

COMPRESSORS & TURBINES - OPERATIONS & MAINTENANCE

"Maximize Performance and Reliability of Rotating Equipment through Proven Operation & Maintenance Strategies."

Schedule

Venue (InHouse)	Fees
At Your Organization Premises	Ask For The Quotation

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

Introduction

This intensive training program provides comprehensive knowledge on the design, operation, troubleshooting, and maintenance of compressors and turbines, which are critical in oil & gas, petrochemical, power generation, and industrial applications. Participants will develop skills to detect early warning signs of mechanical issues, implement condition-based maintenance, and optimize performance through system analysis and tuning. Real-world case studies and technical insights will enhance your ability to manage both centrifugal and reciprocating compressors as well as steam and gas turbines.

Objectives

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

- Understand the construction, function, and operating principles of compressors and turbines
- Operate rotating equipment safely and efficiently under different load conditions
- Detect and analyze performance degradation and common failure modes
- Implement preventative and predictive maintenance strategies
- Apply troubleshooting techniques and optimize system availability

Why Attend

Compressors and turbines are vital to plant uptime and energy efficiency. This course ensures professionals can minimize breakdowns, reduce maintenance costs, and ensure the safe operation of high-value equipment—while preparing for future roles in rotating machinery reliability.

Target Audience

- Mechanical and Maintenance Engineers
- Rotating Equipment Specialists
- Operations and Field Engineers
- Maintenance Technicians and Supervisors
- Plant Engineers and Reliability Professionals
- Anyone involved in machinery performance and plant uptime

Individual Benefits

- Deepen understanding of compressor and turbine systems
- Enhance problem-solving and diagnostic capabilities
- Reduce unplanned downtime and increase machinery lifespan
- Boost confidence in handling breakdowns and preventive care

Organizational Benefits

- Ensure safe and optimized operation of key rotating assets
- Reduce maintenance costs through predictive strategies
- Improve plant reliability and equipment availability
- Develop in-house capability to troubleshoot and resolve issues

Instructional Methodology

- Illustrated technical presentations and animation-supported theory
- Case studies from rotating equipment incidents and audits
- Group exercises on fault detection and performance mapping
- Hands-on examples of maintenance planning and vibration analysis
- Daily recap quizzes and interactive Q&A sessions

Course Outline

DETAILED 5-DAY COURSE OUTLINE (CUSTOMIZABLE)

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 Compressors and Turbines

- Module 1: Overview of Rotating Equipment Types & Classifications (07:30 – 09:30)
- Module 2: Principles of Operation – Compressors vs. Turbines (09:45 – 11:15)
- Module 3: Key Components: Impellers, Shafts, Seals, Bearings (11:30 – 01:00)
- Module 4: Basic Thermodynamics & Fluid Dynamics in Operation (02:00 – 03:30)

Day 2: Compressor Systems - Types, Control & Maintenance

- Module 1: Reciprocating Compressors – Operation, Valves, Cylinders (07:30 – 09:30)
- Module 2: Centrifugal Compressors – Surge, Choke, Anti-Surge Control (09:45 – 11:15)
- Module 3: Lube Oil, Sealing Systems, and Cooling Considerations (11:30 – 01:00)
- Module 4: Maintenance Planning and Common Failures (02:00 – 03:30)

Day 3: Turbine Systems - Types, Dynamics & Diagnostics

- Module 1: Steam Turbines – Principles, Blading, and Control Valves (07:30 – 09:30)
- Module 2: Gas Turbines – Combustion Cycle, Cooling, and Fuel Systems (09:45 – 11:15)
- Module 3: Rotor Dynamics and Vibration Behavior (11:30 – 01:00)
- Module 4: Preventive Maintenance and Outage Planning (02:00 – 03:30)

Day 4: Troubleshooting and Performance Optimization

- Module 1: Performance Deviation – Causes and Detection (07:30 – 09:30)
- Module 2: Vibration, Thermal Expansion, Misalignment (09:45 – 11:15)
- Module 3: Instrumentation, Monitoring Systems & Data Interpretation (11:30 – 01:00)
- Module 4: Fault Tree Analysis and Root Cause Techniques (02:00 – 03:30)

Day 5: Reliability Strategies & Case Studies

- Module 1: Condition Monitoring and Predictive Maintenance (07:30 – 09:30)
- Module 2: Maintenance Optimization – RCM, RBI, CMMS Tools (09:45 – 11:15)
- Module 3: Real-World Failure Case Studies and Lessons Learned (11:30 – 01:00)
- Module 4: Final Review, Certification Wrap-Up & Action Planning (02:00 – 03:30)

Certification

Upon successful completion of the course, participants will receive a Certificate of Completion – Compressors & Turbines: Operations & Maintenance. The course supports continuing education for professionals in mechanical, energy, and process industries.

Why Choose MAWA Events

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Interested in running this course for your team?

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