

## ADVANCED APPLICATION OF STANDARDS IN BOILER, PRESSURE VESSEL & PIPING SYSTEMS

“Mastering the Application of Industry Standards for Safe and Efficient Design, Installation, and Maintenance of Boilers, Pressure Vessels, and Piping Systems”

### Schedule

Date	Venue	Fees (Face-to-Face)
19 - 23 Jul 2026	Doha, Qatar	USD 3495 per delegate
06 - 10 Dec 2026	Doha, Qatar	USD 3495 per delegate

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

### Introduction

The safe design, operation, and maintenance of boilers, pressure vessels, and piping systems are crucial for the prevention of accidents and the optimization of system performance in industries such as oil & gas, power generation, manufacturing, and petrochemical. The application of internationally recognized standards, such as ASME, API, and ISO, is essential for ensuring compliance with safety regulations and achieving high operational efficiency.

This 5-day advanced training course is designed for engineers, inspectors, and maintenance professionals who work with boilers, pressure vessels, and piping systems. Participants will gain a deep understanding of the key international standards for these systems, focusing on their application in design, construction, testing, inspection, and maintenance. This course will also cover best practices for addressing challenges related to corrosion, material selection, and pressure testing.

### Objectives

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

- Understand the key international standards applicable to boilers, pressure vessels, and piping systems (e.g., ASME, API, ISO)
- Apply these standards to ensure the safe and efficient design, installation, operation, and maintenance of pressure systems
- Conduct thorough inspections and assessments of boilers, pressure vessels, and piping systems in compliance with industry regulations
- Identify and mitigate risks associated with system failure, corrosion, and material degradation
- Understand pressure testing, safety protocols, and regulatory compliance requirements for system operation
- Address common operational issues in these systems through adherence to standards and best practices

## Why Attend

- Gain a thorough understanding of the most widely used industry standards for boilers, pressure vessels, and piping systems
- Learn how to apply these standards in real-world engineering and maintenance practices
- Enhance your ability to perform critical inspections, risk assessments, and safety evaluations
- Develop the skills to address common challenges and issues in the operation and maintenance of pressure systems
- Prepare for advanced roles in engineering, quality assurance, and system inspections within highly regulated industries

## Target Audience

### This program is designed for:

- Engineers and technical professionals working with boilers, pressure vessels, and piping systems
- Maintenance managers and supervisors in power generation, oil & gas, and manufacturing sectors
- Inspectors and quality assurance personnel responsible for compliance with safety standards
- Project managers and consultants working on design, installation, or operation of pressure systems
- Anyone seeking to deepen their knowledge and skills related to the safe operation and maintenance of pressure systems

## Individual Benefits

### Key competencies that will be developed include:

- In-depth understanding of international standards for boilers, pressure vessels, and piping systems
- Ability to apply these standards to real-world engineering, construction, and maintenance scenarios
- Enhanced ability to assess system performance and identify potential risks or failures
- Proficiency in conducting inspections, audits, and compliance assessments for pressure systems
- Increased competence in troubleshooting and resolving common operational challenges

## Organizational Benefits

### Upon completing the training course, participants will demonstrate:

- Improved safety and compliance with industry standards in the design, operation, and maintenance of pressure systems
- Increased efficiency and reduced downtime through adherence to best practices
- Enhanced ability to detect and prevent issues related to system failures, corrosion, and material degradation
- Stronger leadership and technical capability in managing pressure systems and ensuring safe operations
- Better risk management strategies and more effective implementation of maintenance programs

## Instructional Methodology

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

- **Strategy Briefings** - Key standards and their application to boilers, pressure vessels, and piping systems
- **Case Studies** - Real-world examples of the successful application and challenges of these standards in the field
- **Workshops** - Practical exercises on applying standards to pressure systems design, inspection, and maintenance
- **Peer Exchange** - Group discussions on best practices, common challenges, and industry trends
- **Tools** - Templates, checklists, and performance assessment frameworks for pressure systems management

## MAWA EVENTS

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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 Pressure Systems and Key Standards

- **Module 1: Overview of Pressure Systems (07:30 – 09:30)**
  - What are pressure systems and their significance in industrial applications?
  - Types of pressure systems: Boilers, Pressure Vessels, and Piping Systems
  - The role of ASME, API, and ISO standards in ensuring safety and efficiency
- **Module 2: Key International Standards for Boilers and Pressure Vessels (09:45 – 11:15)**
  - Introduction to ASME Boiler and Pressure Vessel Code (BPVC)
  - Key sections and their application in design, construction, and inspection
  - Overview of API standards for pressure vessels in the oil and gas industry
- **Module 3: Material Selection and Design Principles (11:30 – 01:00)**
  - The importance of material selection in pressure systems design
  - Key considerations for material properties: strength, corrosion resistance, and fatigue
  - Design principles for boilers and pressure vessels based on ASME and ISO standards
- **Module 4: Workshop – Standards Application and Material Selection (02:00 – 03:30)**
  - Participants will work in groups to analyze a sample boiler or pressure vessel design and select materials based on given standards
  - Group presentations and feedback on material selection and design principles

