Best Technology Solutions (BTS)

API 653 Training - Tank Inspection, Repair, Alteration, and Reconstruction Training program

Description:

American Petroleum Institute (API) initiated an Aboveground Storage Tank Inspector Certification Program with the issuance of Supplement 1 to API 653, Tank Inspection, Repair, Alteration, and Reconstruction. This 5 days training course is designed to give a detailed discussion onthe required engineering knowledge for In-service Storage tankswith emphasis on syllabus published by API (Body of Knowledge). Thepreparatory course will clarify basic intentions of all code prescribedfor study, how to interpret code rulings and at the end, built-up theconfidence among the participants for taking decisions.

The course is divided into six main areas: Basic Storage tank design engineering i.e. API 650, In-service inspection techniques (API 653/ RP 575/ RP 577), Damage mechanisms (API 571), Cathodic protection (API RP 651) and lining of tank bottom (API RP 652), calculations of retirement thickness and other skills required for delivery of quality job & safe operation. The participants will receive comprehensive course notes, illustrated with practical case studies, main punch-points of the course to impart knowledge to participants.

Who Should Attend?

This course will specifically benefit Engineers, Supervisors, and Managers from the following disciplines:

- Mechanical Engineering
- Inspection
- Maintenance & Operations
- Technical & Engineering
- Corrosion Engineer
- and design persons involved in integrity assessment of in-service tanks, repairs and replacement of old tanks.

Course Objectives:

By the end of this course delegates will learn about:

- Main concepts and technical content of API 653 Code and the other reference codes
- Concept of metal degradation.
- Design fundamentals of storage tank (API 650).
- Evaluation of tank integrity of shell, bottom and roof. Thickness calculations for intended design conditions or revised design conditions.
- How to clarify the need of Cathodic Protection and lining of tank bottom.
- Evalution and decision for remedial action in Tank Settlement.
- How to estimate remaining life of tank and decide inspection intervals. Be able to choose the appropriate inspection tools and inspection intervals.
- Carry out re-rating, remaining life and retirement thickness calculations.

Course Outline

Day 1: Fundamentals of Storage Tank Design & Construction (API 650)

- Allowable stress values shell, roof and bottom Design
- Material selection
- Impact test requirement of API 650
- Impact test results
- Shell thickness calculations
- Bottom plate thickness calculations
- Roof plates calculations
- Nozzle openings calculations
- API 650 Requirements for Storage Tank fabrication, erection, NDT and leak testing

Day 2: Understanding of Storage Tank Inspection Code (API 653) Part 1

- Introduction, scope, definitions and organization of API 653
- Intervals and scope of inspections
- Data evaluation and corrosion assessment of roof, shell, and bottom.
- Estimation of corrosion rate
- Inspection and testing practices of API 653
- Evaluation for brittle failure

Day 3: Understanding of Storage Tank Inspection Code (API 653) Part 2

- Repairs, alterations & reconstruction of storage tanks
- Tank relocation and re-erection
- Replacement of tank bottom, hot tapping on tank shell.
- Detail discussions on material corrosion and degradation (API 571), NDT of tank repairs, leak testing

Day 4: Storage tank Inspection (study of other codes and standards)

- Discussions on cathodic protection methods against soil corrosion
- (API RP 651)
- Recommended practices for inspection of storage tanks (API RP 575)
- Introduction to Sec IX, Case studies of checking of PQR & WPS

Day 5: Discussions on Corrosion Protection & Quality of Welding

- Discussions on Lining of bottoms of storage tanks (API RP 652)
- Discussions on API RP 577 and Welding Inspection
- Understanding the difference between Inspection and Examination and Various NDE methods to detect flaws in metals.
- Understanding rules imposed by ASME Sec V for various NDE techniques
- Final examinations Feedback and Concluding