

CENTRIFUGAL COMPRESSOR & STEAM TURBINE: OPERATION, MAINTENANCE & TROUBLESHOOTING PRINCIPLES



OUR ACCREDITATION & PARTNERS



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OVERALL DESCRIPTION:

This course is meticulously designed to equip your team with the practical, hands-on knowledge to move beyond reactive fixes and implement a proactive maintenance and troubleshooting strategy. We'll demystify the complex relationship between these two vital machines, giving you the confidence to ensure maximum efficiency, reliability, and safety across your operations.

Course Objectives:

Upon completion of this course, participants will have the knowledge and skills to:

- Clearly articulate the fundamental operating principles and aerodynamic performance of centrifugal compressors and steam turbines.
- Identify and understand the function of all major components, including bearings, seals, lubrication systems, and control systems.
- Implement best-practice procedures for safe and efficient startup, shutdown, and monitoring of the machinery.
- Develop a robust understanding of proactive and predictive maintenance strategies to minimize operational risks and extend asset life.
- Accurately diagnose and troubleshoot common operational faults and mechanical failures using systematic methods.
- Effectively apply industry-standard safety protocols and environmental regulations related to the equipment's operation and maintenance.

Course Outline:

Foundational Principles & Core Components

- Compressor Aerodynamics & Performance Curves
- Steam Turbine Thermodynamics & Principles
- Detailed Component Breakdown: Impellers, Diaphragms, Rotor Systems, and Casing



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Course Outline:

Instrumentation, Controls & Auxiliary Systems

- Monitoring Instrumentation: Pressure, Temperature, Vibration, and Speed
- Control Systems: Anti-Surge & Governor Controls
- Lubrication and Sealing Systems: Design, Operation & Maintenance

Best Practices in Operation

- Safe Startup and Shutdown Procedures
- Performance Monitoring & Data Analysis
- Load Management & Efficiency Optimization

Maintenance & Reliability Strategies

- Preventive & Predictive Maintenance Techniques
- Vibration Analysis & Condition Monitoring
- Inspection Protocols & Overhaul Procedures

Systematic Troubleshooting & Failure Analysis

- Identifying Common Failures: Surging, Fouling, Bearing Failures
- Developing a Fault Diagnosis Workflow
- Case Studies and Root Cause Analysis (RCA)

WHO SHOULD ATTEND?

- Engineers, technicians, and operators working with centrifugal compressors and steam turbines.
- Maintenance, reliability, and operations staff seeking to improve performance and reduce downtime.
- Supervisors and managers responsible for safe, efficient equipment operation and compliance.

Course Methodology:

We utilize a variety of proven adult learning techniques to ensure maximum understanding, comprehension and retention of the information presented. This training course will be conducted as a highly interactive workshop session. A variety of training methodologies will be used Before and during the course whenever applicable. Some of these methods are gamification, online pre-post test, role plays, self-assessment instruments, group exercises & case studies.

