



594752 (M)

IDC Training House

LAST UPDATED 20-11-2020



ASME B31.3 PROCESS PIPING

COURSE DURATION: 6 DAYS

REACH US Today for Greater Safety, Quality, Reliability, Productivity, Profitability
HRD Approved "Class A" Training Provider (since Year 2002). Registered with Ministry of Finance



COURSE DESCRIPTION

This 6-day specialist course provides a comprehensive coverage of ASME B 31.3 – Process Piping Code requirements for the **design, construction and integrity of process piping systems**. The course includes the new requirements of the **new edition** of ASME B 31.3 – 2016. The course is designed to facilitate the participants into becoming a complete ASME Code professional and apply the code in the **design, analysis, fabrication, erection and testing** of process piping systems.

KEY AREAS/TOPICS TO BE COVERED

- Deep coverage on the scope of process piping systems, organization and intent of the code, fluid service categories, selection of piping components, pressure design of pipe and fittings, valve selection, selection of flanges & gaskets, branch connections, selection of piping materials as per the code requirements, piping flexibility requirements, flexibility methods and calculations, material considerations and requirements, fabrication, Examination and testing requirements for metallic piping systems.
- Detailed insight is provided into code requirements for the design of non-metallic piping systems, category M fluids, high pressure piping systems & high purity piping systems.
- Piping flexibility analysis concepts will be explained in great detail using software CAESAR – II, and a complete analysis will be demonstrated detailing the effects of Thermal expansion loads, use of supports & restraints, consideration of SIF factors for piping joints, introducing expansion loops for flexibility, & discussion of sustained load considerations.
- Cover selection of flanges and requirements of ASME B 16.5 as well as standards for inspection and repair of piping systems that have been in service, as provided in API 570, Piping Inspection Code.
- A foundation of knowledge necessary for those responsible for assuring the mechanical integrity of existing piping systems, as well as those responsible for designing and constructing new piping systems.

The participants will use the ASME Code equations and Data tables at the end of each session and work on sample problems including identifying fluid service categories, design pressure and temperatures, component selection, pipe wall thickness calculation, flexibility calculations, material selection, pressure testing calculations, support span calculations, calculation of stresses, introducing flexibility in piping systems, expansion loop sizing, valve selection, P-T ratings, remaining life calculations & MAWP of piping systems.



WHO SHOULD ATTEND?

- Piping engineers, Piping designers, Pipe stress engineers, Senior Draftsmen working for EPC companies & Design Offices.
- Maintenance, QA/QC personnel, Piping Inspectors working for Process plants including Oil & Gas, Chemical, Petrochemical, Steel, Paper & Pulp, Semi-conductor, Cryogenic, Water & Food Processing, Pharmaceutical, Cement, Utility & Textile plants.
- Managers, Engineers, Supervisors and Plant Operation Personnel working for Process Plants.

COURSE OBJECTIVES

Upon successful completion of the course, participants will be able to:

- ✓ Have a very good background on the scope & definition of ASME B31.3, process piping design, construction & mechanical integrity
- ✓ Understand metallic pipe and fitting selection including its system failure, bases for selection and method requirements
- ✓ Identify the strengths of materials including its requirements and be able to identify the bases for design stresses
- ✓ Determine the components of pressure design and be able to know the concepts of weld joint strength factor and design pressure & temperature
- ✓ Know the process of valve selection and be able to list the requirements needed for the selection process
- ✓ Become familiar with the design of flanged joints and be able to describe its features & functions
- ✓ Introduce flexibility & flexibility analysis and able to explain the general considerations for the layout and support of pipes, Learn the various types and designs of expansion joints and be able to describe their components and use
- ✓ Understand the fabrication and installation methods of piping system and be able to list the requirements and guidelines needed in the inspection, examination and testing of pipes
- ✓ Know the design, fabrication, installation, inspection, examination and testing methods for nonmetallic piping systems, category M Fluid service, high pressure piping & high purity piping systems
- ✓ Review the concept of API 570 including its inspection, repair, alteration and rerating of in-service piping

COURSE OUTLINE

The following program is planned for this course. However, the course instructor(s) may modify this program before or during the course for technical reasons with no prior notice to participants. Nevertheless, the course objectives will always be met.

