

**Training Title**

**Storage Tanks: Design Inspection & Testing Training**

**Training Duration**

5 days

**Training Dates & Venue**

REF ME04 4	Storage Tanks: Design Inspection & Testing Training	5	28 Jan -1 Feb 2018	\$4,250	Dubai, UAE
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Training will be held at any of the 5 star hotels. Exact venue will be informed once confirmed.

**Training Fees**

- 4,250 US\$ 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 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 new constructed tanks. Tank will experience deterioration after been put in service due to different causes. To assure its integrity in service, tank 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 type of material. Tanks must be protected from over pressurization using venting and relieving devices, and most important 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.

**Who Should Attend**

[www.definettraining.com](http://www.definettraining.com)

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 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 multiple-choice type will be made available on 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

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 current systems  
Design of CP systems  
Internal Cathodic protection system  
External Cathodic protection system  
Operation and maintenance of CP systems

**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  
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  
Tank 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

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Tank alarms  
Underground storage tank  
Vapor emissions

**Case Studies, Last Day Review, Discussions & Pre & Post Assessments will be carried out.**



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