

Vessels – Selection, Sizing and Process Data Sheet

The Course is designed for:

The course helps newcomers to process plant design to quickly learn basics of process vessels design and specification. They can start getting into doing it under normal supervision within a short time:

- Graduate Trainees in process department of a design engineering consultancy company or technical services departments of an operating company.
- Experienced engineers with no prior exposure to process design and engineering of pressure vessels.



About the Course:

The program covers a range of topics starting with vessel types, guidelines for selection, description of vessel components. Then it gets into sizing methods (diameter and length or height), selection of vessel internals, nozzles, and guidelines for preparing specification or data sheets. It includes instructions on specification of operating and design pressures, specifying i.d., o.d., and height, materials of construction, corrosion allowance, internals, nozzle schedule. It also defines inputs needed interactions needed between process, mechanical engineers and other disciplines.

The course is designed such that a graduate trainee or a newcomer to process design practices would be able to start sizing and specifying vessels with some guidance and supervision. The background given in the course will help in quick adaptation of the graduate trainees to process design practices. It also helps in using any software for sizing or simulation with better judgment and understanding on parameters used.

The course is designed towards normal vessels like Knock-out drums, Separators, Reflux Drums, Flash Drums, Condensate Separators etc.

More complex vessels like Distillation Column, Reactors etc. are not covered in this program.

Course Content:

| Module No. | TOPIC | DESCRIPTION |
|------------|---|--|
| 1 | Types of vessels and sizing | <ul style="list-style-type: none">• What is a pressure vessel• Description of vessel components• Types of vessels• Conventional internals in a vessel and their selection• Sizing of vertical and horizontal vapor liquid separators• Estimation of diameter• Components of vessel height – space for particle disengagement, internals, essential nozzles, instrumentation nozzles, access.• Estimation of length or height• Practice exercises |
| 2 | Data-sheets and Specifications | <ul style="list-style-type: none">• Typical Vessel Data Sheet• Operating Pressure, Design Pressure and MAWP• Material of construction• Corrosion allowance• Inside and outside diameter (i.d. & o.d.)• Internals and nozzles• Material specifications• Interdisciplinary engineering interactions and inputs• Codes and standards |
| 3 | Guidelines on 3-phase Separators | <ul style="list-style-type: none">• Types of Separators and selection• Types of special Internals and their selection• General guidelines on sizing• Hold-up time for liquid separation• Diameter and length• Control requirements• Data sheet and specification• Handling proprietary equipment specification |

Methodology of Presentation:

- Process Engineering is learnt by practice
- We provide the technique and we supplement it with our experience
- Power Point presentation in html5 with colorful slides packed with information
- Interesting and Interactive Quiz Sessions, exercises for better assimilation
- Narration wherever needed along with animation and script
- Quiz questions and answers.

Duration:

6 to 8 hours (excluding practice sessions which depends on learner's assimilation)

Course Developer:

Dr. U.K. Dutta is a consultant in the Hydrocarbon Process Industry, focusing on specialist consultancy services and training. Graduate in Chemical Engineering from IIT and Doctorate from Loughborough University of Technology (U.K), he has over 50 years of experience in Hydrocarbon Industry (upstream, midstream and downstream) in the areas of process and technology, engineering consultancy, project development, marketing and organizational development. He had work experience and association with major Indian and International companies like EIL, Union Carbide, CE Natco, Lummus Crest, Triune and Rotary Engineering. He has presented papers on Technology Development and Technology Transfer in major International Conferences such as ASCOPE and CHEMTECH.

He has conducted customized training programs for executives of major companies like **Petronas (Malaysia), Petrosin (Singapore), Vopak (Singapore), PTT (Thailand), Aker Kvaerner (Singapore), The Yokogawa Group, Technip (India), Ernst & Young, Triune Projects (India), Indian Chamber of Commerce, Solar Turbines (Singapore), Solar Turbines Inc. (San Diego, Brussels) and others.**

He has conducted several programs for executives in Singapore as **a faculty with National University of Singapore's industry training programs.**