Case Studies, Discussion, and many Practical exercises!



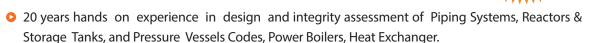
# ASME VIII Division 1 & 2 **Pressure Vessel Series**

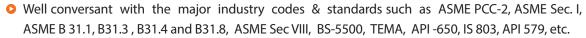
Discover the latest updates on ASME codes and practical session from the ASME guru

22<sup>nd</sup> - 26<sup>th</sup> April 2024 at Kuala Lumpur, Malaysia | 11<sup>th</sup> - 15<sup>th</sup> November 2024 at Kuala Lumpur, Malaysia 09th - 13th December 2024 at Bandung, Indonesia



## Petrosync Distinguished Instructor Mandar Mulay





He has conducted Training Courses (ASME Sec. I, ASME B 31.3 Piping Codes, ASME Sec. VIII, API 579, ASME PCC-2 Repair practices, and Heat Exchanger Design Operations & Maintenance) in Saudi Arabia, Qatar, Bahrain and UAE for engineers from companies like Saudi Aramco, SABIC group of Companies, Qatar Petroleum, ADNOC, BAPCO, Gulf Petrochemicals

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## ASME VIII DIVISION 1 & 2 - PRESSURE VESSEL SERIES

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## **Masterclass Overview**

This Five-day program offers detailed insight and thorough understanding of the most common ASME codes, pertaining to design/engineering and testing of the pressure vessels namely Section VIII Div. 1 and Section VIII Div. 2. This course emphasizes understanding of 'stated' and 'implied' requirements (i.e. content and intent) of the codes. The participants would be explained in detail the mechanics of adopting and applying the code rules and design formulas for different Design conditions and Services.

ASME VIII Div. 1 is the most commonly adopted code which is simple and used friendly, where as, ASME VIII Div 2 is an alternative code which provides a better engineered vessel with detailed stresses calculations and more rigorous testing, and allows for savings in material costs (thinner parts may be used).

This course is designed to give the participants the confidence and practice for carrying out design and Fabrication and testing for new vessels and also carrying out strength calculations and assessment of integrity of existing vessels.

How to adopt code rules for different types of vessels and with various service conditions will be illustrated with numerous case studies

Important code stipulation will be reviewed and discussed collectively with participants so as to address the difficulties and ambiguities they might have encountered during their working.

## **Masterclass Objectives**

- Familiarize participants with the concepts and technical terms of the codes
- Know the basic concepts of the codes and their design fundamentals
- Understand salient features and differences between Div 1 and Div 2
- Know the design of Shell, Heads, and other pressure parts
- Learn design of nozzles and nozzle reinforcements
- Design for external pressure and Jacketed vessels
- Design requirements for low temperature operation
- Discover the fabrication requirements, assembly and welding requirements.
- NDT and Inspection procedures
- How to carry out pressure testing, certification and stamping of Pressure Vessels.
- Introduction to Integrity assessment of in-service vessels.

### Specially Designed for

The course is designed for, but not limited to, mechincal, maintenance, and inspection / QAQC professionals who are involved in pressure vessel equipment.

- Design Engineers / Managers
- Mechanical Engineers / Managers
- Maintenance Engineers / Managers

- QAQC Engineers / Managers
- Inspection Engineers / Managers
- Reliability Engineers / Managers

Each attendee must bring a Laptop computer with Microsoft operating system and Scientific Calculator

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#### Course Agenda

#### Day 1

- Introduction to ASME codes
- Structure of ASME Sec. VIII Div. 1
- ASME Code system: Code revisions, Editions and addenda
- Pressure vessels included in ASME Codes
- Pressure vessels excluding from ASME codes
- Design principles adopted in ASME codes,
- Design rules, How these were derived and arrived at
- Concept of working pressure, design pressure, MAWP
- Allowable stress in ASME design
- Weld joint categories
- Weld joint types
- Concept of weld joint efficiency
- Design of cylindrical and spherical shells under internal pressure
- Static head calculations
- MAWP calculations
- Types of dished heads.
- Selection of dished heads based on pressure / Diameter
- Design of Ellipsoidal heads.
- Design of Torispherical heads
- Design of Hemispherical heads
- Design of conical heads
- Case Studies and examples