DAY 1 & 2

Welcome & Introduction

Introduction

- General Definitions, Piping Design Method, Piping System Standards, B31 Committee Organization, B31.3 Scope, Organization of the Code, Fluid Service Definitions

Metallic Pipe and Fitting Selection

- Piping System Failure, Bases for Selection, Listed versus Unlisted Piping Components, Fluid Service Requirements, Pipe, Joining Method, Fittings, Branch Connections, Flanges, Gaskets, Bolting



COURSE DURATION

- 6 Days Training

DAILY SCHEDULE

- 8:30am - 5:30pm

ITEMS TO BRING

- ASME B31.3 (2016 Edition)
- ASME B16.5 (2017 Edition)
- API 574 (Recommended)
(Codebooks in Hardcopy Recommended)
- Scientific Calculator
- Lots of Questions
- A "CAN-DO" Attitude

Stationeries such as pen and highlighter will be provided.

Overview of ASME B 16.5 Flange Requirements

- Scope, P-T Ratings, Material Selection, Dimensions, Material Specifications, and Temperature Considerations

Materials

- Strength of Materials, Bases for Design Stresses, B31.3 Material Requirements

Pressure Design

- Design Pressure and Temperature, Quality Factors, Weld Joint Strength Factor, Pressure Design of Components

DAY 3 & 4

Valves Selection

- Code Requirements, Selection by Valve Type

Introduction to Flexibility Analysis

- What are we trying to achieve?, Sustained loads, Displacement Loads, Reaction Design Criteria, Flexibility Analysis Example

Layout & Support

- General Considerations, Support Spacing, Support Locations, Support Elements, Fixing Problems

Flexibility

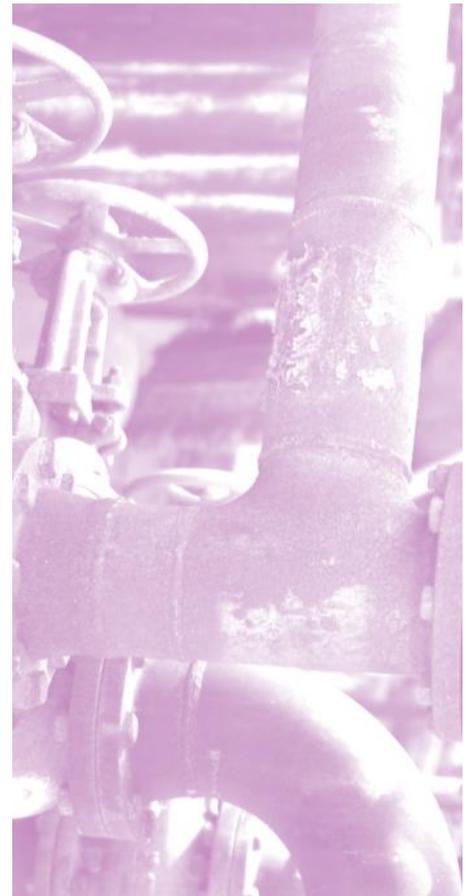
- General Considerations, Friction, Stress Intensification, Elbow Flexibility, Thermal Expansion, Spring Hangers, The Displacement Load Analysis, Elastic Follow-Up, Fixing Problems, Cautions

Reactions

- General Considerations, Fabricated Equipment, Rotating Equipment, Supports, Flanged Joints, Cold Spring

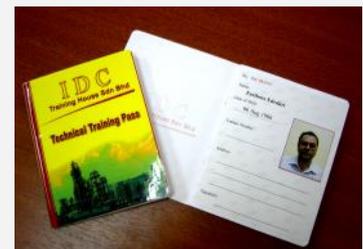
Flexibility Analysis

- When to Perform a Detailed Analysis, Computer Program Attributes, Considerations, Solving Problems, Typical Errors, Sample Computer Flexibility Analysis – CAESAR II



BONUS !!!

**Technical Training
Passes will be provided**



Designing with Expansion Joints

- Types of Expansion Joints, Pressure Thrust, Installation of Expansion Joints, Metal Bellows Expansion Joints, Other Considerations

DAY 5

Category M Fluid Service

- Design, Fabrication and Installation, Inspection, Exam and Testing

High Pressure Piping

- Design, Fabrication and Installation, Inspection, Exam and Testing

High Purity piping

- Basics of High Purity Piping & Non Metallic Piping System

Fabrication & Installation

- Welder/Brazer Qualification, Welding Processes, Weld Preparation, Typical Welds, Preheating and Heat Treatment, Bending and Forming, Typical Owner Added Requirements, Installation
- Inspection, Examination, Testing
- Responsibilities
- Inspection Acceptance Criterias
- Progressive Sampling Concept
- Extent of Required Examination
- Leak Testing

Summary, Open Forum, Closure

DAY 6

Practical Example + Examination

NOTE:

* Sequence of module is subject to training progress.



