

Fundamentals of Centrifugal and Positive Displacement Pump Sizing and Operation

Pump Fundamentals 101

This introductory course provides an introduction to the basic principals of operation for centrifugal pumps, reciprocating plunger pumps, and rotary screw positive displacement pumps. Participants will learn the key information required for sizing pumps, methods of pump control, key pump components, and common mistakes that occur in specifying these kinds of equipment. Ideal for professionals involved in the specification, purchase, operation or maintenance of rotating equipment.

Syllabus Overview:

1. Introduction to Centrifugal Pumps

- Sizing Topics
 - Basic principles of pump operation
 - Information required to size a pump
 - Reading Pump Curves
 - Centrifugal Pump Affinity Laws
 - System curves and pump control
 - Pump Best-Efficiency point (BEP) and reliability
 - NPSH and Cavitation
 - The impact of NPSH of pump options
- Pump Anatomy
 - Overview of main pump components and function
- Types of Centrifugal Pumps
 - Overview of different API pump designations
 - ANSI pumps
 - Review of other centrifugal pump types and use cases

2. Axial Positive Displacement Pumps

- Sizing Topics
 - Basic principles of operation, and differences compared to centrifugal pumps
 - Reading performance charts, and basic sizing calculations
 - PSV setpoints and interaction with pump and motor sizing
- Pump Anatomy
 - Overview of main pump components and function

3. Rotary Positive Displacement Pumps

- ▶ Sizing Topics
 - Brief overview on types of Rotary Positive Displacement Pumps
 - Basic principles of operation
 - Basic information required to size
 - Reading performance charts
 - Comparison of pump designs and their use cases
- ▶ Pump Anatomy
 - Overview of main pump components and function