

Pumps Overview

Course general description:

Pump is one of the major common equipment in several industries such as; petrochemicals, power plants, pharmaceutical,...etc. The pumps are classified to major two families roto-dynamic and positive displacement, both have vital role in different application, in our course here we shall go through design, selection, operation, maintenance and troubleshooting of both families. Course aids are classroom lectures, exercises, videos, open discussions and workshops.

Audience:

This course is designed for:

1. Mechanical engineers
2. Process engineers
3. Maintenance Engineers
4. Supervisors from different disciplines

Course objectives:

By end of the course participants will gain:

1. Design basis of different types of pumps
2. Selection of pump according to application
3. Pump components
4. Pump operation & c/cs curves
5. Pumps maintenance & troubleshooting

Course duration:

5 days

Course location:

Dubai

Course contents:

Day-1

- Pretest
- Review of fluid mechanics & thermodynamics
- Introduction to pumps
- Pumps families
- Centrifugal pump operation theory

Day-2

- Centrifugal pump components
- Single stage centrifugal pump
- Leakage in centrifugal pump
- Centrifugal pump performance & loads types (axial & radial)
- Sealing in centrifugal pumps
- Loads mitigation in centrifugal pumps

Day-3

- NSPH & cavitation
- Centrifugal pump performance curve
- Introduction to positive displacement pumps
- Rotary pumps
- Reciprocating pumps

Day-4

- Selecting positive displacement pump
- Gear pump & lube pump
- Reciprocating piston & plunger pumps
- Screw pump, diaphragm pump, swash plate pump,....etc
- Seal less pump

Day-5

- Case of centrifugal pump design
- Exercises of different cases to understand the meaning of common expressions related to pumps
- Exercise to train participants how to select pump type
- Posttest

Methodology:

- 50% lectures & concepts
- 10% Videos
- 10% Case studies
- 10% Exercises
- 10% Discussions
- 10% Software (if applicable or examples)

Course code: (TEME001)