MAWA EVENTS

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

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STEAM TURBINE OPERATIONS, MAINTENANCE & TROUBLESHOOTING

"Mastering Steam Turbine Operations, Preventive Maintenance, and Advanced Troubleshooting Techniques"

Schedule

Date	Venue	Fees (Face-to-Face)
12 – 16 Jul 2026	Doha, Qatar	USD 3,495 per delegate
03 – 07 Aug 2026	Dubai, UAE	USD 3,495 per delegate
20 – 24 Sep 2026	Manama, Bahrain	USD 3,495 per delegate
05 – 09 Oct 2026	London, UK	USD 3,495 per delegate

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

Introduction

Steam turbines are a critical component in power generation, industrial processes, and marine propulsion systems. Proper operation, routine maintenance, and effective troubleshooting of steam turbines are essential to ensure long-term performance, reliability, and energy efficiency. This 5-day intensive course is designed to provide participants with the knowledge and skills required to optimize the performance of steam turbines, implement preventive maintenance strategies, and resolve complex operational issues.

The course includes in-depth theoretical insights, hands-on troubleshooting techniques, and practical solutions to common steam turbine problems. Participants will learn to enhance their troubleshooting capabilities and extend the lifespan of steam turbines through effective maintenance practices.

Objectives

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

- Understand the fundamental principles and components of steam turbines
- Optimize steam turbine performance through regular maintenance and monitoring
- Diagnose common operational issues and implement effective troubleshooting techniques
- Apply advanced methods for troubleshooting turbine failures and performance degradation
- Develop preventive maintenance programs to enhance turbine reliability and reduce downtime

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Why Attend

- Learn to optimize steam turbine efficiency and performance
- Gain practical knowledge of advanced troubleshooting techniques and tools
- Understand how to design and implement effective preventive maintenance plans
- Reduce operational costs and extend the life of steam turbines through proper care and maintenance
- Enhance your expertise in diagnosing and resolving steam turbine-related issues
- Improve your ability to manage and lead teams responsible for turbine operations and maintenance

Target Audience

This program is designed for:

- Power plant engineers, operators, and technicians
- Mechanical engineers and technicians working with steam turbines
- Maintenance managers and supervisors in energy and industrial sectors
- Operators and engineers involved in turbine diagnostics, repair, and performance optimization
- Anyone responsible for the operation, maintenance, and troubleshooting of steam turbines

Individual Benefits

Key competencies that will be developed include:

- In-depth knowledge of steam turbine theory, components, and operation
- Skills to troubleshoot and resolve common turbine performance issues
- Enhanced understanding of preventive maintenance strategies for steam turbines
- Proficiency in using diagnostic tools and techniques for turbine troubleshooting
- Ability to develop and implement effective maintenance plans to optimize turbine performance

Organizational Benefits

Upon completing the training course, participants will demonstrate:

- Improved turbine reliability and performance through better maintenance practices
- Reduced downtime and operational costs by addressing issues before they escalate
- Enhanced troubleshooting skills to quickly resolve turbine-related problems
- Better resource management in turbine operations, leading to cost savings
- A more skilled and knowledgeable team capable of optimizing steam turbine efficiency

Instructional Methodology

The course follows a blended learning approach combining theory with practical application:

- Strategy Briefings – Overview of steam turbine theory, components, and operations
- Case Studies – Real-world examples of steam turbine troubleshooting and maintenance practices
- Workshops – Hands-on practice with diagnostic tools and turbine troubleshooting scenarios
- Peer Exchange – Group discussions on challenges, best practices, and solutions for steam turbine operations
- Tools – Maintenance checklists, troubleshooting guides, and diagnostic tools

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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: Introduction to Steam Turbines and Operations

- Module 1: Understanding Steam Turbine Fundamentals (07:30 – 09:30) • Basic principles of steam turbines and thermodynamics • Key components: rotor, stator, casing, bearings, seals, and controls • Overview of steam cycle and turbine operation
- Module 2: Turbine Types and Applications (09:45 – 11:15) • Different types of steam turbines: impulse vs. reaction turbines • Applications in power generation, industrial processes, and marine propulsion • Operating characteristics and performance expectations
- Module 3: Monitoring and Performance Optimization (11:30 – 01:00) • Key performance indicators (KPIs) for steam turbines • Monitoring techniques: temperature, pressure, vibration, and efficiency • Optimization strategies for improving turbine performance
- Workshop – Turbine Operation Simulation (02:00 – 03:30) • Hands-on practice with turbine operation monitoring and performance analysis • Group discussion on turbine performance optimization strategies