#### Day 2

- Nozzles and openings, reinforcement of openings
- Adequacy of weld joints for shells and nozzles
- Methods of design optimization, economical compliance.
- Quality Assurance System as per ASME codes
- Materials for pressure parts
- Materials for non-pressure parts
- Requirement of low temperature service
- Deciding impact test requirement
- Impact test exemptions
- Impact test acceptance criteria
- Fabrication requirements
- Forming and ovality
- Weld fit-ups and mis-alignments
- Weld reinforcements
- Weld metal build-up
- Weld joints in shells
- Weld joints for nozzle attachments

#### Day 3

- **Deciding PWHT requirement**
- **PWHT** methods
- PWHT temperature, time
- Heating / cooling rates
- Deciding nozzle orientations
- Requirements of man-ways and inspection openings
- NDT of pressure vessels
- Selection of NDT methods
- Code requirement for radiography
- Acceptance criteria for elongated and rounded indications
- PT and MT requirements
- Acceptance criteria for PT and MT
- Hydrostatic and Pneumatic Tests
- Requirements for Pressure Gauges for pressure test
- Calculating test pressures, Inspection pressures, pressurization stages and safety relief valve settings
- Test temperatures, Temperature Corrections
- Vessel stamping and Name plate
- Introduction to Integrity assessment of in-service vessels

## **PROGRAM SCHEDULE**

	08:00	Registration (Day1)
	08:10 – 10:00	Session I
	10:00 – 10:15	1st Tea Break
	10:15 – 12:30	Session II
	12:30 – 13:30	Lunch Break
	13:30 – 15:00	Session III
	15:00 – 15:15	2 <sup>nd</sup> Tea Break
	15:15 – 16:00	Session IV
	16:00	End of Day

<sup>\*</sup>Schedule may vary for each training

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#### Course Agenda

#### Day 4

- Introduction to ASME Sec. VIII Div.2
- Salient features of ASME Sec. VIII Div.2
- Basic differences between ASME VIII Div. 1 and ASME VIII Div. 2.
- Allowable Stress Basis and Safety factors for design
- User's design specification (UDS)
- Materials Permitted For Construction of Vessel Parts
- Supplemental Requirements for Carbon and Alloy Steels
- Material Test Requirements
- Deciding impact test requirement
- Stress ratio calculations
- Impact test exemptions
- Impact test acceptance criteria
- "Design by Rule" requirements
- Minimum Thickness Requirements
- Weld Category
- Weld Joint Type
- Types of Joints Permitted
- Design Rules for Shells Under Pressure
- Shell Tolerances
- Cylindrical Shells
- Conical Shells
- Spherical Shells and Hemispherical Heads
- Torispherical Heads
- Ellipsoidal Heads

#### Day 5

- Fabrication Requirements
- Fitting and Alignment
- Preheating and Heat Treatment of Weldments
- PWHT methods
- PWHT temperature, time
- Heating / cooling rates
- Examination groups for pressure vessels
- Radiography and UT requirement-Volume NDT
- PT and MT requirements-Surface NDT
- Acceptance criteria for NDT
- Pressure Testing Requirements
- Hydrostatic and Pneumatic Tests
- Requirements for Pressure Gauges for pressure test
- Calculating test pressures, Inspection pressures, pressurization
- Test temperatures, Temperature Corrections
- Vessel stamping and Name plate
- Case studies on Div 1 and Div 2
- Doubts and discussions

## Petrosync Quality

#### Limited Attendees

The course has limited seats to ensure maximum learning and experience for all delegates.

#### Certificate of Attendance

You will receive a Certificate of Attendance bearing the signatures of the Trainer upon successful completion of the course. This certificate is proof of your continuing professional development.

#### Interactive Training

You will be attending training designed to share both the latest knowledge and practical experience through interactive sessions. This will provide you with a deeper and more long-term understanding of your current issues.

#### **High Quality Course Materials**

Printed course manual will provide you with working materials throughout the course and will be an invaluable source of reference for you and your colleagues afterward. You can follow course progress on your laptop with soft copies provided.

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Petrosync Distinguished Instructor Mandar Mulay

Mandar Mulay has about 20 years hands on experience in design and integrity assessment of Piping Systems, Reactor & Storage Tanks, and Pressure Vessels, Power Boiler, and Heat Exchanger. He is well conversant with the major industry codes & standards such as ASME Sec. I, ASME Sec VIII, ASME B 31.1, B31.3, B31.4 and B31.8, ASME PCC-2, BS-5500, TEMA, API -650, IS 803, API 579 etc.

