

API 510

“Pressure Vessel — Maintenance Inspection, Rating, Repair and Alternation” ...and Certification Preparation



INTRODUCTION

This course gives a broad knowledge about “Pressure Vessel—Maintenance Inspection, Rating, Repair and Alternation” and prepares students for the API 510 exam.

The course is an intensive one-week course with a special emphasis on the use of the related codes and calculations.

ABOUT MSTs

MSTs is a company specializing in providing the needed practical training for petrochemical and industrial plant pressure equipment inspectors and engineers.

Currently, MSTs provides eleven courses specifically designed to help pressure equipment personnel improve their technical knowledge and skills.

MSTs instructors are selected for their technical and “wake-ability” skills. (“Wake-ability” – the ability to minimize snores during long, boring technical training.)

API TRAINING

MSTs most popular courses are the API certification classes. MSTs offer classes prior to each API exam. These classes and exams are not easy, so only individuals who are serious about their pressure equipment career should participate.

MSTs students generally have a 90% passing rate.

WHO SHOULD JOIN

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

CLASS PARTICIPANTS

Students should have 3 years of experience at a petro-, chemical- or industrial facility and have at least 1 year of inspection experience.

There are no required class prerequisites, but other helpful MSTs courses include: Surface Inspection, Welding Inspection, RT Film Interpretation, and the Inspector’s Library.

OBJECTIVES

The course provides participants with the knowledge necessary to:

- ◆ Successfully pass to API 510 pressure vessel inspector certification exam
- ◆ Effectively use major codes: ASME B&PV Sections V, VIII, & IX
- ◆ Perform all basic vessel calculations needed for the API exam (e.g. t_{min} , 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)

SPEAKER’S BACKGROUND

Mr. Lutz Seibt has 16 years hand-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 given training sessions on Pressure Equipments and German Pressure Vessel Standards for instance in Malaysia, Singapore, Korea and China. The recent trainings he has conducted in year 2008 include:-

- ◆ European Pressure Equipment Directive
- ◆ ASME IX Code “Welding Qualifications” Simplified
- ◆ ASME VIII Division 1 “Pressure Vessel Calculation & Design”
- ◆ ASME VIII Division 1 “Pressure Vessel” Code Simplified

Organized by:

IDC
Training House Sdn Bhd

594752 (M)
HRD Approved Training Provider (AO470)
Ministry of Finance (Reg. No 357-02088676)



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FEEDBACK FROM PAST PARTICIPANTS

“Before I attend this Training, my knowledge about the pressure vessel code is very poor. Now, I am self-motivated to get to know more about ASME, quite interesting.”

Adi Setiawan, Engineer, PT. Atmindo(Indonesia)

“What I like most about the Training is the SIMPLIFICATION.”

P.Govalupillay, Managing Director, PT. Atmindo (Indonesia)

“The presentation material is neat and almost complete; especially the little note given to stick onto the ASME code, very helpful!”

“Putting the color tabs on the codes make it simpler to look into. ASME presentation by Lutz is good and understandable.”

“After explained by the Trainer, I am more familiar with the ASME code. I found that ASME is not as difficult as we thought. Makes our life simpler and easier.”

“The lesson is quite interesting!”

My API training with MSTs made me confident to know now that I am doing my job the right way. Mark (as a Trainer) not only explains the standards but also shares his own experiences as he teaches the class. My training also allowed me to meet and interact with my own peers and thus now have my own network worldwide. I would only complete my API trainings and reviews with MSTs.

*Malou M. Baluyut
Senior Engineer
Shell Guam, Inc.*

I have sent my employees to other training classes and have had little positive feed back from the employees. This was reflected on their test scores. I then sent three other employees and I myself attended a MSTs class and was very pleased with the manner in which the subject matter was presented. All of my employees left with a real understanding of the subject matter, and confidence that they would pass their API exams!

*Robert G. Maddox
Vice President of Operations
Materials Technology Group L.L.C*

NOTES

This is an intense course with daily homework and a final exam (similar to the API 510 exam). A study guide is issued to direct participant's pre-class study.

