MAWA EVENTS

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

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

FLEXIBLE PIPE ENGINEERING – DESIGN, MATERIALS, MANUFACTURE & INSTALLATION

"Optimizing Performance and Safety Across the Flexible Pipe Lifecycle"

Schedule

Date	Venue	Fees (Face-to-Face)
01 – 05 Jun 2026	London, UK	USD 3495 per delegate

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

Introduction

Flexible pipes play a critical role in subsea and onshore oil and gas systems, offering strength, adaptability, and corrosion resistance across dynamic conditions. A deep understanding of their design, materials, manufacturing, and installation processes is essential to ensuring long-term reliability and safe operation.

This comprehensive 5-day course delivers essential knowledge and technical practices related to flexible pipe engineering. Participants will explore everything from pipe structure and material selection to failure mechanisms and field installation best practices—all aligned with international standards and real-world operational challenges.

Objectives

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

- Understand the structural design and function of flexible pipes
- Select appropriate materials based on application and environmental factors
- Evaluate manufacturing methods and quality control processes
- Identify failure modes and integrity threats
- Plan and oversee safe, effective pipe installation and commissioning

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Why Attend

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Target Audience

This program is designed for:

- Pipeline and mechanical engineers
- Design and structural engineers
- Offshore project and installation engineers
- QA/QC, fabrication, and inspection personnel
- Asset integrity and maintenance engineers

Individual Benefits

Key competencies that will be developed include:

- Proficiency in flexible pipe design and specifications
- Knowledge of mechanical behavior under different load conditions
- Familiarity with advanced materials and degradation mechanisms
- Ability to apply safety and installation best practices
- Confidence in quality assurance and field supervision

Organizational Benefits

Upon completing the training course, participants will demonstrate:

- Improved design and selection of flexible pipe systems
- Enhanced reliability and lifespan of pipeline infrastructure
- Reduced downtime through better failure prevention
- Stronger project execution during installation and commissioning
- Compliance with international engineering and safety standards

Instructional Methodology

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

- Strategy Briefings – Flexible pipe lifecycle and global best practices
- Case Studies – Design and field failures with corrective actions
- Workshops – Pipe selection, stress calculation, QA/QC exercises
- Peer Exchange – Practical challenges in offshore and onshore projects
- Tools – Design charts, inspection templates, and material datasheets

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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: Fundamentals of Flexible Pipe Systems

- Module 1: Introduction to Flexible Pipe Types and Applications (07:30 – 09:30) • Dynamic vs static applications • Flowlines, risers, jumpers, umbilicals
- Module 2: Pipe Structure and Load-Bearing Layers (09:45 – 11:15) • Armor layers, polymer barriers, carcass • Function and configuration of components
- Module 3: Governing Design Codes and Standards (11:30 – 01:00) • API 17J, API 17B, ISO standards • Key design requirements and compliance
- Module 4: Workshop – Pipe System Breakdown (02:00 – 03:30) • Identify and describe key flexible pipe components

Day 2: Pipe Design and Engineering Calculations

- Module 5: Design Principles and Load Conditions (07:30 – 09:30) • Internal/external pressure, tension, bending, torsion • Static and dynamic loading
- Module 6: Fatigue, Collapse, and Stability Considerations (09:45 – 11:15) • Cyclic loading, fatigue life analysis • Burst, collapse, and kink resistance
- Module 7: Thermal and Environmental Effects (11:30 – 01:00) • Temperature, corrosion, sour service conditions • Material aging and degradation
- Module 8: Workshop – Basic Stress Analysis (02:00 – 03:30) • Perform simplified pipe stress and load checks

Day 3: Materials and Manufacturing

- Module 9: Material Selection for Flexible Pipes (07:30 – 09:30) • Metallic and non-metallic materials • Armor wires, liners, and barriers
- Module 10: Manufacturing Processes and QA/QC (09:45 – 11:15) • Helical winding, extrusion, bonding • Inspection, testing, and quality assurance
- Module 11: Failure Modes and Prevention Strategies (11:30 – 01:00) • Fatigue, corrosion, delamination, crushing • Monitoring and mitigation techniques
- Module 12: Workshop – Material Review and Failure Scenarios (02:00 – 03:30) • Match material choice to field conditions

Day 4: Installation, Handling, and Safety

- Module 13: Pipe Handling and Transport (07:30 – 09:30) • Reel deployment, spooling, lifting practices • Bend radius and weight limitations
- Module 14: Offshore and Onshore Installation Methods (09:45 – 11:15) • J-lay, reel-lay, tow methods • Equipment and vessel requirements
- Module 15: Health, Safety & Environmental Considerations (11:30 – 01:00) • Risk assessments and incident prevention • Environmental compliance in pipe installation
- Module 16: Workshop – Develop an Installation Plan (02:00 – 03:30) • Design a basic deployment sequence

Day 5: Inspection, Monitoring, and Lifecycle Management

- Module 17: Field Inspection and Integrity Monitoring (07:30 – 09:30) • In-service inspections, pigging, sensors • Remote monitoring and ROVs
- Module 18: Repair, Requalification, and Replacement (09:45 – 11:15) • Damage classification and repair methods • Decommissioning procedures
- Module 19: Case Studies – Successes and Failures (11:30 – 01:00) • Lessons learned from real installations • Design, handling, or operational issues

- Module 20: Final Workshop – Flexible Pipe Lifecycle Review (02:00 – 03:30) • Integrate design, installation, and monitoring considerations

Certification

Participants will receive a Certificate of Completion in Flexible Pipe Engineering – Design, Materials, Manufacture & Installation, demonstrating their capability to manage the full lifecycle of flexible piping systems from concept to field operation.

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**