DESIGN OF VESSELS, TANKS AND PIPING

3 CPD

SAIChE 433



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Course Outline

The main objective is to develop skills of attendees to assess vessels, tanks and piping design as a total systems approach, and to evaluate a number of economically viable materials for each application. A range of competencies are enhanced including use of engineering design and contextual judgement, developing knowledge-based engineering problem-solving, and other key design practices.

Economic benefits are firstly achieved through the evaluation of different materials and assessing the most suitable and thus effective materials given the critical variables such as pressure, temperature, corrosion, load bearing and other important system parameters.
Economic benefits are also achieved through optimisation of the design and a deeper understanding of how design approaches and parameters can be leveraged to greater savings and profits, while still within design standards and thus safe design parameters.

The popular, unique and information packed Course to enable those involved in design, projects and plant operations to analyse and design a range of process vessels, tanks and pipes in greater detail – thus achieving more cost-efficient and effective complete engineering designs aligned with each process requirement.

The vessel function and main design requirements are analysed through advanced needs, systems, scoping, information and risk analytical methods. Each of the main material types that can be applied in vessels designs are addressed in turn. Steels, Stainless Steels and Exotic Steels, Thermoplastics and Thermosets (Fibreglass), and Steel Plastic-lined Vessels are the main materials groupings evaluated (in total 12 materials types and combinations). Applicable standards are addressed for each material and the critical variables in total design are fully addressed. Pressure Vessels are also addressed in a special sub-section. Hazardous Processes are discussed, and attendees are introduced to the relevant design standards for hazards products.

Piping systems design introduces pipes as pressure vessels and the range of types evaluated matches the total 12 materials types and combinations discussed as vessels.

A section on installation and related topics is provided and there is guidance on vessel batch sizing, design for mixers and reactors, piping installation guidance and cautionaries with installations. Much attention is paid to the importance of vessel design lifetimes with alternate materials. There is a supporting sub-course on Economics in Engineering Manufacture and Design with interesting examples of cost savings through understanding where leverage in design can be achieved.

The final summary of the Course that we present at the end of DAY 2 is prepared as a series of DESIGN STAGES OR STEPS in a master chart with control checklists, and the appropriate design standards and design limitations are discussed and finalized. Interesting and unusual case studies are also presented.

Who should attend?

All qualified engineers, technologist and technicians who want to fully understand the design of vessel and tank systems and specially to gain new skills on optimising vessel designs while retaining safe operations. As with other E4A courses we also address capital cost savings from the design processes and material choice options for Vessels and Tanks.

Course outline?

- Introduction to Vessels and Tanks – types, markets, technical principles
- Design Financial Implications, Critical variables, Primary Cost Saving in Vessel Design
- Introduction to Materials and Corrosion and Design of Vessels
- Analytical Methods for Vessel Design
- Design of Steel, Stainless Steel Vessels
- Design of Thermoplastic Vessels
- Design of Fibreglass Vessels
- Design of Pressure Vessels
- Sub Courses – Mixers and Reactors, Batch Design
- Design of Vessels Master Flowchart

Requirements?

All E4A courses are live, on-line (webinar based) and extend over two days.

Quantity discounts are available for group attendances or multiple bookings paid in advance.

All courses include:
a. Interesting pre-reading material is sent to attendees normally two days prior to the start.
b. Course materials are emailed ahead to you for the course, and your personal library.
c. ZOOM links are sent to you 2 days prior to the course start date.
d. The Course framework and time-plan is sent ahead to attendees as an Excel Document enabling easy tracking.
e. Workshops, which include case studies and worked examples, are interspersed with tea and lunch breaks and all materials are sent ahead to attendees for these exercises.
f. A Certificate of Attendance, with CPD points reflected, is provided at the end of the event.

There is a full scope of reading material that extends the Course to enable the award of 3 CPD points and we will provide those details and discuss with attendees how these details can be addressed, at the time of your registration for the Course. The full live on-line attendance remains at 2 days.

Register?

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