TRAINING METHODOLOGY

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

- 60% Lectures
- 30% Courses, Group Work & Practical Exercises
- 10% Videos & Software



TRAINER'S PROFILE

MD. KAMAL

Md. Kamal Uddin Ahmed, B.E.(Mechanical Engineering) is a Senior Piping & Pipeline Engineer with 15-20 years of progressive & extensive international experience. He is an expert in Process, Power Piping & Liquid & Gas Transmission Pipelines as per ASME & API standards including ASME B1.1, B31.3, B31.4, B31.8, & API 570.

He is a dynamic speaker & master trainer providing knowledge transfer effectively with interactive style that connects with the audience.

Md. Kamal has designed & presented piping design seminars to piping engineers & designers across India, Qatar & Saudi Arabia. He has trained more than 1500 mechanical, chemical, & petroleum engineers in Piping Engineering, Pipeline Design, HVAC & Plumbing Systems from different countries including India, Qatar, Saudi Arabia, Jordan, Turkey, Sudan, Ghana, Nigeria, Maldives, United Kingdom, & Thailand.

CLIENTS SERVED

Md. Kamal has offered professional training services to many corporate including:

- ORYX GTL Qatar
- ICB Tecnimont, Qatar Petroleum
- RASGAS
- Intergraph Consulting
- Infotech Enterprises
- Petrodar Oil & Gas Operating Co.

EXPERTISE IN

- ✓ Piping Systems Detailed Engineering
- ✓ Pipe Stress Analysis
- ✓ Pipe Hydraulics
- ✓ Process Plant Layout
- ✓ Pipeline Design & Construction
- ✓ Pipe Supports
- ✓ Piping Systems Erection & Testing
- ✓ HVAC Plant Design
- ✓ Plumbing & Fire Water Piping Systems

Throughout his career, Md. Kamal has been providing these expertise for both new and operating process / power plants & facility construction industry using codes / standards, software analysis and field experience in arriving at safe, economical piping designs and solutions to piping problems.

Besides, Md. Kamal has also offered his services such as:

- ✓ Project Management
- ✓ Design / Analysis
- ✓ Construction / Testing / Inspection

in **India & Kingdom Of Saudi Arabia** involving many onshore & offshore projects.

REGISTRATION FORM



IDC Training House

ASME B31.3 PROCESS PIPING

LAST UPDATED 20-11-2020



DATE: 05-10 APR 2021
TIME: 8:30AM—5:30PM

VENUE: IDC Training House, No. 7, Unit 8, Jalan Industri PBP 3,
Taman Industri Pusat Bandar Puchong, 47100 Puchong, Selangor, Malaysia.

Please tick where applicable []

COURSE FEE (PER PAX) []

RM 6,000 / USD 1,500

- * Prices include meals and course materials
- * Photocopy this form to register multiple delegates
- * Course fee is subjected to 6% Services Tax (ST) according to Malaysian Government law

Clauses for Registration (Training)

1. MYR course fee is applicable to all Malaysian participant or locally registered company.
2. USD course fee is applicable to any non-Malaysian and non-Malaysia registered company.
3. IDC will determine if the candidate is eligible for MYR or USD course fee based on the invoice (company-sponsored) / participant (self-sponsored) details
4. For any USD training fee paid in MYR, the conversion rate is set at USD 1 = RM 4.50

PARTICIPANT DETAILS

[] Self Sponsored

[] Sponsored by Company

Full Name (as per IC/Passport): _____

Salutation: _____

IC / Passport: _____

Job Title: _____

Email: _____

Mobile No.: _____

INVOICE DETAILS (If self-paying, kindly provide us your postal address)

Organization Name: _____

Attention Invoice to (HR/Training Dept.): _____

Mailing Address (Compulsory): _____

Salutation : _____

Direct Line : _____

Fax : _____

Postcode: _____

Email : _____

FINANCE DEPARTMENT CONTACT DETAILS

Name : _____

Job Title : _____

Email : _____

Direct Line: _____

AUTHORIZATION

Signatory must be authorized to sign on behalf

Name : _____

Job Title : _____

Signature : _____

Date : _____

Company Stamp:
(Applicable if sponsored by company)

* This registration is invalid without signature & company stamp.

