Training - Centrifugal Pumps and Positive Displacement Pumps

Applications with CORYS dynamic simulator

PC-EN-P | Face-to-face only | 4 days

This course covers the centrifugal and positive displacement pumps technology and their operating conditions

Level

Expert

Public

Engineers and technicians involved in centrifugal and positive displacement pump operation, maintenance or engineering

Objectives

Attendees will be able to implement the following skills:

- Explain the operation and operation of centrifugal pumps and technical solutions
- Identify potential incidents on these machines
- Pre-select and size a centrifugal pump

Pedagogical & technical resources

- Actual examples from the refining, petrochemical and chemical industry
- Active participation is encouraged through case studies
- Use of a centrifugal pump dynamic simulator
- E-learning session previously to the presential one

Assessment of achievements

- Trainees are assessed throughout the training through practical application phases and interactions with the trainer
- A final on-the-spot evaluation may also be carried out at the end of the course and/or at the end of each module using tests designed to verify the learners' understanding and assimilation of the knowledge linked to the training objectives

Prerequisites

No prerequisites are necessary to follow this course

Responsable

IFP Training instructors, with expertise in the field and trained in modern teaching methods adapted to the specific needs of learners from the professional world

Program

HYDRODYNAMICS APPLIED TO A PUMPING SYSTEM — 1.5 days

Pump performance:

© IFPTraining

- Flow in a pump, velocities triangle, internal flow and energy losses.
- Theoretical and practical head: characteristic curve.
- Other characteristics: efficiency, power, NPSH required.
- Changes in characteristics vs. rotation, viscosity, impeller shape, cavitation.

Pipe system:

- System curve, resistance of flow and throttling control.
- Operating point: normal and maximum capacities, change in fluid characteristics and incidence on operating conditions.

Exercises with a dynamic simulator.

CENTRIFUGAL PUMP TECHNOLOGY & SELECTION 1.5 days

Centrifugal pump:

- Impeller and pump shape, suction operating conditions.

Mechanical seal:

- Selection according to API 682 standard and type.
- Friction face heating.
- Safety and environment: typical arrangements (single, dual, dry seal).
- Specific solutions: canned motor pump, magnetic drive pump.

Installation:

- Suction and discharge pipe design.
- NPSH available; base plate and grouting.
- Ancillary lines and equipment.
- Coupling and driven machines.
- Safety and environment.

POSITIVE DISPLACEMENT PUMP TECHNOLOGY & PERFORMANCE 0.5 day

Technology: different types of pumps (rotary and reciprocating pumps). Operation and performance of the different types of pumps.
Influence of clearance, internal leaks, nature of product on flow rate and pressure. Flow rate control.
Installation guidelines: position of tanks, line diameters, metering drums, pulsation dampeners, pressure valves.

PUMP OPERATION 0.5 day

Preparation: filling and draining. Start-up/shutdown: priming, hammer shock, risks to the process and the pump.
Monitoring parameters (vibration levels, noises, bearing housing temperature, motor intensity, pressures).
Parallel and serial operation. Safety conditions.
Reliability: types and source of failures (wear, ruptures, cavitation, leakages); improvement methods.
Exercises with dynamic simulator.

To French entities : IFP Training is referenced to DataDock ; you may contact your OPCO about potential funding.
Please contact our disabled persons referent to check the accessibility of this training program : referent.handicap@ifptraining.com

© IFPTraining