CLASS SIZE

Enrollment is limited to 20 students.

BRING TO CLASS

Students should bring to class: a calculator, a straight edge (or triangle), pencils, highlighters, lots of questions, and a “CAN-DO” attitude.

Also, participants must bring the appropriate codes required for the API exam.

REQUIRED CODES FOR EXAM

ASME B&PV Codes:

- ♦ Section V Non-Destructive Examination
- ♦ Section VIII Construction of Pressure Vessels
- ♦ Section IX Welding Qualifications

API Codes:

- ♦ API 510 Pressure Vessel Code
- ♦ API 571 Damage Mechanisms in the Refinery Industry
- ♦ API 572 Inspection of Pressure Vessels
- ♦ API 576 Inspection of Pressure Relieving Devices
- ♦ API 577 Welding Inspection & Metallurgy

Note: See the API website to determine which editions will be used for your exam.

Codebooks can be obtained from Techstreet (www.techstreet.com) or Global Eng Docs (www.global.ih.com)

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DAY 1

- 1) Welcome & Introduction
- 2) ASME B&PV Section VIII – Vessel Fabrication Code: Learn how to successfully use this Code. Includes understanding:
 - ◆ 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.

DAY 2

- 1) Review Homework from Day 1
- 2) ASME B&PV VIII – Key Concepts. Understand the following 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. Understand the following key concepts.
 - ◆ Pressure Testing cautions & requirements
 - ◆ The significance 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.

DAY 4

- 1) Review homework from Day 3
- 2) ASME B&PV VIII – Key Concepts. Understand the following 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: Understand the following key concepts.
 - ◆ 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

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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 Understand the following key concepts.
 - ◆ Purpose of the Code
 - ◆ Organization of the Code
 - ◆ RT Techniques
 - ◆ Purpose & Selection of IQI's
 - ◆ RT Film Density Requirements
 - ◆ Key terms discussed in the Code
 - ◆ Tips on how 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 and operation of Balanced Bellows Relief Devices
 - ◆ Purpose and 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

Hotel Accommodation Required? Yes () No ()
If Yes, please fill in the followings,

Name of Hotel: _____

Check –in on: _____

Check –out on: _____

No. of rooms required: _____

Daily Schedule

8:30a.m. – 5:30p.m.
(Workshop)
7:00p.m. – 9:00p.m.
(Evening sessions)

Registration at 8.00am
On Day 1

API INFO

The API Web-site offers some useful information (i.e. application form, sample test question, required code books). Here's the web-site that takes you directly to the

HOTEL ACCOMODATION INFORMATION

Status	Hotel	Single	Double	Walking Distances from Hotel to IDC / Amcorp Mall
2 stars	SinggahSana Hotel www.hspj.com.my Tel:(603)-7956 2100	RM 125.00 Approximately USD35 with breakfast		About 15 mins walking distance (just across the road).
2 stars	Shah Village Hotel www.shahsresorts.com Tel:(603)-7956 9322	RM 138.00 Approximately USD 40 with breakfast	RM 195.50 Approximately USD 56 with breakfast	About 10 mins walking distance (just across the road).
4 stars	Armada PJ Hotel www.armada.com.my Tel :(603)-7954 6888	RM 253.00 Approximately USD 77 With breakfast	-	Has to go by train, only 1 station away *near Aeroline station in PJ
4 stars	Crystal Crown Hotel www.crystalcrown.com.my Tel :(603)-7958 4422	RM 184.00 Approximately USD 53 With breakfast	RM 207.00 Approximately USD 60 With breakfast	About 15 mins walking distance. By taxi, about 8 mins.
5 stars	Hilton PJ Hotel www.hilton.com Tel :(603)-7955 9122	RM 350.75 Approximately USD 100 with breakfast	RM 402.50 Approximately USD 115 with breakfast	About 15 mins walking distance. By taxi, about 8 mins.

* Room rate is subject to change if the needs arise from the hotel.

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