QUEST
Professional Center

PROFESSIONAL TRAINING COURSE

Course No. 1841

API 653 Tank Inspection, Repair, Alteration and Reconstruction Training Course

DOWNSTREAM OPERATIONS, REFINING, PETROCHEMICALS & INDUSTRIAL OPERATIONS
OIL & GAS

DURATION
5 Days

DELIVERY
Classroom

Course Overview

The API 653 Tank Inspection, Repair, Alteration and Reconstruction Training Course provides a comprehensive professional program focused on the inspection, evaluation, repair, alteration, and reconstruction of aboveground storage tanks in accordance with the principles and requirements of API 653. The course is designed to strengthen participants' ability to assess tank condition, identify deterioration mechanisms, and support safe and reliable tank operation.

Participants will develop a practical understanding of storage tank construction, components, inspection requirements, materials, welds, foundations, roofs, shells, bottoms, and appurtenances. The course examines how inspection requirements are applied throughout the tank life cycle and how inspection findings influence decisions related to continued service, repair, modification, or reconstruction.

A major focus is placed on corrosion assessment, thickness measurements, settlement, weld inspection, shell and bottom evaluation, roof condition, leakage, and other forms of deterioration. Participants will learn how to interpret inspection data, evaluate defects, establish inspection intervals, and determine appropriate technical actions based on tank condition and service requirements.

The course also addresses repair and alteration activities, including temporary and permanent repairs, replacement of shell and bottom sections, roof repairs, welding considerations, reconstruction requirements, examination, testing, documentation, and quality control. Practical case studies enable participants to apply API 653 principles to real-world storage tank integrity and inspection scenarios.

Objectives

- By the end of the course, participants will be able to:
- Analyze the fundamental principles and scope of API 653 for aboveground storage tank inspection and integrity management.
- Identify major storage tank components, materials, welds, foundations, roofs, shells, bottoms, and appurtenances.
- Evaluate inspection requirements throughout the operating life of storage tanks.

- Assess corrosion, deterioration, settlement, leakage, deformation, and other tank integrity threats.
- Apply appropriate visual inspection and non-destructive examination techniques.
- Interpret shell and bottom thickness measurements and corrosion-rate information.
- Evaluate tank condition and support continued-service decisions.
- Determine appropriate inspection intervals based on tank condition and risk.
- Assess requirements for tank repair, alteration, and reconstruction.
- Evaluate welding, examination, testing, and quality-control considerations during repair activities.
- Develop technically sound inspection and integrity-management recommendations.
- Improve documentation, reporting, and decision-making related to storage tank integrity.

Who Should Attend

This course is designed for inspection engineers, mechanical engineers, tank integrity engineers, corrosion engineers, maintenance engineers, reliability professionals, and inspectors responsible for aboveground storage tanks in oil and gas, refining, petrochemical, chemical, and industrial facilities.

It is also suitable for tank maintenance supervisors, asset integrity professionals, welding and quality personnel, inspection coordinators, engineering contractors, technical specialists, and professionals involved in tank repair, alteration, reconstruction, inspection planning, and integrity assessment.

The program is particularly valuable for managers, technical leaders, and decision-makers responsible for storage tank safety, mechanical integrity, maintenance strategy, inspection programs, asset reliability, and decisions concerning continued operation, repair, modification, or reconstruction.

Learning Outcomes

- Upon completion of the course, participants will be able to:
- Explain the purpose, scope, and application of API 653.
- Identify the main components and critical integrity areas of aboveground storage tanks.
- Develop inspection strategies appropriate to tank condition and service.

- Identify common deterioration and failure mechanisms affecting storage tanks.
- Evaluate corrosion and degradation using inspection and thickness data.
- Analyze shell, bottom, roof, foundation, and weld inspection findings.
- Assess settlement, deformation, leakage, and structural integrity concerns.
- Determine appropriate inspection frequencies and monitoring requirements.
- Evaluate repair and alteration options for deteriorated tank components.
- Understand key requirements associated with tank reconstruction.
- Apply appropriate examination, testing, and quality-control considerations.
- Develop recommendations for continued service, repair, alteration, or reconstruction.
- Improve tank inspection documentation and technical reporting.
- Integrate inspection findings into asset integrity and maintenance decisions.

Course Outline

DAY 01

API 653 Fundamentals & Storage Tank Inspection

- Scope, purpose, principles, and application of API 653.
- Aboveground storage tank types, construction, components, and materials.
- Tank shells, bottoms, roofs, foundations, welds, nozzles, and appurtenances.
- Inspection planning, documentation, records, and inspection responsibilities.

> **PRACTICAL APPLICATION**
>
> Develop an initial inspection plan for an aboveground storage tank based on its design, service, age, and operating history.

DAY 02

Tank Condition Assessment & Damage Mechanisms

- Corrosion mechanisms affecting tank shells, bottoms, roofs, and appurtenances.
- Visual inspection, thickness measurement, and non-destructive examination.
- Shell and bottom plate evaluation and corrosion-rate assessment.
- Settlement, distortion, leakage, cracking, and structural deterioration.

DAY 02 — CONTINUED

> **PRACTICAL APPLICATION**
>
> Analyze tank inspection findings and thickness data to identify critical deterioration and integrity concerns.

DAY 03

Inspection Evaluation & Continued Service

- Evaluation of shell thickness and minimum required thickness concepts.
- Assessment of corrosion rates and remaining service considerations.
- Bottom inspection, annular plates, floor corrosion, and leakage evaluation.
- Roof, foundation, weld, nozzle, and appurtenance condition assessment.

> **PRACTICAL APPLICATION**
>
> Evaluate an inspection dataset and determine whether a storage tank requires continued monitoring, repair, or further engineering assessment.

DAY 04

Tank Repair & Alteration

- Repair strategies for tank shells, bottoms, roofs, welds, and appurtenances.
- Replacement of deteriorated plates and components.
- Welding requirements, examination, testing, and quality control.
- Alteration, modification, temporary repairs, and return-to-service considerations.

> **PRACTICAL APPLICATION**
>
> Develop a repair and alteration plan for a deteriorated storage tank, including inspection, welding, examination, testing, and quality-control requirements.

DAY 05

Tank Reconstruction & Integrated Integrity Management

- Reconstruction principles, planning, material requirements, and dimensional control.
- Inspection and testing requirements during repair and reconstruction activities.
- Quality assurance, documentation, records, and technical reporting.
- Risk-based integrity management and long-term inspection strategies.
- Final Application: Develop a comprehensive API 653 tank integrity plan covering inspection, corrosion assessment, thickness evaluation, repair, alteration, reconstruction, examination, testing, documentation, and long-term monitoring.

Register or Request More Information

Course page: https://quest-training.com/courses/api-653-tank-inspection-repair-alteration-and-reconstruction-training-course
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