MAWA EVENTS

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

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TURBINES OVERVIEW – GE & SOLAR TYPE FOR GAS DISTRIBUTION & COMPRESSION

"Comprehensive Understanding of GE and Solar Turbine Technologies in Gas Transmission and Compression Operations"

Schedule

Date	Venue	Fees (Face-to-Face)
24 – 28 Aug 2026	London, UK	USD 3495 per delegate

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

Introduction

Gas turbines, especially those manufactured by GE and Solar, are essential drivers in modern gas distribution and compression systems. These machines are critical for energy efficiency, reliability, and operational flexibility in the oil and gas industry. Understanding the principles, design, operation, and maintenance of these turbines is vital for engineers and operators tasked with maintaining optimum plant performance.

This course provides an in-depth overview of GE and Solar-type turbines, including design features, performance parameters, operation principles, and best practices for inspection, troubleshooting, and maintenance. It ensures participants gain practical and technical insights into turbine systems used in gas transmission.

Objectives

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

- Understand the operational principles of GE and Solar turbines used in gas distribution and compression
- Identify key components, configurations, and system integrations
- Analyze performance characteristics and efficiency metrics
- Perform basic troubleshooting and recognize early signs of operational issues
- Apply maintenance best practices to ensure turbine longevity and reliability

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Why Attend

- Learn from real-world turbine system operations and case studies
- Gain technical confidence in handling GE and Solar turbine systems
- Improve plant reliability through better turbine performance understanding
- Reduce downtime by mastering troubleshooting and maintenance strategies
- Enhance compliance and safety in gas compression and distribution operations

Target Audience

This program is designed for:

- Mechanical and rotating equipment engineers
- Maintenance and reliability engineers
- Plant operations and instrumentation personnel
- Energy and utilities engineers
- Professionals involved in gas pipeline and compression facilities

Individual Benefits

Key competencies that will be developed include:

- Strong knowledge of turbine mechanics and thermodynamics
- Ability to interpret operational parameters and technical data
- Proficiency in preventive and predictive maintenance practices
- Diagnostic skills to address operational anomalies
- Understanding of turbine alignment, vibration analysis, and control systems

Organizational Benefits

Upon completing the training course, participants will demonstrate:

- Improved turbine availability and performance across operations
- Reduced maintenance costs through optimized procedures
- Better workforce capacity to handle turbine-related challenges
- Enhanced safety and reliability in gas distribution systems
- Support for efficient energy utilization and regulatory compliance

Instructional Methodology

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

- Strategy Briefings – Deep dive into GE and Solar turbine design, performance, and gas compression integration
- Case Studies – Field applications and diagnostic reviews of turbine operations
- Workshops – Hands-on turbine component analysis, troubleshooting, and performance review
- Peer Exchange – Collaborative discussions on challenges and lessons learned from turbine operations
- Tools – Diagnostic charts, maintenance schedules, and performance evaluation templates

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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 Gas Turbines and Operational Context

- Module 1: Overview of Gas Turbines in the Oil & Gas Sector (07:30 – 09:30)
- Role of turbines in gas transmission and compression
- Thermodynamic cycles and working principles
- Key performance metrics and fuel types
- Module 2: Types and Configurations of Gas Turbines (09:45 – 11:15)
- Simple-cycle vs. combined-cycle turbines
- Mechanical drive vs. generator drive
- Layout and functional blocks
- Module 3: Safety Considerations and Control Systems (11:30 – 01:00)
- Turbine safety mechanisms and shutdown systems
- Vibration, temperature, and pressure control loops
- Control panels and operator interfaces
- Module 4: Workshop – Gas Turbine Functional Mapping (02:00 – 03:30)
- Mapping turbine components to function
- Safety interlock examples and exercises
- Q&A session

Day 2: GE Turbines – Design, Operation, and Maintenance

- Module 1: Introduction to GE Turbine Models (07:30 – 09:30)
- Commonly used GE turbines in gas compression
- Component features and unique design aspects
- Performance characteristics
- Module 2: Operation and Control Systems (09:45 – 11:15)
- GE turbine startup and shutdown procedures
- Monitoring and remote operation
- Troubleshooting control systems
- Module 3: Maintenance and Inspection Practices (11:30 – 01:00)
- Routine and condition-based maintenance
- Bearing, seal, and blade inspections
- Hot gas path evaluation
- Module 4: Case Study – GE Turbine Incident Analysis (02:00 – 03:30)
- Analysis of a turbine failure scenario
- Fault tree and root cause analysis
- Group discussion

Day 3: Solar Turbines – Overview and System Integration

- Module 1: Solar Turbine Product Range (07:30 – 09:30)
- Solar Mars, Taurus, and Centaur models
- Application in pipeline compression
- Key performance specifications
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Module 2: Design Features and Efficiency Metrics (09:45 – 11:15)

- Compressor and combustor designs
- Turbine stage efficiency analysis
- Fuel consumption and emission profiles
- Module 3: Maintenance and Diagnostic Tools (11:30 – 01:00)
- Diagnostic software and remote monitoring
- Blade health, vibration analysis, and thermal imaging
- Planned overhaul and spare part management
- Module 4: Workshop – Comparing GE and Solar Turbine Features (02:00 – 03:30)
- Performance comparison matrix
- O&M implications of design differences
- Participant presentations

Day 4: Troubleshooting and Operational Challenges

- Module 1: Common Operational Problems (07:30 – 09:30)
- Vibration and misalignment
- Inlet guide vane malfunction
- Combustion instabilities
- Module 2: Diagnostic Approaches and Tools (09:45 – 11:15)
- Thermodynamic analysis
- Borescope inspections
- Data logging and trend evaluation
- Module 3: Alignment and Commissioning Practices (11:30 – 01:00)
- Proper alignment techniques
- Commissioning protocols
- Baseline performance checks
- Module 4: Case Study – Solving a Start-Up Issue (02:00 – 03:30)
- Reviewing a real case scenario
- Step-by-step fault isolation
- Corrective actions and verification

Day 5: Performance Optimization and Future Trends

- Module 1: Performance Evaluation and Benchmarking (07:30 – 09:30)
- Load profile analysis
- Heat rate and output monitoring
- Degradation indicators
- Module 2: Efficiency Improvement Techniques (09:45 – 11:15)
- Advanced controls and tuning
- Emissions management
- Fuel optimization
- Module 3: Emerging Trends in Turbine Technology (11:30 – 01:00)
- Hydrogen-ready turbines
- Digital twins and AI diagnostics
- Enhanced materials and coatings
- Module 4: Final Assessment and Certification (02:00 – 03:30)

Recap and knowledge review

- Group discussion and Q&A
- Course wrap-up and certificate distribution

Certification

Participants will receive a Certificate of Completion in Gas Turbine Technologies – GE & Solar Overview, recognizing their knowledge in turbine operation, troubleshooting, maintenance, and performance management in gas compression and distribution systems.

Why Choose MAWA Events

- **Global Expertise:** More than 17 years of experience in professional training and consulting.
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