



Energizing Engineering - Empowering Engineers



ISO 9001 : 2008

Institute of Piping Engineering & Building Services

CERTIFICATE ONLINE TRAINING COURSE



ASME B 31.3 – PROCESS PIPING (DESIGN, CONSTRUCTION & MECHANICAL INTEGRITY)

Course Speaker:

Mr. Mohammed Kamal Uddin Ahmed

Pipeline & Pumps Specialist.

Certified Engineer – Saudi Aramco, KSA.

International Trainer & Course Speaker.

ABOUT TRAINING PROGRAM

This 5 days specialized training program provides a comprehensive coverage of ASME B 31.3 – Process Piping Code requirements for the design, construction & 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 participants into becoming a complete ASME code professional and apply the in the design, analysis, fabrication, erection and testing of process piping systems.

The **Online Training Course** is developed by the faculty of **IPEBS**, who are International Course Speakers and have more than 20 years work & training experience individually.

COURSE OBJECTIVES

- 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 and be able to list the requirements and guidelines needed in the inspection, examination and testing of pipes
- Heighten awareness with the concept of instrument piping and pressure relieving systems and learn how these systems can be designed.
- Know the design, fabrication, installation, inspection, examination and testing methods for nonmetallic piping systems, category M Fluid service & high pressure piping
- Review the concept of API 570 including its inspection, repair, alteration and rerating of in-service piping

PROGRAM FEATURES

- ✓ In-depth course content for easy understanding.
- ✓ Blended Learning: Online contact with faculty.
- ✓ Accessibility to Course Faculty & Counseling Services.
- ✓ Job oriented training program.
- ✓ Student will be job ready, after the course.
- ✓ Student will acquire skills and knowledge similar to working professional.

WHO SHOULD ATTEND

- **Graduating College Students in the following disciplines**

- ✓ Mechanical Engineers
- ✓ Chemical Engineers
- ✓ Petroleum Engineers
- ✓ Production / Industrial Engineers
- ✓ Diploma / ITI

- **Working Professionals**

- ✓ Piping Design / Layout Engineers
- ✓ Pipeline Engineers
- ✓ Pipe Stress Engineers
- ✓ Pipeline Contractor
- ✓ Mechanical Engineers
- ✓ Pipeline Operators
- ✓ Senior Draftsman
- ✓ Government Regulators
- ✓ Inspection Engineers
- ✓ Piping QA / QC Engineers
- ✓ Piping Supervisors

- **Corporate / Organizations**

- ✓ EPC Companies
- ✓ Piping Equipment Manufacturing Companies
- ✓ Piping Consultants
- ✓ Piping Contractors
- ✓ Thermal Power Plants Industry
- ✓ Ship Building / Marine Industry

COURSE MODULES

- ✓ **Introduction**
- ✓ **Metallic Pipe and Fitting Selection**
- ✓ **Overview of ASME B 16.5 Flange Requirements**
- ✓ **Materials**
- ✓ **Pressure Design**
- ✓ **Valves Selection**
- ✓ **Flanged Joints**
- ✓ **Introduction to Flexibility Analysis**
- ✓ **Layout & Support**
- ✓ **Flexibility**
- ✓ **Reactions**
- ✓ **Flexibility Analysis**
- ✓ **Designing with Expansion Joints**
- ✓ **Fabrication & Installation**
- ✓ **Inspection, Examination, Testing**
- ✓ **Instrument Piping & Pressure Relieving Systems**
- ✓ **Non metallic Piping Systems**
- ✓ **Category M Fluid Service**
- ✓ **High Pressure Piping**
- ✓ **API -570- Inspection, Repair, Alteration and Rerating of In - Service Piping Systems**
- ✓ **Summary, Open Forum, Closure**

Detailed Course Modules

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

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

Valves Selection

- Code Requirements
- Selection by Valve Type

Flanged Joints

- Design
- Bolt-Up

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

Designing with Expansion Joints

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

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

Instrument Piping & Pressure Relieving Systems

- What must be protected
- How systems can be designed

Non metallic Piping Systems

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

Category M Fluid Service

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

High Pressure Piping

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

API -570- Inspection, Repair, Alteration and Rerating of In – Service Piping Systems

- Responsibilities, General Considerations
- Frequency and Extent of Inspections
- Remaining Life
- MAWP
- Repairs and Alterations
- Rerating

Summary, Open Forum, Closure

Course Fee Details:

Course Title	Fee for Indian Participants	Fee for International Participants
ASME B 31.3 – Process Piping (Design, Construction & Mechanical Integrity)	INR 25,000/-	USD 500/-

For making e – payment for the course fee please find **IPEBS** Bank account details below.