Major projects closely associated with, in his professional career so far are, Qatar Chemicals, Shell, Castrol India, Reliance Industries, Cargill Foods USA, etc.

His proficiency in Piping Systems, Reactors & Storage Tanks, and Pressure Vessel Codes, Power Boiler, and Heat Exchanger enables him to trace the similarities and differences of these codes. He also actively involved as Instructor for programs on the subjects of API/ASME/TEMA codes, Integrity Assessment, Fitness for Service, etc.

Along with his career in Engineering and Design Department in a multinational company at a very senior post for the last 20 years, he is also visiting faculty to a well known Engineering College in India for their P.G. Courses in Piping Design and Engineering.

Apart from being visiting faculty, He has also conducted several Training Courses (ASME Sec. I, ASME Sec. VIII, ASME B 31.3 Piping Codes, API 579 FFS code, ASME PCC-2 Repair practices, and Heat Exchanger Design Operations & Maintenance ) in Saudi Arabia, Qatar, Bahrain and UAE for engineers from companies like Saudi Aramco, SABIC group of Companies, Qatar Petroleum, ADNOC, BAPCO, DEWA, Gulf Petrochemicals etc. He has already conducted many times the training courses in API 579, where the participants rated him "Excellent" for these courses.

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Please checklist the package that you are attending!

ASME Section VIII Division 1 & 2 Schedules	LOCATION	PRICE
22 <sup>nd</sup> - 26 <sup>th</sup> April 2024	Kuala Lumpur, Malaysia	USD 3,250
11 <sup>th</sup> - 15 <sup>th</sup> November 2024	Kuala Lumpur, Malaysia	USD 3,250
09 <sup>th</sup> - 13 <sup>th</sup> December 2024	Bandung, Indonesia	USD 3,250

\*All prices are subject to change without notice and are not guaranteed, except that prices for an order that have been accepted by PetroSync is not subject to change after acceptance

\* Price is nett excluding Withholding Tax if any and will be quoted separately. Please send us the withholding tax payment receipt.

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Mobile Number:	Job Title:
Department:	Head of Department:
2nd Delegate Name	Mr ☐ Mrs ☐ Ms ☐ Dr ☐ Others
	Email:
Mobile Number:	Job Title:
Department:	Head of Department:
	Mr ☐ Mrs ☐ Ms ☐ Dr ☐ OthersI
	Email:
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Bank Address: 12 Marina Boulevard, Level 3. Marina Bay Financial Centre Tower 3. Singapore 018982

All bank charges to be borne by payer. Please ensure that PetroSync Global Pte Ltd receives the full invoiced amount.

#### PROGRAMME CONSULTANT

Contact : Cay Aagen

Email: registration@petrosync.com

Phone: +65 3159 0800

#### **TERMS AND CONDITIONS**

#### **DISCLAIMER**

Please note that trainers and topics were confirmed at the time of publishing; however, PetroSync may necessitate substitutions, alterations or cancellations of the trainers or topics or location (classroom / Virtual). As such, PetroSync reserves the right to change or cancel any part of its published programme due to unforeseen circumstances. Any substitutions or alterations will be updated on our web page as soon as possible

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#### **CANCELLATION POLICY**

Delegates who cancel after the training is officially confirmed run by email, are liable to pay the full course fee and no refunds will be granted. You may substitute delegates at any time as long as reasonable advance notice is given to Petrosync.

In the event that PetroSync cancels or postpones or change the trainer or change the training location (classroom / virtual) of an event for any reason and that the delegate is unable or unwilling to attend in on the rescheduled date, you will receive a credit voucher for 100% of the contract fee paid. You may use this credit voucher for another PetroSync to be mutually agreed with PetroSync, which must occur within a year from the date of postponement.

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#### **CERTIFICATE OF ATTENDANCE**

80% attendance is required for PetroSync's Certificate of Attendance.

#### **DETAILS**

Please accept our apologies for mail or email that is incorrectly addressed.

Please email us at registration@petrosync.com and inform us of any incorrect details. We will amend them accordingly.

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