MAWA EVENTS

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

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

BASICS & PRINCIPLES OF COMPRESSOR - DYNAMIC & POSITIVE DISPLACEMENT (RECIPROCATING / ROTARY) COMPRESSOR TYPES

""Understanding Compressor Types, Operation & Maintenance for Reliable Plant Performance""

Schedule

Date	Venue	Fees (Face-to-Face)
02 – 06 Mar 2026	Dubai, UAE	USD 3495 per delegate

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

Introduction

Compressors are critical components in a wide range of industrial applications—from oil and gas to manufacturing and utilities. Understanding the fundamental principles behind compressor operation, types, and performance characteristics is essential for engineers, technicians, and operators involved in system design, maintenance, or troubleshooting.

This intensive 5-day training course offers in-depth knowledge of both dynamic and positive displacement compressors, including reciprocating and rotary types. Participants will learn how different compressors function, how to evaluate their performance, and how to ensure reliability and safety through best maintenance practices.

Objectives

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

- Understand the operational principles of dynamic and positive displacement compressors
- Distinguish between reciprocating, rotary screw, and centrifugal compressors
- Interpret compressor curves, efficiency parameters, and selection criteria
- Identify common faults, performance issues, and causes of failure
- Apply maintenance best practices for reliable and safe compressor operation

MAWA EVENTS

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

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

Why Attend

- To gain foundational and practical knowledge of industrial compressor systems
- To enhance your technical ability to select, operate, and maintain various compressor types
- To reduce the risk of failures, downtime, and inefficiencies
- To support safe and energy-efficient operations in plant and field environments
- To build confidence in troubleshooting compressor problems

Target Audience

This program is designed for:

- Maintenance and mechanical engineers
- Rotating equipment specialists and technicians
- Process and reliability engineers
- Plant operations and utility staff
- Anyone involved in selecting, operating, or maintaining compressors

Individual Benefits

Key competencies that will be developed include:

- Understanding compressor principles and performance curves
- Differentiating between various compressor technologies
- Troubleshooting operational problems in compressors
- Applying lubrication, cooling, and vibration control methods
- Planning preventive maintenance and inspection programs

Organizational Benefits

Upon completing the training course, participants will demonstrate:

- Increased equipment uptime and reduced maintenance costs
- Improved energy efficiency in compressed air systems
- Fewer failures through predictive and preventive maintenance
- Better compressor selection and system integration decisions
- Enhanced safety and reliability of plant operations

Instructional Methodology

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

- Strategy Briefings – Explanation of core compressor types and working principles
- Case Studies – Examples of compressor failure modes and performance analysis
- Workshops – Interactive exercises for system diagnostics and selection calculations
- Peer Exchange – Discussion of plant-specific compressor challenges
- Tools – Compressor data sheets, troubleshooting guides, and maintenance checklists

MAWA EVENTS

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

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

MAWA EVENTS

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

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

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: Compressor Fundamentals and Classifications

- Module 1: Introduction to Compression Principles (07:30 – 09:30) • Basic thermodynamics of gas compression • Compressor definitions and classifications • Overview of compression system components
- Module 2: Types of Compressors – Overview (09:45 – 11:15) • Positive displacement vs. dynamic compressors • Reciprocating, rotary screw, scroll, vane, and centrifugal types • Comparison of working cycles and applications
- Module 3: Compressor Selection Criteria (11:30 – 01:00) • Pressure, flow, and duty cycle considerations • Compressor performance maps and efficiency curves • Sizing and application alignment
- Module 4: Workshop – Selecting the Right Compressor (02:00 – 03:30) • Case study with selection decision-making exercise

Day 2: Positive Displacement – Reciprocating Compressors

- Module 1: Reciprocating Compressor Design & Operation (07:30 – 09:30) • Working mechanism and cycle stages • Single-stage vs. multi-stage systems • Valves, cylinders, pistons, and crankshaft components
- Module 2: Performance Monitoring and Measurement (09:45 – 11:15) • Flow rate, compression ratio, volumetric efficiency • Indicated vs. brake power • Vibration and noise diagnostics
- Module 3: Common Failures and Maintenance Practices (11:30 – 01:00) • Wear, leaks, overloading, and improper lubrication • Preventive and corrective maintenance activities • Spare parts and inventory planning
- Module 4: Reciprocating Compressor Troubleshooting (02:00 – 03:30) • Hypothetical fault diagnosis scenarios

Day 3: Positive Displacement – Rotary Compressors

- Module 1: Rotary Screw Compressors (07:30 – 09:30) • Working principle and internal rotor design • Lubricated vs. oil-free systems • Temperature and cooling considerations
- Module 2: Other Rotary Types (09:45 – 11:15) • Rotary vane, scroll, and lobe compressors • Applications and operating limits • Comparison with screw compressors
- Module 3: Rotary Compressor Maintenance & Monitoring (11:30 – 01:00) • Lubrication systems, air filtration, and heat management • Inspection and wear indicators • Scheduled maintenance planning
- Module 4: Group Exercise – Rotary System Failure Review (02:00 – 03:30) • Troubleshooting symptoms and responses

Day 4: Dynamic Compressors – Centrifugal and Axial

- Module 1: Centrifugal Compressors – Design & Application (07:30 – 09:30) • Energy conversion principles and stages • Impellers, diffusers, and volutes • Surge, choke, and performance curves
- Module 2: Axial Compressors – Basic Overview (09:45 – 11:15) • Aerodynamic design and multi-stage structure • Use in power generation and aircraft engines • Limitations and maintenance considerations
- Module 3: Dynamic Compressor Diagnostics (11:30 – 01:00) • Efficiency monitoring and surge prevention • Vibration, noise, and thermal diagnostics • Control systems and protection interlocks
- Module 4: Case Study – Centrifugal System Failure Analysis (02:00 – 03:30) • Root cause analysis on a simulated failure case

Day 5: System Integration, Safety and Reliability

- Module 1: Compressor System Integration (07:30 – 09:30) • Piping, controls, valves, and receiver tanks • Compressed air system optimization • Energy audits and leak loss impact
- Module 2: Safety and Operating Procedures (09:45 – 11:15) • Safe start-up and shutdown practices • Pressure relief devices and emergency protocols • Personal protective equipment and site standards
- Module 3: Reliability Improvement Techniques (11:30 – 01:00) • Predictive maintenance technologies (vibration, thermography) • Root cause analysis and reliability-centered maintenance (RCM) • Establishing compressor KPIs and failure tracking
-

Module 4: Final Workshop and Review (02:00 – 03:30) • Team discussion, learning review, and certificate presentation

Certification

Participants will receive a Certificate of Completion in Basics & Principles of Compressor – Dynamic & Positive Displacement Types, validating their knowledge in compressor fundamentals, types, operations, and maintenance strategies for efficient and reliable performance.

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**