



Best Technology Solutions (BTS)

API 570 PIPING INSPECTION CODE Inspection, Repair, Alteration & Rerating of In-Service Piping Systems (API Exam Preparation) Training program

Introduction:

Piping Inspection Code 570 Inspection, Repair, Alteration, and Rerating of In-Service Piping Systems is recognized and used with confidence worldwide. The Piping Inspector Certification Program (PICP) is developed for the continual high level of efficiency and safety through emphasizing professional credibility and process integrity. Process piping system is one of the critical production assets in process industry. Organizations recognize the need to maintain authorized inspection agency and technically assess qualified piping engineers and inspectors to ensure facilities are at top performance. Therefore, API 570 certification is one of the most sought after professional competency that enables inspectors to be actively involved in the improvement of industry & environmental health and safety performance, reinforcement management control, compliance of inspection capabilities. This course is based on API 570/574, API RP 577/578, ASME B16.5/ B31.3 and ASME BPVC Section V/ Section IX. It is to promote the recognition of fitness-for-service concepts to evaluate in-service degradation of piping system.



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Who Should Attend?

Piping, pipeline, Mechanical Engineering, Inspection, Maintenance & Operations, Technical & Engineering, QAQC Engineers, Supervisors, and Managers and technical personnel with 2-3 years of experience in the management and planning of inspection and maintenance activities of piping system at upstream oil & gas facilities, refineries, process plants and petrochemical facilities

Course Objectives:

By the end of this course delegates will learn about:

- API 570: Inspection methodologies, remaining life calculations, degradation mechanisms, repair & rerating of in-service piping system and relations to ASME codes
- ASME Section V: Principles and application of Non-Destructive Examination
- ASME section IX: Welding & brazing requirements and procedures
- ASME B31.3: Design review, welding & heat treatment, inspection, leak testing of process piping
- ASME B16.5: Design & repair of pipe flanges and flanged fittings
- API RP 571: Damage Mechanisms affecting fixed equipment in refineries, e.g. fractures, fatigue, corrosion, sulfidation, MIC, HTTA etc.
- API 574: Inspection practices for piping system components
- API RP 577: Welding inspection and metallurgy recommended practices
- API RP 578: Material verification program for new and existing alloy piping systems



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Course Outline:

Introduction to API 570

ASME B 31.3: Process Piping

- Scope and applicability
- Service/Fluid Classification
- Joint Quality Factors
- Allowable stresses
- Design for internal pressure
- Design of permanent blanks
- Impact testing for Low temperature service
- Acceptance of Impact test results
- Welding requirements-Preheat Temperatures
- Post Weld Heat Treatment
- Hardness Testing after PWHT
- Inspection and testing
- Non Destructive Examination Requirements
- Acceptance Criteria
- Leak testing-Hydrostatic
- Leak testing-Pneumatic
- Precautions during Pneumatic test
- Service leak test
- Thermal Expansion of Piping



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ASME B16.5: Pipe Flanges and Flanged Fittings

- Overview of pipe flanges and flanged fittings

ASME B16.5: Pipe Flanges and Flanged Fittings

- Scope
- Pressure Temperature Ratings
- Materials
- Dimensions
- System pressure Test

API 570: Inspection, Repair, Alteration, and Rerating of In-Service Piping Systems

- Scope & Definitions, Owner/user inspection organization
- API authorized piping inspector qualification and certification
- Inspection and testing practices
- Risk-based inspection
- Preparation for inspection
- Inspection for specific types of corrosion and cracking
- Types of inspection and surveillance
- Thickness measurement locations
- Thickness measurement methods
- Inspection of welds in-service
- Inspection of flanged joints



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API 570 Inspection, Repair, Alteration, and Rerating of In-Service Piping Systems

- Frequency and extent of inspection
- Piping service classes
- Inspection intervals
- Extent of visual external and cui inspections
- Inspection data evaluation, analysis and recording
- Corrosion rate determination
- Maximum allowable working pressure determination
- Repairs, alterations and rerating of piping systems
- Welding and hot tapping
- Inspection of buried piping
- Types and methods of inspection
- Frequency and extent of inspection
- Repairs to buried systems

ASME: Boiler and Pressure Vessel Code Section IX Welding & brazing Qualifications

- Review of a WPS and PQR
- Determine if WPS and PQR are in compliance with ASME Sec. IX
- Essential and Nonessential Variables
- Determine that the number and type of mechanical tests are correct tests
- Determine whether the results are acceptable



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ASME Boiler & Pressure Vessel Code Section V Non-Destructive Examination

- Article 1, general requirements
- Article 2, radiographic examination
- Article 6, liquid penetrant examination
- Article 7, magnetic particle examination
- Article 9, visual examination
- Article 10, leak testing

API Recommended Practice 574

- Inspection of piping, tubing, valves, and fittings

API RP 571: Damage Mechanisms in the Refining Industry

- Brittle Fracture
- Thermal Fatigue, Erosion/Erosion Corrosion
- Mechanical Fatigue
- Vibration Induced Fatigue
- Atmospheric Corrosion
- Corrosion Under Insulation (CUI)
- Boiler Water Condensate Corrosion
- Flue Gas Dew Point Corrosion
- Microbiological Induced Corrosion (MIC)
- Soil Corrosion, Sulfidation
- Chloride Stress Corrosion Cracking (CISCC)
- Caustic Stress corrosion Cracking (Caustic)