Account Name	IPEBS
Account Number	03182020005287
Bank Name	HDFC
Branch	ABIDS
RTGS / NEFT / IFSC Code	HDFC0004125
SWIFT Code	HDFCINBB

IPEBS Corporate Training Clients:

Company Name	Location	Company Name	Location
Intergraph Consultants	India	SPPC	Sudan
Port of Sohar	Oman	CFPE Technology Solutions	Malaysia
Uhambiso Consultant	South Africa	Qatar Petroleum Technical Center	Qatar
Newtech Consulting Group	Sudan	Petro Vietnam Marine Shipyard	Vietnam
Yashada Consultant	India	Locus Technologies	India
Telstar Life Science Pvt Ltd	India	RasGas	Qatar
BHEL	India	ICB Technimont	India & Italy
IDC Training House SDN BHD	Malaysia	LG-Digitech	Sudan
Sakhlain Energy	Russia	Infotech Enterprises	India
Aveon Offshore	Nigeria	Petroleum Operating Company	Sudan
BPCL	Bhutan	Dr. Reddy's Labs	India
Saitech Engineers	India	Vasavi Power Services	India
Riyan Architects	Maldives	Siddhi Consulting	India
Oryx GTL	Qatar	Qatar Petroleum	Qatar
WNPOC	Sudan	Centroid Technical Services	Sudan
GNPOC	Sudan	MG – Vowgas Group	Nigeria
Fleming gulf	UAE	DAL Group	Sudan

Terms & conditions:

CANCELLATIONS: IPEBS does not provide refunds for Cancellations done after registration & fee payment. However, credit maybe granted to a later program. This credit will be available for up to one year from the date of issuance.

COURSE MATERIAL AGREEMENT: It is the intention of IPEBS that the course text and materials supplied to participants at IPEBS courses are prepared and issued for the participants' sole use. Codes and standards constantly change and interpretations are issued by the publishing societies. Information contained in IPEBS course materials is based on the best available data obtained by IPEBS at the time of publication. IPEBS is in no way responsible for subsequent use regardless of intention.

PROGRAM CHANGE POLICY: Please note that instructors and topics were confirmed at the time of publishing this document; however, circumstances beyond the control of the training organizers may necessitate substitutions, alterations or cancellations

of the instructors and/or topics. As such, IPEBS reserves the right to alter or modify the instructors and/or topics if necessary. Any substitutions or alterations will be updated on our web site.

COURSE CANCELLATION BY IPEBS: IPEBS reserves the right to cancel any course due to circumstances beyond our control. All tuition fees will be refunded in the event of cancellation. IPEBS liability is limited to only those tuition fees paid in advance.

FORCE MAJEURE: Except for the obligations to make money payments as outlined hereunder, neither party shall be responsible to the other for delay or failure to perform any of the terms and conditions, or other activities, of this agreement if such delay or failure is caused by strike, war, act of God, or force majeure.

Frequently Asked Questions – FAQ's

Duration of the course?

Ans: Course Duration is 05 Days.

Daily Class Duration?

Ans: Morning 09:00am to 05:30pm with appropriate Lunch & Tea breaks.

Requirement for the course?

Ans: Computer / Laptop with good internet connection, Camera and Mic.

Support from IPEBS?

Ans: Faculty assigned to all registered participant of the course. Faculty not only helps to clear the participant's queries while doing the course but also monitors the progress of the participant to help in successful completion of the course.

Mode of Payment?

Ans: You can make the payment through electronic transfer or at **IPEBS** office.

Issue of Certificate?

E - Certificate will be issued by **IPEBS** only on successful completion of the course & will be sent via email to the participant.

Training Methodology?

Ans: Online streaming of lectures, contact with faculty by email or chat groups.

Training Material?

Ans: Printed Material – Course / Class handouts will be provided in printed format and shipped (within India) to the participants.

Soft Copy Material - Data tables, charts, Nomographs, drawings, concept theory, design calculations and practice exercise's will be provided in soft copy.

Demonstration software's and excel spread sheets will be provided.

**** International Shipping charges of printed material - course / class handouts to be borne by participants.**