

Training Title

STORAGE TANKS: DESIGN INSPECTION & TESTING

Training Duration

5 days

Training Dates & Venue

REF SM019	Storage Tanks: Design Inspection & Testing	5	22 - 26 Jan. 2024	\$5,500	Dubai, UAE
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Training will be held at any of the 5-star hotels. The exact venue will be informed once confirmed.

Training Fees

- \$5,500 per participant for Public Training includes Materials/Handouts, tea/coffee breaks, refreshments & Buffet Lunch

Training Certificate

Define Management Consultancy & Training Certificate of course completion will be issued to all attendees.

TRAINING OVERVIEW

TRAINING DESCRIPTION

Storage Tanks find applications in different petrochemical plants, refineries, and petroleum facilities. This course is designed to cover different aspects of storage tanks, the design, construction, and methods of inspection to assure the integrity of the newly constructed tanks. Tank will experience deterioration after been put in service due to different causes. To assure its integrity in service, tanks need to be inspected, thickness measurements must be performed and fitness for service must be applied. To prevent and minimize the deterioration the tank must be protected against corrosion using cathodic protection systems. Safety of storage tanks is also of very essential requirements, especially for those containing hazardous types of material. Tanks must be protected from over pressurization using venting and relieving devices, and most importantly, they must be protected from fire.

The above topics will be covered in detail over five days. Discussion and participation from the delegates are encouraged to enrich the course outcomes.

COURSE OBJECTIVES

To get familiar with different types of storage tanks, their features, construction, advantage/disadvantages.

- To learn about tanks related corrosion and corrosion prevention methods
- To develop a deep knowledge into Tanks Inspection techniques

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- To develop a deep knowledge into Tanks assessment, repair, and testing.
- To get familiar with the most recent advanced techniques utilized in the field of storage tanks evaluation.
- To get familiar with related standards controlling the operations (inspection & maintenance).

WHO SHOULD ATTEND

Engineers, Inspectors and Technicians responsible for building, operating, maintaining, and controlling storage tanks are the most benefit from this course.

TRAINING METHODOLOGY:

A highly interactive combination of lectures and discussion sessions will be managed to maximize the amount and quality of information and knowledge transfer. The sessions will start by raising the most relevant questions and motivate everybody to find the right answers. You will also be encouraged to raise your own questions and to share in the development of the right answers using your own analysis and experiences. Tests of the multiple-choice type will be made available on a daily basis to examine the effectiveness of delivering the course.

Very useful Course Materials will be given.

- 30% Lectures
- 30% Workshops and work presentation
- 20% Group Work & Practical Exercises
- 20% Videos & General Discussions

COURSE OUTLINE

DAY 1

- Design and Construction
- Stress and pressure terms
- Tank wall thickness
- Material, plates
- Design parameters
- Operating temperature
- Design pressure
- Maximum allowable stress for walls
- Corrosion allowance
- Lining
- Procedure for designing.
- Tank walls
- Roofs and Bottoms
- Reinforcement of openings

DAY 2

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Inspection and Testing

Inspection of Materials

- Measuring thickness of materials
- Inspection of Welds (radiographic method)
- Hydrostatic and Pneumatic tests
- Proof tests for establishing allowable working pressures.
- Test gauges
- Pressure and vacuum-relieving devices
- Pressure limits
- Means of venting
- Liquid relief valves
- Pressure setting of safety devices.

DAY 3

Corrosion Protection

- Corrosion Protection of above ground storage tanks
- Corrosion mechanisms
- Stray current corrosion
- Galvanic corrosion
- Internal corrosion

Cathodic Protection

- Need for CP
- New aboveground storage tanks
- Existing aboveground storage tanks
- Internal CP vs. External CP
- Factors affecting CP.
- Methods of Cathodic Protection
- Galvanic systems
- Impressed by current systems.
- Design of CP systems
- Internal Cathodic protection system
- External Cathodic protection system
- Operation and maintenance of CP systems

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DAY 4

- Storage Tanks Fitness-for-Service
- Suitability for service
- Tank roof evaluation
- Tank shell evaluation
- Tank bottom evaluation
- Tank foundation evaluation
- Brittle fracture consideration
- Assessment procedure
- Inspection

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- Inspection frequency
- External inspection
- Internal inspection
- Determining bottom thickness
- Non-destructive examinations
- Tank repair and Alteration
- Removal and replacement of shell plate material
- Lap-welded patch plates
- Repair of defective welds
- Repair of shell penetrations
- Repair tank bottoms
- Repair of fixed roofs
- Repair of floating roofs
- Repair of floating roof seals

DAY 5

- Safety and fire protection
- Fire prevention
- Vapor control
- Control of ignition sources
- Tanks overfill protection.
- Inspection and maintenance programs
- Fire extinguishment and control
- Controlled burn
- Extinguishing systems for tanks
- Aboveground petroleum storage tanks
- Release prevention, leak detection, and air emissions
- Tank calibration
- Coating and protection systems
- Tank alarms
- Underground storage tank
- Vapor emissions

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NOTE:

Pre & Post Tests will be conducted.

Case Studies, Group Exercises, Group Discussions, Last Day Review & Assessments will be carried out.

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