

API 653: Above Ground Storage Tanks Code Exam Preparation

Course general description:

This course is designed to train individuals who are interested in obtaining the API 653 Above Ground Storage Tanks Certification, as well as those who are seeking a better understanding of API 650 Tank Design and ASME IX code requirements. Included with the course is a pre-study guide and student classroom workbook. The student receives instruction regarding how to take the test, as well as insight into the intricacies of "real world" situations. Daily tests are designed to gauge students' proficiency and understanding of the material.

Audience:

This course prepares participants for the API 653 exam. It is designed for those involved in the maintenance, inspection, rating, repair and alteration of storage Tanks such as inspectors and inspection engineers. Other engineers, managers and technical staff who are dealing with tanks will also benefit from this course.

Course objectives:

Upon the successful completion of this course, each participant will be able to:-

- Get prepared for the next API 653 exam and have enough knowledge and skills to pass such exam in order to get the API 653 certification
- Apply and gain an in-depth knowledge on API 653 storage tanks code: maintenance, inspection, rating, repair and alteration (API exam preparation training)
- Identify the service restrictions, joint efficiencies and radiography and discuss tanks under internal pressures like shell and bottom calculations
- Recognize maximum allowable fill height and define hydrostatic head pressure .
- Describe and identify the charpy impact testing and fillet welds and reinforcement
- Carryout material name plates data reports and apply corrosion calculations
- Discuss ASME section IX overview and write a welding procedure specification and welders qualification
- Review WPS's and PQR's and define ASME section-V: NDE
- Analyze API RP 577 welding inspection and metallurgy
- Implement API RP 571 damage mechanisms
- Discuss overview – API 653 inspections of storage tanks
- Prepare for API 653 practice examination

Course duration:

5 days

Course location:

Cairo-Dubai-Istanbul

Course contents:

Day-1

Code of API 653 Tank Inspection BOK

- Scope & Introduction
- Tank Roof Evaluation
- Tank Shell Evaluation 4.4 Tank Bottom Evaluation
- Tank Foundation Evaluation
- Brittle Fracture Considerations.
- Inspection Frequency Considerations

- Inspections from the Outside of the Tank
- Internal Inspection
- Alternative to Internal Inspection to Determine Bottom Thickness
- Materials for Tank Repair & Replacement
- New Materials.
- Original Materials for Reconstructed Tanks
- Welding Consumables
- Materials of Plates, Sheets & Structural Shapes
- Design Considerations for Reconstructed Tanks
- Tank Repair and Alteration
- Removal and Replacement of Shell Plate Material
- Shell Repairs Using Lap-welded Patch Plates
- Repair of Tank Bottoms
- Repair of Fixed & Floating Roofs
- Dismantling and Reconstruction.
- Welding
- Examination and Testing (NDE)
- Hydrostatic Testing
- Leak Test
- Annex B (normative) Evaluation of Tank Bottom Settlement

Day-2

API 650 Tank Design BOK & API 652 BOK

- Materials of Plates, Sheets & Structural Shapes
- Design of New Tanks
- Fabrication of New Tanks
- Erection of New Tanks
- Methods of Examining Joints
- Welding Procedure and Welder Qualifications
- Marking of New Tanks
- Demonstration of Required API 650 Annexes
- API RP 652 Tank Bottom Lining BOK
- TANK BOTTOM LINING SELECTION
- LINING APPLICATION & LINING Quality Control

Day-3

API RP 575 , ASME Sec V, IX & API 651 BOK

- Types of tanks covered
- Procedures to perform internal and external inspection
- Evaluation change-of-service effects on suitability for continued service
- Evaluation of: distortions, wind girders, stiffeners, welds, and nozzles
- Evaluation of tank bottoms & foundations
- Causes of corrosion, leaks, cracks, and mechanical deterioration
- Auxiliary equipment, anchor bolts, pipe connections, ground connections & insulation.
- API RP 651 C.P of AST BOK

- Corrosion of aboveground steel storage tanks
- Determination of need for cathodic protection

Methods of cathodic protection

Day-4

BOK of API RP 571 BOK of API RP 577

- Brittle Fracture
- Mechanical Fatigue
- Atmospheric Corrosion
- Corrosion Under insulation (CUI)
- Microbiologically Induced Corrosion (MIC)
- Soil Corrosion
- Caustic Corrosion
- Chloride Stress Corrosion Cracking (Cl-SCC)
- Caustic Stress Corrosion Cracking (Caustic Embrittlement)
- Sour Water Corrosion (Acidic)
- Sulfuric Acid Corrosion
- BOK of API RP 577

Day-5

BOK of API ASME Sec V & ASME Sec IX

- ASME Section-IX: Welding & Welder Qualification
- Welding Procedures by Essential Variables
- Welder's Qualification
- Practice WPS/PQR reviews
- ASME Section-V: NDE
- Demonstration of Real Exam Tricks & how to study/easily pass the exam
- Test

Methodology:

- 50% lectures & concepts
- 10% Videos
- 10% Case studies
- 10% Exercises
- 10% Discussions
- 10% Software (if applicable or examples)

Course code: (TEME014)