MAWA EVENTS

Address: No. 857, Block A2. Leisure Commerce Square - No 9., 46150 Petaling Jaya, Selangor, Malaysia

Phone: +601116373203 | **Email:** info@mawaevents.net

TURBINE MAINTENANCE MASTERY: GAS AND STEAM TECHNOLOGIES

"Ensuring Operational Reliability and Performance in Power Generation and Process Industries"

Schedule

Date	Venue	Fees (Face-to-Face)
09 – 13 Nov 2026	London – UK	USD 3495 per delegate

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

Introduction

Gas and steam turbines are critical assets in power plants, petrochemical facilities, and industrial operations. Their reliable performance directly impacts energy efficiency, safety, and output continuity. However, without proper maintenance strategies and troubleshooting techniques, these high-value machines are vulnerable to catastrophic failures and costly downtime.

This advanced-level training course is designed to develop mastery in turbine maintenance. Covering both gas and steam technologies, it equips participants with a deep understanding of turbine components, failure mechanisms, maintenance best practices, and diagnostic techniques to extend equipment life and improve plant reliability.

Objectives

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

- Understand the mechanical and thermodynamic principles of gas and steam turbines
- Identify common faults, wear patterns, and degradation modes in turbine components
- Apply proven preventive, predictive, and condition-based maintenance strategies
- Conduct inspections, alignments, and overhauls using OEM best practices
- Integrate root cause analysis and reliability-centered maintenance (RCM) in turbine care

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Why Attend

- Enhance your technical expertise in turbine operation and maintenance
- Prevent unplanned outages and extend turbine service life
- Learn how to assess vibration, thermal, and acoustic data for early failure detection
- Gain confidence in planning and executing major turbine maintenance events
- Ensure compliance with safety, quality, and OEM maintenance standards

Target Audience

This program is designed for:

- Maintenance and reliability engineers
- Power plant and utility operations personnel
- Mechanical engineers and field technicians
- Rotating equipment specialists
- Asset managers in energy and process sectors

Individual Benefits

Key competencies that will be developed include:

- Troubleshooting and inspection of gas and steam turbine systems
- Precision alignment, balancing, and component diagnostics
- Root cause failure analysis (RCFA) for turbine-related issues
- Shutdown planning and outage execution
- Knowledge of vibration analysis and thermodynamic performance assessment

Organizational Benefits

Upon completing the training course, participants will demonstrate:

- Improved equipment reliability and availability
- Minimized downtime through predictive diagnostics and maintenance optimization
- Better planning of outages and overhauls to control cost and risk
- Increased safety and regulatory compliance in turbine operations
- Enhanced operational efficiency and asset lifecycle management

Instructional Methodology

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

- Strategy Briefings – Design principles, OEM guidelines, and thermodynamic insights
- Case Studies – Real-world failure investigations in gas and steam turbines
- Workshops – Maintenance planning, inspection exercises, and data interpretation
- Peer Exchange – Sharing lessons learned from turbine operation challenges
- Tools – Diagnostic templates, vibration reference charts, outage checklists

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Course Outline

Detailed 5-Day Course Outline

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: Turbine Fundamentals and Operating Principles

- Module 1: Overview of Gas and Steam Turbine Technologies (07:30 – 09:30) • Thermodynamics, energy conversion cycles, and major components
- Module 2: System Layout and Flow Paths (09:45 – 11:15) • Turbine casings, rotors, blades, bearings, seals, and auxiliaries
- Module 3: Workshop – Identify Components from Schematics (11:30 – 01:00) • Hands-on activity using P&IDs and technical drawings
- Module 4: Peer Exchange – Operating Challenges by Industry (02:00 – 03:30) • Group discussion of experience across sectors

Day 2: Common Failures and Inspection Techniques

- Module 5: Turbine Failure Modes and Damage Mechanisms (07:30 – 09:30) • Fatigue, creep, erosion, corrosion, FOD, and thermal distortion
- Module 6: Condition Monitoring and NDT (09:45 – 11:15) • Vibration analysis, oil analysis, thermography, borescope inspections
- Module 7: Workshop – Fault Tree Analysis (11:30 – 01:00) • Troubleshoot sample turbine faults using RCA techniques
- Module 8: Case Study – Blade Fatigue and Crack Propagation (02:00 – 03:30) • In-depth review and discussion of actual incident

Day 3: Maintenance Planning and Outage Execution

- Module 9: Preventive and Predictive Maintenance (07:30 – 09:30) • Inspection intervals, OEM schedules, and risk-based maintenance
- Module 10: Planning for Major Overhauls (09:45 – 11:15) • Resource planning, logistics, parts, and workforce coordination
- Module 11: Workshop – Maintenance Schedule Optimization (11:30 – 01:00) • Develop a maintenance timeline and work package
- Module 12: Peer Exchange – Lessons from Planned Outages (02:00 – 03:30) • Group sharing of best practices and pitfalls

Day 4: Alignment, Balancing, and Performance Optimization

- Module 13: Alignment and Balancing of Rotors (07:30 – 09:30) • Precision shaft alignment and vibration balancing procedures
- Module 14: Thermodynamic and Efficiency Assessment (09:45 – 11:15) • Heat rate, flow path optimization, and exhaust losses
- Module 15: Workshop – Troubleshooting Misalignment and Vibration (11:30 – 01:00) • Interpret vibration signatures and alignment data
- Module 16: Case Study – Turbine Performance Degradation (02:00 – 03:30) • Analyze indicators and corrective actions

Day 5: Safety, Documentation, and Certification Readiness

- Module 17: Safety Procedures and Permit-to-Work (07:30 – 09:30) • Isolation, lockout-tagout, confined space entry in turbine work
- Module 18: Quality Assurance and Documentation (09:45 – 11:15) • Inspection reports, alignment logs, and regulatory compliance
- Module 19: Final Project – Maintenance Strategy Plan (11:30 – 01:00) • Team-based development of a turbine maintenance strategy
- Module 20: Wrap-Up, Feedback, and Certification (02:00 – 03:30) • Course summary and certificate awarding

Certification

Participants will receive a Certificate of Completion in Turbine Maintenance Mastery: Gas and Steam Technologies, validating their expertise in maintaining and optimizing turbine systems across industrial and power generation settings.

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Why Choose MAWA Events

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In-House / Customized Training Interested in running this course for your team? Please contact us:	TEL: **+601116373203**	EMAIL: **info@mawaevents.net**