

**ASME B 31.3 - Process Piping**



**Course Date : 05<sup>th</sup> Aug to 10<sup>th</sup> Aug 2019**

**Venue: IPEBS Hyderabad, INDIA.**

**Duration : 6 Days**



## **PROGRAM DESCRIPTION**

### **ASME B31.3 - Process Piping**

The course provides comprehensive coverage of the **ASME B31.3**, Process Piping Code requirements. It has been completely revised, reorganized and updated, and includes descriptions of important new requirements in the **2012 edition of ASME B31.3**, including the philosophy behind the changes.

The course will review the basic requirements of the ASME B31 Code for Pressure Piping with emphasis on B31.3, Process Piping. General topics in the course include: Code organization and intent, pressure design, design for sustained loads including support design, flexibility analysis, equipment loads, expansion joints, supports and restraints, materials, fabrication, examination, testing, and, for existing piping systems: mechanical integrity. Applications of these concepts, including simple hand analysis methods and computer-based analysis methods using **CAESAR II**, will be demonstrated. Examples of the required analysis and sources of further information will be provided. Inspection and maintenance (mechanical integrity) of existing piping systems will also be covered, as provided in **API 570, Piping Inspection Code**.

The course covers design, fabrication, examination and testing requirements of ASME B31.3. It covers Code requirements from design through start-up of new piping systems, as well as standards for inspection and repair of piping systems that have been in service, as provided in API 570, Piping Inspection Code.

This course provides a working knowledge of the Code, how it is organized, its intent, the basis for requirements, including both design and construction (fabrication, erection and testing) aspects. It provides 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.

Upon the successful completion of this course, the participant will gain and understanding of the physical phenomena which affect the design of piping systems: the ASME Code formulas and other methods by which these phenomena can be analyzed to determine resulting stresses, evaluation of those stresses relative to ASME Code limitations, the methods by which piping systems are fabricated, inspected and tested.

Each session will be conducted in a lecture/discussion format designed to provide intensive instruction and guidance on understanding Code requirements, and also on developing an awareness of other considerations in the design, analysis, fabrication and installation of piping which is not covered by the Codes. There will also be a demonstration of computer software that can be used to assist in piping analysis. The faculty will be available following each day's session to provide participants with further opportunity for discussion and consideration of specific problems. Participants should bring calculators for working sample problems. Participants may wish to bring a copy of ASME B31.3 if they have a copy available, but the course is designed such that it is not necessary for the students to have copies of the Code for reference.

**“Gain complete understanding of key issues affecting the design of Process Piping Systems”**

**“Understand the design Considerations for Metallic & Non-Metallic Piping Systems for different Fluid Service Categories”**

**“Attend this knowledge – packed workshop & become a Process Piping Code Specialist”**

**“Carry out design calculations, & flexibility analysis using the latest codes - learn directly from piping engineering experts”**

## WHY TRAIN WITH US

IPEBS team develops the training programs based on the practical consulting and site construction expertise that has been built up over the years in various specialist areas.

We set out to teach top-quality engineering skills training courses and we have achieved this - we constantly strive to make them as good as it's possible to - but over the years we have also refined our methods, adding several enhancements to the construction stages of course description, design of the courses and assessment.

We believe that these are important to our training participants; it's easy to see what the courses consist of, what value they will gain from attending them and how they can apply their new knowledge and skills in their workplace in a structured, evidence-rich way.

**"POWER YOUR CAREER FORWARD WITH IPEBS SPECIALIZED TRAINING COURSES"**



## WHAT YOU WILL LEARN

**Upon the 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 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



## **Who Should Attend**

This course provides an overview of all significant aspects and considerations of piping for those who are involved in the design, analysis, fabrication, installation, maintenance or ownership of piping systems.

Engineers, Senior Draftsmen, maintenance, quality assurance, and Manufacturing personnel who work in the chemical, petroleum, utility, plastic processing, pulp and paper, and manufacturing, fields will find it a time-saving means to broaden and update their knowledge of piping. Those who must comply with Code requirements will benefit from the practical approach presented in this course in obtaining satisfactory and economical piping systems.

## **WORKSHOP OVERVIEW**

### **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

**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, and 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

## **WORKSHOP OVERVIEW(cont'd)**

**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, and 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.

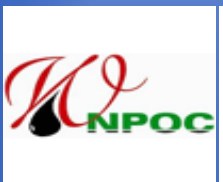
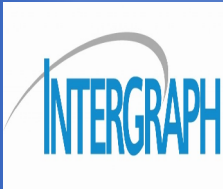
**Category M Fluid Service:** Design, Fabrication and Installation, Inspection, Examination and Testing.

