

Program title: Pumps training-overview

DESIGNED FOR

The course is designed for, but not limited to, R&D engineers, design engineers, quality assurance engineers, operation&maintenance engineers, and sales persons, who are involved with centrifugal pump engineering.

YOU WILL LEARN

- Basics on pump
- Points on pump design
- Causes of troubles
- Classification of troubles
- Mechanism of experienced troubles and its countermeasures
- Troubleshooting
- Approach to minimize troubles
- Current topics on pumps

ABOUT THE COURSE

We have many kinds of pumps such as horizontal, vertical, single-stage, multi-stage, etc. By API 610, pumps are classified into three categories as overhung, between-bearings and vertically suspended.

More than forty billion US dollars pumps per year is produced in the world, and pumps are constantly operated as transfer, circulation, pressurization, etc. in almost all sectors, such as power generation, car industry, construction machine, steel plant, oil refinery, petrochemical plant, chemical industry, food, pulp, and medical devices.

A trouble happens in a pump. Then, why does a trouble happen and can it be made zero? A cause of a trouble is not simple. It is common that technical, human, and economic causes mix and happen. However, people related to pumps do not wish the same trouble again, and want to cope with it appropriately.

In this course, you learn pump fundamentals and pump design first. Then you understand examples of troubles and discuss to minimize troubles.

COURSE CONTENT

Pump types and selection. Pump design standards. Performance curves. Operating point and performance. Materials and working pressure. Pump design. Efficiency. Adjustment of performance. Auxiliaries. Pump standardization. Classification of troubles. Mechanism of experienced troubles and its countermeasures. Troubleshooting. Approach to minimize troubles. Trend of ISO. Trend of API. Trend of JIS. Trend of pump development. Trend of energy savings on pumps. Trend of pump market.

END

Program title: Pumps training-agenda

- . Basics on pump
 - 1 . Pump types and selection
 - 2 . Pump design standards
 - 3 . Performance curves
 - 4 . Operating point and performance
 - 5 . Materials and working pressure
 - 6 . Units conversion
- . Points on pump design
 - 1 . Pump design
 - 2 . Efficiency
 - 3 . Adjustment of performance
 - 4 . Auxiliaries
 - 5 . Pump standardization
- . Causes of troubles
 - 1 . Technical factors 2 . Human factors 3 . Economic factors
- . Classification of troubles
 - 1 . Classification by function 2 . Classification by usage
- . Mechanism of experienced troubles and its countermeasures
 - 1 . Corrosion and erosion (7) 2 . Vibration and noise (3)
 - 3 . Trouble of bearings (6) 4 . Trouble of shaft seals (9)
 - 5 . Operational troubles (2) 6 . Other troubles (4)
- . Troubleshooting
 - 1 . Suction troubles 2 . System troubles 3 . Mechanical troubles
- . Approach to minimize troubles
 - 1 . Single approach 2 . Matrix approach
- . Current topics on pumps
 - 1 . Trend of ISO
 - 2 . Trend of API
 - 3 . Trend of JIS
 - 4 . Trend of pump development
 - 5 . Trend of energy savings on pumps
 - 6 . Trend of pump market

END