MAWA EVENTS

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

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OIL STORAGE TANKS – MECHANICAL & STRUCTURAL INTEGRITY

"Ensuring Safety, Compliance, and Longevity of Aboveground Storage Tanks"

Schedule

Date	Venue	Fees (Face-to-Face)
22 – 26 Jun 2026	London, UK	USD 3495 per delegate

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

Introduction

Oil storage tanks are vital assets in petroleum, chemical, and process industries. Their mechanical and structural integrity is essential for environmental safety, operational reliability, and regulatory compliance. This course provides in-depth knowledge on the design, inspection, maintenance, and failure prevention of aboveground storage tanks (ASTs).

Using industry standards such as API 650, API 653, and EEMUA, participants will gain hands-on skills in assessing tank conditions, identifying failure risks, and implementing integrity programs that extend service life and ensure operational continuity.

Objectives

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

- Understand design principles and material selection for oil storage tanks
- Apply API and EEMUA standards for inspection and assessment
- Identify mechanical and structural failure modes in tanks
- Plan and execute effective maintenance and repair strategies
- Conduct risk-based inspection and fitness-for-service evaluations
- Ensure compliance with environmental and safety regulations

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Why Attend

- Enhance your ability to assess and manage tank integrity
- Learn how to detect early signs of corrosion, buckling, and leakage
- Apply global codes for tank design, maintenance, and repair
- Improve risk assessment and asset management for storage facilities
- Gain practical knowledge for auditing and regulatory compliance

Target Audience

This program is designed for:

- Mechanical and civil engineers responsible for tank farms
- Inspection and maintenance engineers
- Plant managers and asset integrity specialists
- Health, safety, and environment (HSE) professionals
- Project engineers involved in design or rehabilitation of tanks

Individual Benefits

Key competencies that will be developed include:

- Knowledge of tank design, stress analysis, and failure mechanisms
- Skills in inspection planning, corrosion evaluation, and data analysis
- Confidence in selecting repair techniques and structural retrofits
- Ability to manage regulatory and environmental requirements
- Application of risk-based inspection and integrity assessment models

Organizational Benefits

Upon completing the training course, participants will demonstrate:

- Improved structural and operational safety of storage tanks
- Reduced downtime and cost through proactive maintenance
- Compliance with global standards (API, EEMUA, ISO)
- Stronger tank lifecycle management and asset integrity programs
- Increased resilience to mechanical failures and environmental risks

Instructional Methodology

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

- Strategy Briefings – Industry standards, structural design, corrosion
- Case Studies – Tank failures, inspection results, regulatory audits
- Workshops – Thickness calculations, fitness-for-service analysis
- Peer Exchange – Sharing of maintenance practices across regions
- Tools – API 653 checklists, RBI software, inspection 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: Tank Design and Construction Principles

- Module 1: Overview of Storage Tank Types and Components (07:30 – 09:30) • Cone roof, dome roof, floating roof tanks • Shell, roof, baseplate, nozzles, and appurtenances
- Module 2: Mechanical Design per API 650 (09:45 – 11:15) • Design pressures, wind and seismic loads • Weld types and joint efficiency
- Module 3: Material Selection and Compatibility (11:30 – 01:00) • Steel grades, corrosion allowances, liners
- Module 4: Workshop – Design Review of Tank Shell and Roof (02:00 – 03:30) • Evaluate code compliance in sample tank designs

Day 2: Failure Modes and Inspection Planning

- Module 5: Common Mechanical and Structural Failures (07:30 – 09:30) • Buckling, settlement, corrosion, brittle fracture
- Module 6: Non-Destructive Testing and API 653 (09:45 – 11:15) • Visual inspection, UT, RT, MT, MFL, vacuum box
- Module 7: Inspection Frequencies and RBI (11:30 – 01:00) • Risk-based inspection planning methodology
- Module 8: Workshop – Develop an Inspection Plan (02:00 – 03:30) • Define scope and intervals for a tank farm

Day 3: Integrity Assessment and Repairs

- Module 9: Fitness-for-Service Analysis (07:30 – 09:30) • API 579 Level 1 and 2 assessments • Minimum thickness, corrosion rates
- Module 10: Structural Repairs and Modifications (09:45 – 11:15) • Patch plates, shell replacement, foundation repairs
- Module 11: Welding Procedures and QA/QC (11:30 – 01:00) • Weld testing, qualification, and documentation
- Module 12: Workshop – Evaluate a Repair Scenario (02:00 – 03:30) • Select repair method based on inspection data

Day 4: Environmental, Safety, and Regulatory Compliance

- Module 13: Overfill Protection and Leak Detection (07:30 – 09:30) • Alarms, sensors, bunding, SCADA integration
- Module 14: API, EEMUA, and Local Regulatory Requirements (09:45 – 11:15) • Documentation, inspection reports, incident response
- Module 15: Fire Protection and Emergency Planning (11:30 – 01:00) • Foam systems, tank spacing, venting
- Module 16: Workshop – Compliance Gap Assessment (02:00 – 03:30) • Review mock audit findings and action planning

Day 5: Lifecycle Management and Final Simulation

- Module 17: Tank Lifecycle and Decommissioning (07:30 – 09:30) • Re-certification, cleaning, retirement options
- Module 18: Digital Tools and Integrity Programs (09:45 – 11:15) • CMMS, inspection logs, integrity dashboards
- Module 19: Final Case Study – Integrity Strategy Design (11:30 – 01:00) • Develop a full integrity plan for a terminal
- Module 20: Wrap-Up and Certification Briefing (02:00 – 03:30) • Review learning outcomes and action plan

Certification

Participants will receive a Certificate of Completion in Oil Storage Tanks – Mechanical & Structural Integrity, validating their expertise in design principles, inspection techniques, and risk-based maintenance strategies for tank integrity and safe 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.

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