API 653

Aboveground Storage Tank Inspectors

Certification Preparation Course

For Inspectors & Engineers

Applicable Sectors: Petro-Chemical & Energy.
Expertise: Beginner.
Training Setup: Class.

An API accreditation gains you the required competence and global industry confidence that inspections are conducted professionally and attest to one's competence and knowledge of the applicable industry codes, standards and recommended practices. The course is designed to develop the knowledge base of the attendees with special emphasis on exam preparation methods to aid a one-time success in Inspector examinations.

Course Structure

The Training provides participants with:

1. Knowledge of API publications and other accompanying standards. This include:
    - ≡ API Standard 653: Tank Inspection, Repair, Alteration, and Reconstruction.
    - ≡ API Standard 650: Welded Tanks for Oil Storage.
    - ≡ API RP 651: Cathodic Protection of Aboveground Petroleum Storage Tanks.
    - ≡ API RP 652: Lining of Aboveground Petroleum Storage Tank Bottoms
    - ≡ API RP 571: Damage Mechanisms Affecting Fixed Equipment in the Refining Industry.
    - ≡ API RP 572: Inspection of Pressure Vessels.
    - ≡ API RP 576: Inspection of Pressure-Relieving Devices.
    - ≡ API RP 577: Welding Inspection and Metallurgy.
    - ≡ API RP 575: Inspection of Atmospheric and Low-Pressure Storage Tanks.
    - ≡ American Society of Mechanical Engineers (ASME), Boiler and Pressure Vessel Code.
        - Section V, Nondestructive Examination.
        - Section IX, Qualification Standard for Welding, Brazing and Fusion Procedures.
2. Maintenance, rating, inspection, repair and alteration of in-service above ground storage tanks.
3. Information of API Individual Certification Program and API 653 Inspector certification process.
4. Practical tests simulating the API 653 ICP exam;
5. Competence and confidence to complete the API 653 ICP qualification and recertification.

Who should attend?

The course is a five days training designed for plant personnel who are engaged in the design, inspection, maintenance and repair of process piping equipment. This course is particularly targeted for preparations of the API 653 certification examination. The structure entails the exam body of knowledge and the API653 publication effectivity sheet. Course Attendees are responsible for the documents listed as per the API ICP Effectivity Sheet. A general working knowledge of pressure equipment and their usual construction materials is a requirement to attend this course.

Plant personnel would typically include experienced:

- ≡ Unit inspectors
- ≡ Plant engineers
- ≡ Asset integrity specialists and engineers
- ≡ Operations engineers
- ≡ Maintenance engineers
- ≡ Welding engineers and allied personnel.

Certificate & Credits

Upon completion of this course, a certification of completion will be issued. This earns the attendee at the end of the course 80 professional development hours (PDHs).

Topics Covered

Day 1

- Introduction, Publications, Course Outline and Structure of the codes & Body of Knowledge.
- API 653, Tank Inspection, Repair, Alteration, and Reconstruction. Scope, organization and definitions. Suitability for Service. Brittle Fracture. Materials.

Day 2

- API 653, Design considerations for reconstructed tanks. Tank repair and alteration. Dismantling and reconstruction. Welding. Examination and testing. Marking and recordkeeping.
- API 650, Welded Tanks for Oil Storage. Scope and organization of the code. Definitions and materials. Design and Fabrication, Erection. Methods of Examining Joints. Welding and Marking.
- API RP 571, Damage Mechanisms (related to pressure vessels in general).

Day 3

- API RP 575, Inspection of Atmospheric and Low Pressure Storage Tanks. Scope, Terms and Definitions. Reasons for inspection and Causes of Deterioration. Inspection Planning. Frequency, Extent and Methods of Inspection. Leak Testing and Hydraulic Integrity of Bottom. Repairs and Alterations. Records and Reports
- API RP 652, Lining of Aboveground Petroleum Storage Tank Bottoms. Scope and definitions. Corrosion mechanisms. Determination of need for tank bottom lining. Selection of tank bottom lining θ Surface preparation. Lining application. Inspection of lining.

Day 4

- API RP 651, Cathodic Protection of Aboveground Petroleum Storage Tanks. Scope and definitions. Corrosion and determination of need for CP. Methods and design of CP. Criteria for CP. Installation of CP.
- ASME Section 5: Article 1: General requirement. Article 2: Radiographic Examination. Article 6: Liquid Penetrant Examination. Article 7: Magnetic Particle Examination. Article 9: Visual Examination. Article 10: Leak Testing. Article 23, Section SE-797, Ultrasonic Standards.

DAY 5

- API RP 577, Welding Inspection and Metallurgy: Definitions, Welding inspection, processes, procedure, materials, Welder qualifications, welding Non-destructive examination, Metallurgy, Refinery and Petrochemical Plant Welding Issues.
- ASME Section 9: Article 1, Welding General Requirements. Article 2, Welding Procedure Qualifications. Article 3, Welding Performance Qualifications. Article 4, Welding Data.

500 example questions for practice to be reviewed during the training and open/close book exams at various stages.