSE

Course No. 1140

Steam Turbine Engineering Training Course

MECHANICAL ENGINEERING
INDUSTRIAL ENGINEERING, MAINTENANCE & OPERATIONS

DURATION
5 Days

DELIVERY
Classroom

LOCATION
Online, Online

DATES
24 – 28 Jan 2027

Scheduled Event Details

CITY	Online, Online
DATE	24 – 28 Jan 2027
DELIVERY TYPE	Classroom
COURSE FEE	€2,700

Course Overview

The Steam Turbine Engineering Training Course is a comprehensive professional development program designed to provide engineers, maintenance professionals, operations personnel, technical specialists, and engineering managers with the knowledge and practical skills required to understand, operate, maintain, troubleshoot, and optimize steam turbines and associated steam systems. Steam turbines are among the most critical rotating machines used in power generation, oil and gas facilities, petrochemical plants, refineries, industrial manufacturing, and process industries, making their reliable operation essential for achieving operational efficiency, equipment reliability, energy optimization, and business continuity.

Steam turbines operate under high temperatures, elevated pressures, and demanding mechanical conditions that require specialized engineering knowledge and disciplined operational practices. Effective steam turbine engineering enables organizations to improve equipment availability, optimize thermal efficiency, reduce operational costs, extend asset life, minimize downtime, and enhance plant safety. This course provides participants with internationally recognized engineering principles and industry best practices for managing steam turbines throughout their operational lifecycle.

Throughout the program, participants will develop a comprehensive understanding of steam turbine technologies, including steam generation principles, Rankine cycle fundamentals, turbine construction, steam flow, blades and rotors, bearings, sealing systems, lubrication systems, governing systems, auxiliary equipment, performance analysis, vibration monitoring, condition monitoring, maintenance planning, reliability engineering, failure analysis, and operational optimization. Practical engineering exercises and real industrial case studies allow participants to apply engineering theory to real-world operational challenges.

The Steam Turbine Engineering Training Course also demonstrates how steam turbine engineering

integrates with maintenance management, reliability engineering, asset management, energy efficiency, process optimization, operational excellence, engineering safety, and continuous improvement initiatives. By completing this course, participants will be prepared to improve steam turbine reliability, optimize plant performance, reduce maintenance costs, strengthen engineering decision-making, and support sustainable engineering operations across government entities, ministries, public sector organizations, financial institutions managing engineering infrastructure, oil and gas companies, power generation facilities, petrochemical industries, manufacturing organizations, utilities, and multinational corporations.

Objectives

- Analyze the operating principles and engineering applications of industrial steam turbines.
- Develop practical knowledge for operating, maintaining, and managing steam turbine systems.
- Evaluate steam turbine performance using engineering calculations, operational data, and performance analysis techniques.
- Apply Rankine cycle principles and thermodynamic concepts to steam turbine operation.
- Design operational improvement strategies that enhance turbine efficiency, reliability, and availability.
- Improve steam turbine operation through effective startup, shutdown, monitoring, and maintenance practices.
- Strengthen troubleshooting capabilities by identifying common steam turbine failures and conducting root cause analysis.
- Implement preventive, predictive, and reliability-centered maintenance strategies for steam turbines.
- Assess steam turbine efficiency, steam utilization, and opportunities for operational optimization.
- Align steam turbine engineering practices with organizational objectives for safety, reliability, asset management, and operational excellence.

Who Should Attend

This course is designed for mechanical engineers, maintenance engineers, operations engineers, power plant engineers, rotating equipment engineers, reliability engineers, process engineers, project engineers, utility engineers, commissioning engineers, maintenance supervisors, operations supervisors, engineering technicians, equipment inspectors, asset management professionals, engineering consultants, and technical specialists responsible for steam turbine systems and power

generation equipment.

The program is equally valuable for engineering managers, maintenance managers, plant managers, operations managers, facility managers, project managers, procurement engineers, HSE professionals, quality specialists, executive managers, and decision makers responsible for turbine reliability, engineering operations, maintenance planning, asset performance, and energy management.

Professionals working within government entities, ministries, public sector organizations, financial institutions managing engineering infrastructure, oil and gas companies, refineries, petrochemical industries, power generation facilities, utility providers, industrial manufacturing plants, mining organizations, infrastructure developers, district energy plants, and multinational engineering organizations will benefit significantly from the practical engineering methodologies and internationally recognized steam turbine management practices presented throughout the course.

Learning Outcomes

- By the end of this course, participants will be able to:
- Explain the operating principles, components, and industrial applications of steam turbines.
- Analyze steam turbine performance using Rankine cycle principles and engineering calculations.
- Interpret turbine operating parameters and evaluate equipment efficiency.
- Apply engineering principles to optimize steam turbine operation and thermal efficiency.
- Identify common steam turbine failures and conduct systematic troubleshooting and root cause analysis.
- Develop preventive and predictive maintenance programs for steam turbine systems.
- Evaluate lubrication systems, governing systems, sealing systems, and auxiliary equipment.
- Apply vibration monitoring and condition monitoring techniques to improve turbine reliability.
- Implement engineering safety practices during steam turbine operation, inspection, maintenance, and shutdown activities.
- Support operational excellence and asset reliability through effective steam turbine engineering and lifecycle management.

Course Outline

DAY 01

Fundamentals of Steam Turbine Engineering

- Principles of steam turbine operation and the Rankine cycle
- Types of steam turbines and industrial applications
- Steam turbine components and mechanical construction
- Steam generation principles and thermodynamic fundamentals

> **PRACTICAL**
> Practical workshop on steam turbine identification and interpretation of technical documentation

DAY 02

Steam Turbine Performance and System Design

- Steam turbine performance characteristics
- Steam flow analysis and turbine stage operation
- Rotor, blades, bearings, and sealing systems
- Governing systems and auxiliary equipment

> **PRACTICAL EXERCISE**
> Practical exercise on steam turbine performance evaluation and operational analysis

DAY 03

Steam Turbine Operation and Maintenance

- Installation, commissioning, startup, and shutdown procedures
- Operational monitoring and performance optimization
- Preventive, predictive, and reliability-centered maintenance strategies
- Inspection techniques and maintenance planning

DAY 03 — CONTINUED

PRACTICAL

Practical workshop on maintenance scheduling and operational inspections

DAY 04

Troubleshooting, Reliability, and Condition Monitoring

- Common steam turbine failures and root cause analysis
- Vibration analysis and condition monitoring technologies
- Reliability engineering methodologies for steam turbines
- Thermal performance degradation and efficiency improvement

PRACTICAL APPLICATION

Practical application involving steam turbine troubleshooting and reliability improvement planning

DAY 05

Advanced Steam Turbine Management and Operational Excellence

- Steam turbine asset lifecycle management
- Engineering safety and operational risk management
- Performance measurement and engineering best practices
- Continuous improvement strategies for steam turbine operations

FINAL WORKSHOP

Final workshop involving the development of a comprehensive Steam Turbine Engineering management plan integrating turbine performance analysis, maintenance planning, reliability improvement, condition monitoring, thermal efficiency optimization, safety management, and continuous improvement to maximize equipment reliability, operational efficiency, and engineering excellence.

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Register or Request More Information

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