Day 2: Maintenance and Preventive Strategies

- Module 1: Preventive Maintenance for Steam Turbines (07:30 – 09:30) • Developing and implementing a preventive maintenance schedule • Key maintenance tasks: lubrication, cleaning, alignment, and balancing • Inspection techniques to detect early signs of wear and tear
- Module 2: Identifying Common Issues in Steam Turbines (09:45 – 11:15) • Common causes of steam turbine failures: vibration, overheating, corrosion, and erosion • Troubleshooting routine issues and preventative measures • Monitoring and maintaining critical components: bearings, seals, and blades
- Module 3: Overhaul and Component Replacement (11:30 – 01:00) • Guidelines for turbine overhauls and major component replacements • Disassembly, inspection, and reassembly processes • Best practices for minimizing downtime during maintenance and repairs
- Workshop – Preventive Maintenance Planning (02:00 – 03:30) • Create a preventive maintenance plan for a steam turbine system • Group review and discussion of maintenance plan strategies

Day 3: Advanced Troubleshooting Techniques

- Module 1: Diagnosing Performance Degradation (07:30 – 09:30) • Common performance issues: low efficiency, vibrations, pressure fluctuations • Advanced diagnostic tools and techniques for identifying problems • Using vibration analysis, thermography, and oil analysis to detect issues
- Module 2: Steam Turbine Failure Modes and Root Cause Analysis (09:45 – 11:15) • Identifying and analyzing root causes of steam turbine failures • Conducting root cause analysis (RCA) and failure mode effects analysis (FMEA) • Troubleshooting strategies for resolving turbine performance issues
- Module 3: Repair and Restoration of Steam Turbines (11:30 – 01:00) • Repair techniques for common turbine components: blades, seals, and rotors • Restoring turbine efficiency after damage or wear • Managing repair processes and ensuring quality control
- Workshop – Advanced Troubleshooting Exercise (02:00 – 03:30) • Hands-on troubleshooting scenarios for diagnosing and repairing turbine issues • Group collaboration on identifying and addressing turbine performance issues

Day 4: Steam Turbine Efficiency and Performance Optimization

- Module 1: Efficiency Improvements in Steam Turbines (07:30 – 09:30) • Techniques for improving turbine efficiency: steam temperature, pressure, and flow control • Balancing steam conditions for optimal turbine performance • Energy conservation strategies in turbine operations
- Module 2: Advanced Control Systems for Steam Turbines (09:45 – 11:15) • Understanding modern control systems and digital monitoring tools • Integrating advanced control systems for precise operation and efficiency • Remote monitoring and diagnostic capabilities in steam turbine systems
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Module 3: Turbine Performance Testing and Troubleshooting (11:30 – 01:00) • Performance testing procedures and standards for steam turbines • Analyzing test results to identify performance gaps • Corrective actions to improve turbine efficiency and reliability

- Workshop – Performance Testing and Troubleshooting (02:00 – 03:30) • Simulate performance testing and troubleshooting based on real turbine data • Group feedback and strategies for optimizing turbine performance

Day 5: Steam Turbine Life Extension and Future Trends

- Module 1: Extending the Life of Steam Turbines (07:30 – 09:30) • Strategies for prolonging the lifespan of steam turbines • Maintenance and operational practices for longevity • Enhancing the resilience and reliability of aging turbines
- Module 2: Emerging Technologies in Steam Turbine Design and Operation (09:45 – 11:15) • Innovations in turbine technology: high-efficiency designs, advanced materials • Smart turbines: integrating IoT and AI for predictive maintenance • Future trends in turbine optimization and digitalization
- Module 3: Risk Management and Safety in Turbine Operations (11:30 – 01:00) • Risk management strategies for steam turbine operations • Safety protocols and standards in turbine maintenance and operation • Managing environmental impacts and compliance with regulations
- Final Workshop – Turbine Life Extension and Strategy Planning (02:00 – 03:30) • Develop a life extension and optimization strategy for steam turbines • Group presentation and feedback on strategic planning

Certification

Participants will receive a Certificate of Completion in Steam Turbine Operations, Maintenance & Troubleshooting, confirming their expertise in optimizing turbine performance, performing advanced troubleshooting, and implementing effective maintenance strategies.

Why Choose MAWA Events

- **Global Expertise:** More than 17 years of experience in professional training and consulting.
- **Industry-Leading Faculty:** Courses delivered by seasoned professionals with hands-on experience.
- **Practical Insights:** Learn to turn theory into actionable strategies for real-world business impact.
- **Client-Focused Solutions:** Customized programs designed to achieve your organisation’s unique goals.

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