

Mechanical Engineering

IPEBS

Pressure Vessel & Process Equipment Design & Engineering



Course Dates & Venues: 14th Apr to 20th Apr 2018 - Hyderabad, India.
Duration: 7 Days



PROGRAM DESCRIPTION

PRESSURE VESSEL & PROCESS EQUIPMENT DESIGN & ENGINEERING.

This course broadly covers design & construction including fabrication / testing of pressure vessels & other process equipments like heat exchangers, reactors & columns. The course is designed to give complete understanding of ASME Codes used in design of pressure vessels.

WHO WILL ATTEND

- Mechanical Engineers, Chemical Engineers responsible for pressure vessel / STATIC process equipment design & engineering.
- STATIC Equipment Design Engineers / Process Engineers / Inspection Engineers / Fabrication Engineers.
- Fresh Engineering Graduates aiming to work for EPC / Plant Owner Companies as Equipment Design Engineers.

WHAT YOU WILL LEARN

Upon completion of course the attendees will be able to

- Understand different types of Static Process Equipments.
- Pressure Vessel Design, Supports & Attachments.
- Prepare and develop pressure vessel & process equipment data sheet, sizing of process equipments, design them as per relevant codes, prepare fabrication details and specifications, estimation and quality assurance during fabrication and assembly.
- Mechanical Design of Pressure Vessels, Heat Exchangers -TEMA & Columns.
- The course also covers training on PVELITE (DEMO version) software which is a highly useful tool and gives u an upper edge as a design engineer in the process equipment design field.
- Understand how to use ASME Codes related to Pressure Vessel Design, Materials, Fabrication & Pressure Testing.
- Detail Engineering Aspects of Process Equipments
- Preparation of G.A. / Fabrication Drawings of Process Equipments.

“ Gain complete understanding of design, fabrication & testing of pressure vessel & static process equipments”

“ Prepare G.A. Drawings, Fabrication Drawings and perform mechanical Design calculations for pressure vessels and process equipments”

Trainees Testimonials

- I feel the course content and presentation matched that given in the brochure. I am satisfied.

George Gerber, South Africa.

- Happy with the material covered. Program was beneficial & good for discussion.

Thomas Van der Kolf, South Africa.

- Informative and familiarizes with code application to design of pressure vessel.

K. Sridhar, Tamil Nadu.

- Excellent, faculty is so friendly, understanding the problems and resolving quickly, good patience, nicely explaining on board, material etc. Will refer IPEBS sure.

K. Bala Krishna, Hyd.

- Overall good for detailed understanding. Personal observation on students.

Vishal Panchal, Mumbai.

WORKSHOP OVERVIEW

Module-1) Introduction

- o Introduction about process Industry and EPC (Engineering , Procurement, Construction) industry.
- o List of Equipments used in Industries, their introduction, applications.
- o Relevant Codes and Standards used in Industry

Module-2) Material Technology related to Pressure Vessel Design and Engineering

- o Basics on Material Technology related to Pressure Vessel Design
- o Stress strain Diagrams, Types of Materials, Commonly used carbon steels, Stainless steels, Low and High alloy steels, ASME Code properties for different materials and Engineering properties related to materials.
- o Factors governing choice of materials, criteria for material selection for process equipment
- o Materials for Different temperature requirements (High and Low Temperature), NACE requirements, Hydrogen Requirements, Petrochemical Requirements, Sour gas service requirements, cryogenic services.
- o Types of Gaskets , Gasket material selection , Role of gaskets in Pressure Vessel Design

Module-3) ASME Codes and its relation to Pressure Vessel Design

- o Introduction of Various Standards of Different Consulting and Engineering Companies.
- o Codes related to Pressure Vessels & Process Equipments, (ASME Sec.VIII Div.1-Latest issue, ASME Sec II, TEMA and API 650 etc.)
- o Code philosophy understanding requirements of codes. - ie conditions/clauses governing pressure vessel design under ASME Sec VIII Div 1.
- o Pressure vessel categories & code rules for design of Pressure Vessel Design

Module-4) Mechanical Design of Pressure Vessels

- o Design and Analysis of Pressure Vessels & Component & Coded Design of Pressure Vessels (ASME Section VIII Division 1).
- o Internal and External Pressure Design , Design of cylindrical vessels, various types of dished heads, flat heads,
- o Design of Jacketed vessels, Limpet Coils, Horizontal equipments with saddle support.
- o Various Types of Supports & Attachments:
 - o Leg, Skirt, Bracket Supports,
 - o Lifting attachments, Design of Anchor Bolts, Safe Loads for Ropes and Chains.
- o Nozzle openings and reinforcements, Nozzle Local Load Analysis.

