



API 510 PRESSURE VESSEL INSPECTOR CERTIFICATION PREPARATION PROGRAM

COURSE DURATION: 7 DAYS

An intensive course with daily homework & a final exam (similar to API 510 exam); special emphasis on the use of related codes & calculations. Study Guide is provided for pre-class study.



COURSE DESCRIPTION

The API 510 Pressure Vessel Inspector Certification Preparation program is designed to equip individuals with broad knowledge base relating to **maintenance, inspection, repair, and alteration of pressure vessels.**

This program is produced by **MSTS Inspection Training Services** in Oklahoma, U.S. All instructors trained by **Mark Smith** (Master Trainer of MSTS) are selected for their technical and **"wake-ability"** skills. ("Wake-ability" – the ability to minimize snores during long, boring technical training.) Our students generally have a 90% passing rate.

This program benefits employers and the industry as a whole by helping to:

- **Improve** management control of **process unit operation, repair, and maintenance**
- Reduce the potential for **inspection delays**
- Provide a **continued high level of safety** through the use of highly specialized and experienced inspectors



Course Notes From
Mark Smith
Master Trainer from
MSTS Training Services



PREPARE YOURSELF TO BE A CERTIFIED API 510 INSPECTOR!

COURSE OBJECTIVES

The course provides participants with the knowledge necessary to:

- ✓ Successfully pass the API 510 Pressure Vessel Inspector certification exam
- ✓ Effectively use major codes: ASME B&PV & Sections V, VIII, & IX
- ✓ Perform all basic piping calculations needed for the API exam (e.g. tmin, test pressure, MAWP, static head, MDMT, corrosion rates, remaining life, etc.)
- ✓ Use API's requirements during inspection, repairs, and alterations of pressure vessels
- ✓ Review welding procedures (WPS/PQR) and welder performance qualifications (WPQ)

COURSE OUTLINE

DAY 1

1) Welcome & Introduction

2) ASME B&PV Section VIII – Vessel Fabrication Code

Learn how to successfully use this Code:

- Purpose of the Code
- Scope of the Code
- Organization of the Code
- Qualification requirements specified by the Code
- Roles specified by the Code
- Key terms discussed in the Code
- Tips on how to find needed information in the Code

3) API 510 Sections 1-4

- Purpose of API 510
- Scope of API 510
- Responsibilities defined in API 510
- Tips on how to memorize important information from API 510

Evening Session:

- Section VIII Homework
- Use the Code to answer typical questions found in the API exam



WHO SHOULD ATTEND?

Designed for pressure equipment inspectors and engineers working in refineries, chemical & industrial plants, gas plants, pipeline terminals, and oil fields.

- Inspection / Mechanical Engineer
- Asset Integrity Engineer
- Material & Corrosion Engineer
- DOSH Officer
- Welding Inspector
- Project Engineer
- QA /QC / NDT Engineer
- Quality / Safety Coordinator
- Static Engineer, Technician

No required class pre-requisites. However, if you wish to pursue the API Certification Exam, a minimal years of experience on subject matter is required depending on your educational qualifications.

Please refer to the Exam Qualification Requirements at: www.api.org/icp

DAY 2

1) Review Homework from Day 1

2) ASME B&PV VIII – Key Concepts

- Vessel MAWP
- Vessel Part MAWP
- Stresses – Longitudinal and Circumferential
- Types of Joints, Weld Joint Categories
- Amount of RT – Full or Spot
- RT Factors

3) ASME B&PV VIII – Calculations & Charts

Learn how to successfully determine the following:

- Static Head Pressure
- Vessel MAWP
- Joint Efficiency
- Minimum Thickness for a Cylindrical Shell

Evening Session:

- Section VIII Homework
- Practice all Calculations covered in class

DAY 3

1) Review homework from Day 2

2) ASME B&PV VIII – Key Concepts

- Pressure Testing cautions & requirements
- The significant of a brittle fracture

3) ASME B&PV VIII – Calculations & Charts

Learn how to successfully determine the following:

- Minimum Thickness for a Formed Head
- Minimum Thickness for a Flat Head
- Vessel Part MAWP for Shell and Formed Heads
- Hydrotest Test Pressure
- Pneumatic Test Pressure
- Vessel MDMT
- Acceptance criteria for Impact Tests
- Maximum Allowable External Pressure for a Shell

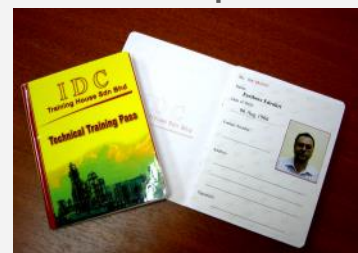
Evening Session:

- Section VIII Homework
- Practice all Calculations covered in class



BONUS !!!

Technical Training Passes will be provided



DAY 4

1) Review homework from Day 3

2) ASME B&PV VIII –Key Concepts

- Fillet weld terms
- Principles of nozzle reinforcement

3) ASME B&PV VIII - Calculations & Charts

Learn how to successfully determine the following:

- Minimum size of nozzle fillet welds
- Nozzle reinforcement

4) API 510 Sections 5-6

- Corrosion Mechanisms
- Fitness for Service Evaluations
- Inspection Types and Requirements, Inspection Intervals
- Pressure Testing Requirements
- Inspection of Relief Devices

Evening Session:

- Section VIII Homework
- Practice all Calculations covered in class

DAY 5

1) Review Homework from Day 4

2) ASME B&PV Section IX - Welding Code

- Purpose of the Code
- Roles of the Inspector
- Organization of the Code
- Welding Positions – Test and Field
- Testing Requirements and Acceptance Criteria
- Welder Qualification Process and Restrictions
- Weld Procedure Qualification Process and Restrictions

