MERCURY

Gas & Steam Turbine Course

17 - 21 Feb 2025
Paris (France)

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Gas & Steam Turbine Course

Ref.: 15564_315113 **Date:** 17 - 21 Feb 2025 **Location:** Paris (France) **Fees:** 5500 **Euro**

Introduction:

A Gas & Steam Turbine course typically introduces the fundamental principles, design, operation, and maintenance of gas and steam turbines used in power generation and other industrial applications.

Gas and steam turbine training is essential for engineers, technicians, and operators in power generation, energy, and related industries.

This centrifugal Gas and steam turbine course will familiarize engineers, technicians, and operators with the guidelines and best practices for utilizing this equipment, including design, operation, maintenance, and repair. The emphasis of the training seminar will be on a physical understanding of the problems in operation and the best way of troubleshooting them.

This centrifugal Gas and steam turbine course will feature the importance of proper design, operation, and maintenance of various designs and applications of centrifugal Gas and steam turbines throughout chemical and process industries, including oil refineries, gas production facilities, power generation, and other engineering fields.

Targeted Groups:

The training is for:

- Chemical, Process, and Mechanical Engineers.
- Product Engineers and Technologists.
- The Operation, Technical Service, and Maintenance Professionals.
- Engineers, Consultants, and Sales Professionals.
- Technical Professionals are responsible for interdisciplinary energy projects.

Training Objectives:

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

- Understand fundamental thermodynamic principles for gas and steam turbine operation, including energy conversion, efficiency, and performance metrics.
- Learn turbine system components, configurations, and working principles for gas turbines, steam turbines, and combined cycle systems.
- Acquire knowledge and techniques to optimize turbine system performance, maximize efficiency, and improve operational reliability.
- Develop turbine maintenance, inspection, repair, and troubleshooting skills for safe and reliable operation.
- Understand safety protocols, risk management practices, and turbine operation and maintenance compliance requirements.
- Stay updated on advanced turbine technologies, innovations, and emerging trends in the industry.
- Gain hands-on experience through practical exercises, lab sessions, simulations, and case

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studies.
- Equip participants with skills, expertise, and credentials for career advancement in turbine engineering and related fields.
- Foster a continuous learning, adaptation, and innovation culture in the turbine industry.
- Facilitate networking and collaboration opportunities among participants, industry experts, and stakeholders.

Targeted Competencies:

- Technical Knowledge:
  - Understand thermodynamic principles for energy conversion and efficiency metrics.
  - Know gas turbine, steam turbine, and combined cycle system components and working principles.
  - Familiarize yourself with advanced turbine technologies, materials, and emerging trends.
- Operational Skills:
  - Proficient in turbine startup, shutdown, and load control.
  - Interpret performance data, diagnose issues, and implement corrective actions.
  - Apply operational best practices for efficiency, reliability, and safety.
- Maintenance and Troubleshooting:
  - Competent in turbine maintenance, including inspection and repair.
  - Proficient in troubleshooting to minimize downtime and maximize availability.
  - Understand preventive and predictive maintenance strategies.
- Safety and Compliance:
  - Know safety protocols, risk management, and compliance requirements.
  - Implement environmental regulations and workplace safety standards.
  - Conduct risk assessments and implement safety improvements.
- Analytical and Problem-Solving Skills:
  - Analyze performance data and identify optimization opportunities.
  - Apply problem-solving methodologies to address operational issues.
  - Make data-driven decisions for improved performance and reliability.
- Communication and Collaboration:
  - Effectively communicate technical information and collaborate with stakeholders.
  - Work in multidisciplinary teams to solve turbine-related problems.
  - Facilitate knowledge sharing and mentoring within the organization.
- Continuous Learning and Adaptation:
  - Commit to continuous learning and staying updated on turbine technology.
  - Adapt to industry trends, market demands, and technological innovations.
  - Drive innovation in turbine design, operation, and maintenance.

Course Content:

Unit 1. Gas & Steam Turbine Fundamentals:

- Intro to gas turbines: basic principles, components, and operation.
- Learn about types of gas turbines: aero-derivative, heavy-duty, and industrial.
- Learn about thermodynamics and gas turbine cycles, such as the Brayton cycle and efficiency calculations.
- Understand performance parameters and metrics: power output, efficiency, and heat rate.
- Know the basics of steam turbine operation and components.
- Learn about the types of steam turbines impulse and reaction.
- Apply and industries where steam turbines.

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Unit 2. Gas & Steam Turbine Maintenance Practices:

- Explore preventive maintenance: inspection schedules, planning, and predictive maintenance techniques vibration analysis, thermography, and oil analysis.
- Explore corrective maintenance: troubleshooting, fault diagnosis, root cause analysis, and repair techniques.
- Overhaul procedures: disassembly, cleaning, inspection, component repair/replacement, reassembly, and testing.
- Explain component replacement and refurbishment practices for gas and steam turbines.
- Health, safety, and environmental considerations include handling hazardous materials, confined space entry, noise and vibration exposure, and emissions control.

Unit 3. Operational Considerations and Troubleshooting:

- Learn about startup and shutdown procedures: sequence of operations, safety checks, and monitoring parameters.
- Know the Performance monitoring and optimization: efficiency monitoring, load balancing, and component degradation analysis.
- Common failure modes and troubleshooting techniques: compressor fouling, turbine blade erosion, combustion instability, control system malfunctions.

Unit 4. Case Studies and Practical Exercises:

- Real-world case studies: analysis of actual maintenance challenges, failures, and solutions.
- Hands-on practical exercises: disassembly and assembly of turbine components, use of diagnostic tools, simulated troubleshooting scenarios.

Unit 5. Emergency Response and Recovery:

- Emergency shutdown procedures.
- Understand the response to abnormal operating conditions overspeed, flameout.
- Contingency planning for critical failures.

Unit 6. Alignment and Balancing:

- Know the importance of proper alignment and balancing for turbine performance.
- Understand techniques for shaft alignment and rotor balancing.

Unit 7. Diagnostic Tools and Technologies:

- Intro to diagnostic equipment vibration analysis, thermography, borescope inspection.
- Interpret of diagnostic data and trends.
- Use of condition monitoring systems for predictive maintenance.

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Registration form on the :
Gas & Steam Turbine Course

code: 15564 **From:** 17 - 21 Feb 2025 **Venue:** Paris (France) **Fees:** 5500 **Euro**

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