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”**

WORKSHOP OVERVIEW

- Welded joints, Butt welded joints of unequal Thicknesses, Application of Welding Symbols.
- Role of MAP, MAWP, Design Pressure, Design Temperatures, Allowable Stresses, Corrosion Allowance and Loadings as per ASME in Pressure Vessel Design.
- Impact Testing, PWHT along with heating rates and cooling rates, Hydro test pressure, Stamping of Vessels

Module-5) Pressure Vessel/Column/Reactor Design Calculation: (ASME SEC VIII, DIV.1)

- Maximum Allowable Stress Values (UG-23)
- Shell Design for Internal Pressure (UG-16, UG-27,Appendix 1-2)
- Dished End Design For Internal Pressure (UG-32)
- Shell Design for External Pressure (UG-28, UG-29,UG-30)
- Dished End Design For External Pressure (UG-33)
- Hydro test Pressure/Pneumatic Test (UG-99,UG-100)
- Wind Load (IS-875, Pt-3)
- Seismic Load (IS-1893, Pt-1 & 4)
- Combined Loading Effect
- Conical & Toriconical Section Analysis (UG-32,33, Appendix 1-5 & 1-8)
- Weight Calculation
- Opening (Nozzles) (UG-36 ~ UG-45)
- Local Load (WRC 107 & 297)
- MDMT & Impact Test Enigma (UCS-66)
- Lifting & Tailing Lug analysis
- Support Analysis (Skirt, Leg, Saddle ,Lug) & Anchor Bolt Design
- Joint Efficiency, MAWP, MAP, SR of DE for Forming Operation
- PWHT (UCS-56).
- Types of Gaskets, Gasket material selection, Role of gaskets in Pressure Vessel Design.
- Mechanical Design of Non Standard Flanges as per Appendix 2 .
- Mechanical Design of Jacketed Vessels and Limpet Coils

Module-6) Fabrication of Pressure Vessels

- Plate rolling, Plate Bending, Welding methodologies (STAW, GTAW, GMAW, SMAW) , welding symbols , fabrication sequences , fabrication schedules, plate forming, cutting etc.
- Hydro testing of pressure vessels, pneumatic testing of pressure vessels.
- Painting and coating for corrosion protection, surface preparation, pickling & passivation of process equipments

WORKSHOP OVERVIEW

Module-7) Column & Tower Internals

- Types of Internals
- Functions of Internals
- Process aspect of these internals
- Specialized manufacturers of internals.
- Scope and design of the internals

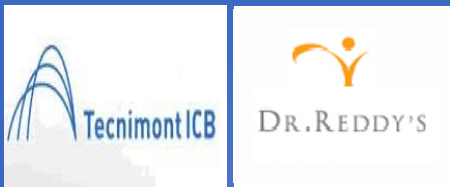
Module-8) Design & Analysis of Heat Exchangers

- Heat Exchanger Types , Classifications , TEMA types, classifications,
- Design of Shell, Channel, Shell Bonnet , Channel Cover , Selection of Girth Flanges.
- Limitations in the use of heat exchangers.
- Components of Heat Exchangers
- Design aspects in the design of Heat Exchangers .
- Tube sheet Design: Fixed Tube sheet , Floating Tube sheet , U – Tube sheet
- Design of tube sheet as per TEMA as per Bending and Shear Loading.
- Limiting cases in the design of heat exchangers.
- Testing of Heat Exchangers
- Introduction to the following types of heat exchangers :
 - Condensers
 - Evaporators
 - Reboilers
 - Plate Heat Exchangers

Module-9) Detail Engineering Aspects of Process Equipments

- Understanding the BASIC ENGINEERING PACKAGE, Tender requirements of Clients, Engineering Design Basis , Understanding the Client and Project requirements , Issues co agreed between client and the Consultant.
- Preparation of Technical Specifications: Process Data Sheets and Mechanical Data Sheets.
- Information flow between Process and Mechanical and other relevant data required to prepare the Technical Specification.
- Understanding the scope of supply between mechanical, civil& process.
- Enquiry Stage design , drawings and other relevant calculations
- Preparation of General Arrangement Drawings & Fabrication Drawings of Process Equipments.
- Evaluation of Vendor Offers, Preparation of Technical Queries , Technical Bid Evaluation , Technical Recommendation to be given to the Client.

