Tel No:+97126654546 | Fax No:+97126654182 | Email: training@cmc-me.com | www.cmc-me.com



FE123-10D:
API 510 Pressure Vessel Inspection Certification

Maintenance, Inspection, Rating, Repair and Alteration
(API Exam Preparation Training)

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Training Description:

This 10-day training course is designed to give a detailed understanding of the required engineering knowledge for in-service pressure vessel inspection (API 510) and provide adequate preparation before appearing for examination. This preparatory course will cover the fundamental pressure vessel design with emphasis on syllabus published by API body for the said examination. It includes all the code sections referred by API 510 committee to the extent required from examination point of view. This course will clarify basic intentions of all code sections, how to interpret code rulings and build-up the confidence among the participants for taking decisions.

The training course covers five main areas: basic pressure vessel design engineering i.e. ASME Sec VIII Div 1, in-service inspection techniques (API 510/ 572/ 576/ 577), in-service degradation mechanisms (API 571), calculations of retirement thickness and other aspects required for taking run-repair-replace decisions. The participants will receive comprehensive course notes, illustrated with practical examples, mock-examinations, main punch-points of the course and extensive question banks to give the participants the confidence for getting certified successfully.

Training Objectives:

By the end of the training, participants will be able to:

- ✓ Familiar with the “Steel Structure” design
- ✓ Familiarize participants with the main concepts and technical terms of API 510 code
- ✓ Provide participants step-by step approach in use of API 510 inspection code, with clear understanding of stated and intended requirements
- ✓ Understand basic design and the rules for correct fabrication, inspection and testing of pressure vessels
- ✓ How to conduct and certify the pressure testing
- ✓ Know the in-service degradation and damage suffered by pressure vessels
- ✓ Learn the basic requirements for inspection of pressure vessels placed in service
- ✓ Calculate corrosion rate, interval of inspection and similar parameters of Vessel inspection
- ✓ Choose the appropriate inspection tools and inspection intervals
- ✓ Carry out re-rating, remaining life and retirement thickness calculations
- ✓ Calculate and certify the correct set pressure of pressure relieving device
- ✓ Know learn different methods of Vessel repairs, and integrity assessments
- ✓ Score very well in API 510 examination

Training Designed for:

This course is intended for Pressure vessel inspection engineers, managers, inspection personnel, plant operating engineers and managers, and those who wish to appear for API 510 examination. Maintenance engineers and technicians and people involved in troubleshooting of plant operations. This course will be equally beneficial to all QA/Qc engineers even though they may or may not be planning to take API 510 examination.

Pre-requisites/Requirements for taking API 510 Exam:

Education	Years of Experience	Experience Required
BS or higher in engineering or technology	1 year	Supervision or performance of inspection activities as described in API 510
2-year degree or certificate in engineering or technology	2 years	Design, construction, repair, operation, or inspection of pressure vessels, of which one year **must** be in supervision or performance of inspection activities as described in API 510
High school diploma or equivalent	3 years	Design, construction, repair, operation, or inspection of pressure vessels, of which one year **must** be in supervision or performance of inspection activities as described in API 510
No formal education	5 or more years	Design, construction, repair, operation, or inspection of pressure vessels, of which one year **must** be in supervision or performance of inspection activities as described in API 510

Training Program:

TEN DAYS:

- Module - 1: Concept related to new Vessels, ASME Sec. VIII.
  - Introduction to API 510 Certification
  - Guidelines for preparation for examination
  - Design of cylindrical shells, calculation of vessel MAWP
  - Static head calculations
  - Design of dished heads - hemispherical, ellipsoidal and torispherical
  - Calculate vessel MAWP given vessel parts MAWP and elevations
  - Impact testing requirements
  - How to conduct and certify pressure tests
  - Writing hydro test procedure & pneumatic test procedure
  - Key concepts of nozzle reinforcement
  - Inspection requirements for pressure vessels
  - NDT of pressure vessels
  - Fabrication and heat treatment requirements
- Module - 2: Concepts related to inspection of in-service vessels API 510
  - Inspection and testing practices for in-service vessels as per API 510
  - Typical degradation mechanisms in pressure vessels
  - Monitoring degradation mechanisms
  - Inspection plans
  - Pressure vessel inspection external, internal, on-stream inspection
  - Inspection and testing of pressure relieving devices
  - Corrosion rate determination
  - Remaining life calculations

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- Frequency and time of inspection
- Evaluation of locally thinned areas
- Evaluation of pitted surface
- Correction of weld joint efficiency
- Repairs, alterations & re-rating of pressure vessels
- Reports and records
- Sample inspection record

❖ Module - 3: Other related codes, standards and recommended practices

- Detail discussions on damage mechanisms (API 571)
- Introduction to ASME Sec IX and its requirements
- Understanding of PQR and WPS
- Welding procedure qualification & welder qualification
- Understanding rules imposed by ASME Sec V for various NDE techniques
- Inspection of pressure relief devices (API RP 576)
- Safety valves, relief valves, safety relief valves
- Balanced safety relief valves
- Inspection and test procedures of pressure relief devices
- Discussions on welding inspection and metallurgy (API RP 577)
- Practice examinations close book and open book
- Concluding session

❖ POST-ASSESSMENT and EVALUATION

Training Requirement:

"Hand's on practical sessions, equipment and software will be applied during the course if required and as per the client's request."

Contents can be adapted to your specific wishes. It is therefore possible to focus on specific modules of the training course as per client's learning needs and objectives. Further, it should be forwarded to us a month prior to the course dates.

Training Methodology:

This interactive training course includes the following training methodologies as a percentage of the total tuition hours:

- 30% Lectures, Concepts, Role Play
- 70% Workshops & Work Presentations, Techniques, Based on Case Studies & Practical Exercises, Gamification, Software & General Discussions
- Pre and Post Test

Training Certificate(s):

CMCT Internationally recognized certificate(s) will be issued to each participant who completed the course.

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Training Fees:

TBA as per the course location - This rate includes participant's manual, hand-outs, buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

Note: The 5% VAT (Value Added Tax), will be effective starting 01st of January 2018 as per the new regulation from the UAE Government. The VAT applies for all quotation both for local and abroad.

Training Timings:

Daily Timings:

07:45 - 08:00	Morning Coffee / Tea
08:00 - 10:00	First Session
10:00 - 10:20	Recess (Coffee/Tea/Snacks)
10:20 - 12:20	Second Session
12:20 - 13:00	Recess (Prayer Break & Lunch)
13:00 - 14:00	Last Session

For training registrations or in-house enquiries, please contact:

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