3) Review and Evaluate a WPQ (Welder Performance Qualification)

4) Review and Evaluate a WPS (Welding Procedure Specification) and the associated PQR (Procedure Qualification Record)

Evening Session:

- Section IX Homework
- Open and Closed book Quiz, evaluate 2 WPQ's, and 1 WPS/PQR



COURSE DURATION

- 7 Days Training

DAILY SCHEDULE

- 8:30am - 5:30pm (Workshop)
- 6:00pm - 7:30pm
(Evening session - Optional)

ITEMS TO BRING

- Calculator
- Lots of Questions
- A "CAN-DO" Attitude
- Codes/Standards (in hardcopy)
* Please refer to 510 Publications Effectivity Sheet at https://www.api.org/~media/Files/Certification/ICP/ICP-Certification-Programs/510/EKS_%20510_20190411_Septemper2019.pdf

Stationeries such as pen and highlighter will be provided.



DAY 6

1) Review Homework from Day 5

2) API 510 Section 7

- Repairs & Alterations Requirements
- PWHT Alternatives
- Inspector & Engineer Roles
- Re-rating Requirements

3) ASME B&PV Section V – NDE

- Purpose of the Code
- Organization in the Code
- Tips on how to use the Code
- RT Techniques
- Purpose & Selection of IQI's
- RT Film Density Requirements
- Key terms discussed w to find needed information in the Code

Evening Session:

- Section V Homework
- Open and Closed book Quiz, API 510 Quiz

DAY 7

1) Review Homework from Day 6

2) API 576 – Relief Devices

- Types of Relief Devices
- Purpose & operation of Balanced Bellows Relief Devices
- Purpose & operation of Pilot Operated Relief Devices
- Tips on how to study this document

3) API 572 – Inspection of Vessels

- Tips on how to study this document

4) Chap 2 – Conditions causing Deterioration

- Tips on how to study this document

5) Practice Exam – Exam is similar to the API 510 exam

NOTE:

- * Sequence of module is subject to training progress.





TRAINER'S PROFILE

LUTZ SEIBT

Lutz Seibt has more than 25 years hands-on experience as an **Authorized Inspector and Auditor acc. to German Pressure Vessel (AD Merkblaetter), Boiler (TRD) and Storage Tanks Codes, Pressure Equipment Directive (PED), Transportable Pressure Equipment Directive (TPED) and European Construction Material Directive; 9 years out of it within TUV's International Business Unit in Asia Pacific.**

He has conducted numerous training sessions related to Pressure Equipments (based on American and European standards) in Malaysia, Singapore, Korea, China, Thailand and Vietnam.

TECHNICAL QUALIFICATIONS

- ✓ Certified International Welding Engineers (International Institute of Welding - IIW, Germany)
- ✓ Certified API 510 Pressure Vessel Inspector
- ✓ Certified API 570 Piping Inspector
- ✓ Certified API 577 Advanced Welding Inspection & Metallurgy Professional
- ✓ Certified Pedestal Crane Inspector acc. to API RP 2D (Cranetech Training & Inspection, Inc., USA)
- ✓ Certified Safety Engineer (Fachhochschule Frankfurt, Germany)
- ✓ Environmental Auditor (Technical Academy Esslingen, Germany)
- ✓ Bachelor Degree – Motor Vehicle Engineering

SPECIAL SKILLS

- ✓ Inspector for periodical inspection & certification of
 - * Pressure vessels, Steam boilers, Piping Systems
 - * Cranes, Hoisting equipment, Hoisting equipment of lifeboats
- ✓ Inspector for third party & welding inspection and QA/QC in manufacturing / construction of
 - * Pressure vessels, Steam boilers, Piping Systems

COURSES CONDUCTED

- API 510 Pressure Vessel Inspector
- API 570 Piping Inspector
- API 577 Advanced Welding Inspection & Metallurgy Professional cum IDC Welding Inspector
- ASME IX "Welding Qualification"
- ASME VIII Division 1 "Pressure Vessel"
- European Pressure Equipment Directive (PED) 97/23/EC Simplified
- IDC Piping Specialist - Part 1: ASME B31.3 Process Piping
- Leak or Pressure Testing of Pressure Equipment
- Material Certificates (EN10204 / EN10168 / ISO10474)
- Welding & NDT Symbols (AWS / ISO Code)



TRAINER'S PROFILE

LUTZ SEIBT

TESTIMONIALS

It was an excellent program conducted by a very experienced tutor. The discussion topics were directly related to my work scope and responsibilities & helpful and recommended this course to any inspection personnel.

E. Kanna

Discipline Head, Inspection Execution, Sarawak Shell Bhd

As always the course has been conducted to an excellent standard and the learning very much tuned to actual work environments. Very much recommended to all levels of the engineering community.

Pg Hassanal ASBPHM Puteh

Utilities Plant Inspector, Brunei LNG Sdn Bhd

What I like most about the Training is the **SIMPLIFICATION**.

P.Govalupillay

Managing Director, PT. Atmino (Indonesia)

Before I attend this Training, my knowledge about the pressure vessel code is very poor. Now, I am **SELF-MOTIVATED** to know more about ASME, quite interesting.

Adi Setiawan

Engineer, PT. Atmino (Indonesia)

The course was conducted successfully and I believe it helps me in having a better understanding of ASME IX "Welding Qualification".

Ir Mohd Rosli Salim

Inspector Engineer, Petronas Penapisan (Melaka)

