

STEAM TURBINES & GOVERNING SYSTEM - TURBINE MAINTENANCE & TURBINE OPERATION

“Maximize Turbine Performance – Expert Operation, Maintenance & Reliability for Steam Turbines”

Schedule		
Date	Venue	Fees (Face-to-Face)
15 – 19 Feb 2026	Kuwait	USD 3495 per delegate
02 – 06 Mar 2026	Dubai, UAE	USD 3495 per delegate

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

Introduction

Steam turbines remain the backbone of power generation and mechanical drive systems in various industries. Their continuous, efficient, and safe operation is vital for plant reliability and productivity. Proper maintenance practices and an understanding of turbine governing systems are essential to prevent costly failures and downtime.

This 5-day intensive training provides technical personnel with the knowledge and tools to operate, monitor, troubleshoot, and maintain steam turbines effectively. Participants will gain insights into the mechanical design, performance optimization, failure modes, and governing system mechanisms that control speed and load.

- Objectives
- By the end of this course, participants will be able to:
- Understand the working principles and components of steam turbines
 - Operate turbines under safe and optimal conditions
 - Identify common failure modes and root causes in turbine systems
 - Maintain governing systems and ensure accurate control of speed and load
 - Apply diagnostic techniques to detect mechanical problems early
 - Extend the life cycle of turbines through predictive and preventive maintenance

Why Attend

- Learn practical turbine maintenance and operation techniques from industry experts
- Understand governing systems and control mechanisms in depth
- Avoid unplanned outages and costly turbine failures
- Improve plant safety, reliability, and efficiency
- Apply hands-on tools and checklists for maintenance planning

Target Audience

This program is designed for:

- Mechanical and Maintenance Engineers
- Plant Operators and Turbine Technicians
- Reliability and Asset Management Professionals
- Instrumentation and Control Engineers
- Utility Engineers and Power Plant Supervisors
- Project and Maintenance Managers

Individual Benefits

Participants will develop skills in:

- Interpreting turbine performance data
- Diagnosing common problems and implementing solutions
- Maintaining control and governing systems
- Performing effective shutdown and startup procedures
- Planning routine maintenance and inspections

Organizational Benefits

Organizations will benefit from:

- Reduced turbine downtime and improved reliability
- Extended turbine lifespan through better maintenance practices
- Safer turbine operation with minimal risks
- More skilled and capable technical teams
- Improved energy efficiency and lower maintenance costs

Instructional Methodology

The course follows a blended learning approach combining theory with practice:

- Strategy Briefings – Turbine fundamentals, governing systems, and maintenance strategies
- Case Studies – Real turbine failure incidents and lessons learned
- Workshops – Hands-on diagnostics, vibration analysis, and system checks
- Peer Exchange – Discussions on field experiences and solutions
- Tools – Maintenance checklists, lubrication charts, troubleshooting guides

Course Outline

Detailed 5-Day Course Outline

Training Hours: 07:30 AM – 3:30 PM **Daily Format:** 3–4 Learning Modules | Coffee breaks: 09:30 & 11:15 | Lunch Buffet: 01:00 – 02:00

Day 1: Steam Turbine Basics & Construction

- Module 1: Introduction to Steam Turbines (07:30 – 09:30)
 - Types and applications of steam turbines
 - Thermodynamic principles of steam expansion
- Module 2: Turbine Components & Function (09:45 – 11:15)
 - Rotor, stator, casing, blades, and seals
- Module 3: Turbine Design Considerations (11:30 – 01:00)
 - Pressure, temperature, and material selection
- Module 4: Workshop – Component Identification (02:00 – 03:30)

Day 2: Governing System & Control Mechanisms

- Module 1: Governing System Overview (07:30 – 09:30)
 - Speed and load control fundamentals
- Module 2: Types of Governors (09:45 – 11:15)
 - Mechanical, hydraulic, and electronic governors
- Module 3: Control Valves & Actuation (11:30 – 01:00)
 - Steam admission, trip and throttle valves
- Module 4: Workshop – Governor Troubleshooting (02:00 – 03:30)

Day 3: Operation and Startup Procedures

- Module 1: Safe Startup and Shutdown (07:30 – 09:30)
 - Warm-up rates, rolling procedures, and cooldown
- Module 2: Monitoring and Operation Parameters (09:45 – 11:15)
 - Vibration, temperature, pressure, and speed
- Module 3: Emergency Handling and Interlocks (11:30 – 01:00)
 - Overspeed trips, alarms, and safety controls
- Module 4: Case Study – Startup Failure Event (02:00 – 03:30)

Day 4: Maintenance Practices and Condition Monitoring

- Module 1: Predictive Maintenance Techniques (07:30 – 09:30)
 - Vibration analysis, thermography, and oil analysis
- Module 2: Preventive Maintenance Planning (09:45 – 11:15)
 - Inspection schedules and checklists
- Module 3: Lubrication Systems & Best Practices (11:30 – 01:00)
 - Oil types, filtration, and system flushing
- Module 4: Workshop – Maintenance Plan Development (02:00 – 03:30)

Day 5: Failure Analysis, Diagnostics & Wrap-up

- Module 1: Common Turbine Failures & Root Causes (07:30 – 09:30)
 - Blade cracking, bearing wear, steam leakage
- Module 2: Diagnostic Tools and Analysis (09:45 – 11:15)
 - Root cause analysis, trending, and documentation
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Module 3: Performance Optimization & Upgrades (11:30 – 01:00)

- Retrofit options and reliability improvement
- Module 4: Final Q&A + Course Summary (02:00 – 03:30)

Certification

Participants will receive a Certificate of Completion in Steam Turbine Operation & Maintenance, certifying their skills in turbine mechanics, maintenance planning, and safe operational practices – with a strong focus on governing systems and diagnostics.

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