METHOD OF PAYMENT (Please tick your preferred option)

[] BY CASH

* 50% down payment is required in order to secure the seat.

[] BY CREDIT CARD

* 50% down payment is required in order to secure the seat.

* Visa/Master card only. 2% surcharge based on total invoice value.

[] BY CHEQUE

* 50% down payment is required in order to secure the seat.

* Made payable to IDC Training House Sdn Bhd.

* Cheque payment will only be accepted if received NOT LESS than 7 working days before training date. Full prepayment via cheque will only be acknowledged upon clearance by the bank.

[] BY BANK TRANSFER

* 50% down payment is required in order to secure the seat.

* Seat is confirmed only upon payment received with remittance slip (quoted with invoice number).

* All bank charges to be borne by payer. Please ensure that IDC Training House Sdn Bhd receives the full invoiced amount.

Please refer to the page behind on the registration and training related terms and policies. →

To REGISTER, please EMAIL this form to info@idc-training.com or FAX to +603-80687720
For more INFO, please call +603-8061 5126 / 8061 8720

ASME B31.3 PROCESS PIPING

LAST UPDATED 20-11-2020


CURRENCY Please tick where applicable []
BANK ACCOUNT DETAILS

Account holder: IDC TRAINING HOUSE SDN BHD

<input type="checkbox"/> MYR (Malaysian Ringgit)	Bank : Ambank (M) Berhad Account No : 091-201-200378-6 Swift No : ARBK MYKLXXX
<input type="checkbox"/> USD (United States Dollar)	Bank : OCBC Bank (M) Berhad Account No : 786-113201-4 Swift No : OCBCMYKLXXX

DISCLAIMER

- 1) IDC Training House Sdn Bhd reserves the right to cancel or make alternative arrangements to the course content, date, trainer, venue & course fee if the needs arise due to unforeseen circumstances.
- 2) **Fee does not include any taxes** (withholding or otherwise). In case of any taxes applicable, the client has to ensure that the taxes are paid on top of the investment fee paid for the course. Compliance with the local tax laws is the responsibility of the client.
- 3) **Exam fee charged in MYR is subject to change based on currency conversion.** Participants who failed to register in the said exam window stated in the invoice will need to pay for the difference in MYR if there is an increase in the currency conversion.
- 4) In the event where *physical training is not possible due to border restriction*, IDC will **convert the training online**, and will consult all participants before doing so.

REGISTRATION & CANCELLATION POLICY

- 1) Seat is confirmed only upon receiving Registration Form with Proof of Payment. **Verbal or written request to reserve seat will not be entertained.**
- 2) Any cancellation / amendment must be received in writing. Otherwise, full course fee will be charged accordingly. **Verbal notice alone will not be entertained.**
- 3) For any cancellation received in writing **less than fourteen (14) working days prior to the course date**, or no-show, client is liable to pay the full course fee and **NO REFUND** will be granted. Replacement of delegate to same training session is allowed at no extra charges.
- 4) For any cancellation received in writing NOT less than fourteen (14) working days prior to the course date, full refund will be granted, with less MYR 200 administrative fee and any related bank or credit card charges.
- 5) For any postponement received in writing less than fourteen (14) working days of the training course, client is liable to pay 50% of course fee as a **penalty on late notice.**
- 6) **Service Fee** of MYR 200 will be charged to any request in amending issued invoice beyond given time.
- 7) **LOU provided** by company will **not serve as** 50% payment, and is merely an agreement of commitment.

COPYRIGHT AGREEMENT

Upon signing and submitting the registration form, I hereby agreed as follows:

No part of the course materials including course notes, colour tabs, handouts or any related materials distributed to the participants during the workshop may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise without either written permission of IDC Training House.

IDC Training House reserves the right to take any legal action towards the participant who violates this agreement without prior notice

I acknowledge that I have read the Agreement and understand my obligations to comply with the terms and conditions outlined in the Agreement. Hereby, I accept and understand the legal enforcement and consequences thereof.