**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**

## SELECTED CLIENTS



## GENERAL INFORMATION:

- Class begins at 09:00 AM and ends at 05:30 PM. Participants are expected to be present each day and during all training periods. Participants who do not fulfill the attendance requirement will not be certified. Please remember this when making your travel arrangements.
- Participant fee includes course material (containing all slides and presentation handouts), participation certificate.
- Accommodation can be arranged for the participants near to the training venue (accommodation is not included in the participants fee).
- The training is restricted to registered participants only. Visitors are not permitted.
- Course attendance certificate will be issued to all participants.
- Use of mobile phones, Personal Data Assistants (PDA, Blackberry) and pagers is not permitted during workshop training periods. Same applies for use of laptop, tablet, and computer for any purpose (E-mail, games etc.) other than workshop training.
- The recommended attire is business casual.
- Participants are expected to maintain a professional standard of appearance and behavior. Any participant wearing inappropriate attire or behaving in an unprofessional manner will be given a verbal warning. Further incidents may result in the participant being asked to leave the class without refunding their fee.
- Failure to meet or comply with these requirements will result in non-certification.

## ABOUT IPEBS

*" Energizing Engineering – Empowering Engineers"*

IPEBS is a premium professional training service provider based in Hyderabad, India.

IPEBS has expertise in providing knowledge packed training courses relating to Plant Engineering with specialized training programs in Mechanical, Electrical, Instrumentation & Control, Civil/Structural, Process Engineering & Projects Management.

IPEBS core team comprises of Internationally reknowned course speakers and domain specialists.

People behind IPEBS have trained thousands of engineers/draftman from all over the Globe.

IPEBS trainers are Subject Matter Experts with real time Consulting & Construction experience.

## **INSTRUCTOR PROFILE**

### **Md. Kamal Uddin Ahmed**

***Piping / Pipeline Design & Engineering Specialist.  
Certified Engineer – Saudi Aramco, KSA.  
International Trainer & Course Speaker.***

Mr. Md. Kamal, B.E (Mech) is a Senior Piping & Pipeline Engineer with 15-20 years of progressive & extensive international experience.

His expertise includes 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, he has been providing this 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.

He has offered Project Management, Design / Analysis, Construction / Testing / Inspection services in India & Kingdom of Saudi Arabia involving many onshore & offshore projects.

He is an expert in Process, & Power Piping as per ASME & API standards including ASME B1.1, B31.3, B31.4, B31.8, & API 570.

He 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.

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

## **PARTICIPANT FEES:**

ASME B 31.3 Process Piping	Registration Fee	Group Discounts
Indian Participant	22,000/- INR	2 or more at 7% off 5 or more at 10% off
International Participant	500/- US \$	

Account Name: IPEBS Account No : 03182020005287

Branch Name : ABIDS Bank Name : HDFC

RTGS/NEFT/IFSC Code : HDFC0004125 Swift Code : HDFCINBB

All bank charges to be borne by payer. Please ensure that **IPEBS** receives the full invoiced amount.

Interested in Onsite training - save over 40% off in total fees, for further information on Onsite training please contact,  
E-mail : [corptrain@ipebs.in](mailto:corptrain@ipebs.in) Mobile- +91- 9885946711

## **Terms & conditions:**

**CANCELLATIONS & SUBSTITUTIONS:** Cancellations done 2 weeks prior to the course start date a full refund will be promptly made after a written cancellation is received. Cancellations done 1 week prior to the course start date a minimum charge of 50% of the total fee will be charged. No cancellations are accepted 6 Days before the course start date. However, credit maybe granted to a later workshop or you could send a substitute participant. After registration you may substitute a participant anytime.

**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 workshop 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 WORKSHOP/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.



## REGISTRATION

Please print or type clearly & use separate form for each Participant.

Please visit [www.ipebs.in](http://www.ipebs.in) for details on courses we offer and more updated information. You can also register online.

For applications by E-mail, please fill the form below and send to [register@ipebs.in](mailto:register@ipebs.in)

### Course Title: **ASME B31.3 - Process Piping**

COURSE DATE: \_\_\_\_\_ COURSE LOCATION: \_\_\_\_\_

NAME: \_\_\_\_\_

QUALIFICATION: \_\_\_\_\_ WORK EXPERIENCE (if any): \_\_\_\_\_

JOB TITLE: \_\_\_\_\_ COMPANY: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

CITY: \_\_\_\_\_ STATE: \_\_\_\_\_ POSTAL CODE: \_\_\_\_\_ COUNTRY: \_\_\_\_\_

PHONE: \_\_\_\_\_ FAX: \_\_\_\_\_ EMAIL: \_\_\_\_\_

### In case of Emergency, contact

NAME: \_\_\_\_\_ PHONE: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

EMAIL: \_\_\_\_\_

**NOTE: Registrations are not confirmed until full payment is received, course confirmation will be sent via Email.**

I, acknowledge to the terms & conditions of the organizer.

Date: \_\_\_\_\_

Signature: \_\_\_\_\_

### IPEBS

# 206, B - Block, 2nd Floor,  
Mayur Kushal Complex,  
Beside Chermas Showroom Abids,  
Hyderabad-500001, Telangana. (INDIA)  
Mob: +91 – 9885946711

[info@ipebs.in](mailto:info@ipebs.in) | [www.ipebs.in](http://www.ipebs.in)