SELECTED CLIENTS



GENERAL INFORMATION:

- Workshop begins at 9:00 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.
- Exact venue of the workshop will be notified 2 weeks prior to the course start date.
- Participant fee includes printed course material (containing all slides and presentation handouts), participation certificate, Coffee/Tea/Snacks on arrival, morning & afternoon and buffet luncheon.
- Accommodation can be arranged for the participants at the workshop venue (accommodation is not included in the participants fee).
- The workshop is restricted to registered participants only, Visitors are not permitted.
- Workshop 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 related to Plant Engineering with specialized training programs in Mechanical, Electrical, Instrumentation & Control, Civil/Structural, Process Engineering & Projects Management.

IPEBS core team comprises of Internationally renowned 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

Mr. V. H. Ashok,
B.E. (Mechanical Engineering)

Summary

Mr. Ashok has over a decade of work experience in preparation / design calculations of Pressure Vessels, Heat Exchangers, Reactors, Columns, Filters, Stacks, Storage Tanks & Silencers. He is currently employed in a Multinational EPC company as Executive Design Engineer - Mechanical Static Equipments.

Mr. Ashok is well conversant with design codes & standards including ASME VIII Div.1, TEMA, API 650, WRC 107/297, fabrication standards like TOYO, EIL, UHDE, AXENS etc.

He has hands on experience on software's like PV Elite, CodeCalc, B-jac, Microprotol, AutoCAD, MS-Office, Nozzle Pro.

Mr. Ashok is Bachelor's in Mechanical Engineering from University of Mumbai, and is well versed with

- Preparation and checking of Technical Specification (Mechanical Data Sheet), Material Requisition, Inquiry specification, Foundation Load Data
- Technical Bid Analysis, Technical Negotiation Meetings with Vendors
- Answering the Vendor and client queries during execution of project
- Vendor Drawing checking, Technical Problem identification / Solving
- Engineering and expediting activity related to fabrication of Static Equipments
- Equipment draft sheet checking and approval along with coordination with other disciplines
- PDMS model updating based on mechanical design requirements

Mr. Ashok has worked with various Owner & Leading EPC companies in the India and Germany providing his specialist services for world's major projects in different process equipment design areas.

PARTICIPANT FEES:

PRESSURE VESSEL & PROCESS EQUIPMENT DESIGN & ENGINEERING 7 Days Workshop	Early Registration	*Registration Fee	Group Discounts
	At least 45 Days Prior to start of class	Less than 45 days prior to start of class	
Indian Participant	32,760/- INR	36,400/- INR	2 or more at 10% off 5 or more at 15% off 8 or more at 20% off
International Participant	1,070 US \$	1,190 US \$	
Account Name: IPEBS Branch Name : Abids, Hyderabad, Andhra Pradesh, India. Swift Code : HDFCINBB All bank charges to be borne by payer. Please ensure that IPEBS receives the full invoiced amount.			Account No : 03182020005287 Bank Name : HDFC Group discounts are provided based on the *Registration Fee.
Interested in Onsite training - save over 40% off in total fees, for further information on Onsite training please contact, E-mail : corptrain@ipebs.in Phone- +91-40- 30623249 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

REGISTRATION

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

Please visit 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

Course Title: PRESSURE VESSEL & PROCESS EQUIPMENT DESIGN & ENGINEERING

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
204, C-Block, 2nd Floor,
Mayur Kushal Complex,
Beside Chermas Showroom Abids,
Hyderabad-500001, Telangana. (INDIA)
Tel: +91 - 040 -30623249
Mob: +91 – 9885946711

info@ipebs.in | www.ipebs.in