#### DAY 2: Pressure Testing, Safety Protocols, and System Maintenance

- **Module 5: Pressure Testing and Safety Protocols (07:30 – 09:30)**
  - The role of pressure testing in ensuring system integrity
  - Methods for pressure testing: hydrostatic and pneumatic testing
  - Safety protocols during pressure testing and system operation
- **Module 6: Inspecting Pressure Systems for Compliance (09:45 – 11:15)**
  - How to conduct inspections on boilers, pressure vessels, and piping systems
  - Key components to inspect: welds, seals, valves, and pressure gauges
  - Ensuring compliance with ASME and ISO inspection standards
- **Module 7: Maintenance Strategies for Pressure Systems (11:30 – 01:00)**
  - Preventative and predictive maintenance for pressure systems
  - Common issues in pressure systems: corrosion, wear, and cracking
  - Techniques for maintaining system efficiency and extending the lifecycle of equipment
- **Module 8: Workshop – Pressure Testing and Maintenance Planning (02:00 – 03:30)**
  - Participants design a maintenance plan for a sample pressure system, including testing and inspection schedules
  - Group discussions on troubleshooting and maintenance challenges

#### DAY 3: Corrosion Management and Risk Mitigation

- **Module 9: Understanding Corrosion in Pressure Systems (07:30 – 09:30)**
  - Causes and types of corrosion in boilers, pressure vessels, and piping systems
  - Identifying signs of corrosion and its impact on system integrity
  - Methods for corrosion control and mitigation
- **Module 10: Risk Assessment and Management in Pressure Systems (09:45 – 11:15)**
  - Conducting a risk assessment for pressure systems
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Identifying potential hazards and evaluating their impact on system safety

- Developing a risk management plan for pressure systems
- **Module 11: Case Studies in Corrosion and Risk Management** (11:30 – 01:00)
- Real-world examples of pressure system failures due to corrosion and poor risk management
- Lessons learned from past incidents and best practices for avoiding similar issues
- **Module 12: Workshop – Corrosion Management and Risk Mitigation** (02:00 – 03:30)
- Participants work on identifying corrosion risks in a case study and developing a risk mitigation strategy
- Group presentations and feedback on risk management strategies

#### **DAY 4: Advanced Applications of Pressure Vessel and Piping System Standards**

- **Module 13: Advanced Applications of ASME Code in Pressure Vessel Design** (07:30 – 09:30)
- Advanced topics in pressure vessel design using ASME BPVC
- Design considerations for high-pressure, high-temperature systems
- Using the ASME code for complex and custom pressure vessels
- **Module 14: Piping System Design and Code Compliance** (09:45 – 11:15)
- Design of piping systems in compliance with ASME B31.3 and B31.1
- Pressure and temperature considerations for piping materials and design
- Stress analysis and fatigue in piping systems
- **Module 15: Welding and Inspection in Pressure Systems** (11:30 – 01:00)
- Welding techniques for boilers, pressure vessels, and piping systems
- Inspecting welds and joints for quality and integrity
- Non-destructive testing (NDT) methods for pressure systems
- **Module 16: Workshop – Advanced Design and Inspection Techniques** (02:00 – 03:30)
- Participants apply ASME codes to design a complex pressure system and plan an inspection process
- Group feedback on design, inspection, and quality control strategies

#### **DAY 5 – Regulatory Compliance, Final Inspections, and System Certification**

- **Module 17: Regulatory Compliance and Documentation** (07:30 – 09:30)
- Understanding regulatory compliance in pressure system operations
- Preparing the necessary documentation for certification and inspection
- Compliance with international standards and local regulations
- **Module 18: Final Inspections and Pressure System Certification** (09:45 – 11:15)
- Final inspections before pressure system commissioning
- Preparing for and managing certification audits
- Ensuring ongoing compliance through continuous monitoring
- **Module 19: Best Practices in Pressure System Maintenance and Performance** (11:30 – 01:00)
- Developing best practices for long-term performance monitoring and maintenance
- Optimizing the performance of pressure systems throughout their lifecycle
- Using performance data to inform maintenance decisions
- **Module 20: Final Workshop – Pressure System Certification and Compliance Review** (02:00 – 03:30)
- Participants work through a final case study to develop a complete pressure system compliance and certification plan
- Group presentations and feedback on compliance strategies and final inspections

### Certification

Participants will receive a **Certificate of Completion in Advanced Application of Standards in Boiler, Pressure Vessel & Piping Systems**, validating their expertise in applying industry standards to the design, inspection, and maintenance of pressure systems.

### Why Choose MAWA Events

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