



Presented By: John Broli of Engineers for Africa (E4A)

Course Outline

The main objective is to develop skills of attendees to approach pump designs as a total systems design including upstream and downstream lines, total piping systems and control with VSD and PLC designs.

Economic benefits are firstly achieved through the evaluation of different materials and assessing the most suitable and thus effective materials for the given process variables, service and functional needs, and potential hazards. Economic benefits are secondly achieved through optimisation of the design and a deeper understanding of how design approaches and parameters can be leveraged to greater savings and profits, whilst not compromising any EHS considerations.

All courses of E4A are directed at practical application of the theories of each of the course main topics and thus the courses are introduced with a series of articles for pre-reading to provide an overview to each course and to broadly introduce the attendees to the subject matter. Notes and articles on pumping systems are also frequently added. In this Course the importance of a total pumping systems approach is presented and emphasized and there is also extended consideration given to the many key and critical variables that are relevant to the design of pumping systems and thus the effectiveness of each design.

This popular, unique and information packed course enables those involved in design, projects and plant operations to analyse and design a range of pumping systems in greater detail – thus achieving more cost-efficient and effective complete engineering designs aligned with process requirements.

This course first provides overviews of the range of pumps available and then addresses all the technical points of pump design such as piping hydraulics, pump sizing, pump curves, NPSH and how a pump's operation is reflected in the curves. A solid presentation of all pump design parameters including seals is presented.

This Course focusses firstly on the fundamentals of materials with important coverage of materials used in pump and piping systems design as well as many important material grades, special terminologies and understanding key topics such as extruded versus welded pipe materials.

The need to understand the rating of metals and non-metals for pressure and temperature variables is dealt with in detail to ensure a wide understanding of materials in engineering design. There are a range of materials shown in our chart and for total systems there are 12 major materials choices presented.

The Course then addresses unique and special pump types such as slurry pumps, plastic pumps, chemical service steel-shrouded pumps, chemical service sump pumps, diaphragm pumps and other services, such as magnetic-drive pumps. A range of interesting design options for a range of special processes. The assessment of pipe layouts and the conditions of the pump operation (such as water hammer, pump sparing and others) are followed through to a detailed selection of the pump for the relevant service. There are also some sub-courses that are always added such as bellows design and corrosion as materials selection parameters - to broaden the course and provide the full pump system design considerations.

The final summary 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 pumping systems and specially to gain new skills on optimising pumping system designs for capital cost savings and power efficiency savings during operation.

Course outline?

- Introduction to Pumping Systems
Sub Courses on Temperature-Pressure effects, Materials and Corrosion, Bellows
- Pump types, Pumping Basics
Design Financial Implications, Critical variables, Primary Cost Saving in Pumping Systems
- Pumping Systems Design
- Special Pump Types, Design for Slurry Pumping
- Design of Pump Drives
- Design of Vessels and Piping Systems for Pumping Systems
- Design of Pump Seals
- Design of Pumping Systems 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.

Register?

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