

## Course Overview:

Pumps find extensive use in refinery and oil field, water circulation systems, A/C and heating systems, and many other applications. Keeping these machines running with least troubles and shutdown decreases the downtime of the whole system. Right machine selection appropriate to the right application, right machine operation, effective maintenance programs, reliable monitoring system, and skilled personnel capable of doing the right trouble shooting are essential requirements for prolong machine life. All the above can be achieved via deeper understanding of the machines construction and tolerances, the limits and constraints on their operation, and the more effective controlling methods. This course will offer the opportunity to learn more about pumps, their construction, operation, performance curves, control and troubleshooting. During the course participant's discussion, comments, bringing up their own problems are welcomed and encouraged. Short tests on the course material will be performed to examine the degree of delivering the right and quality of the presented material.

## Course Objective:

- Familiarize the Attendees with different types of pumps.
- Learn the appropriate operation methods.
- By learning the operation limits of the machine
- Upgrading the knowledge of problems and solutions for pump and Compressors.
- Exercising examples of troubleshooting methods
- Highlight the importance of cavitations in pumps
- Highlight the importance of seals and bearings on pumps availability
- Learn the importance and methods of lubrication

## Course Outline:

1. INTRODUCTION TO PUMPS
  - Simple system diagrams
  - Pump names
2. PUMPS CLASSIFICATION
3. TYPES AND OPERATION OF PUMPS
4. MAIN PARTS OF CENTRIFUGAL PUMP AND FUNCTION OF EACH PART
5. OPERATIONAL PERFORMANCE OF PUMPS
6. INTRODUCTION TO COMPRESSORS
7. OPERATION AND CONTROL
8. MAINTENANCE AND TROUBLESHOOTING CENTRIFUGAL PUMPS

## Who Should Attend:

Mechanical, Operation, Production, and Maintenance Engineers Senior Technicians should benefit from this course. Also Senior Technicians should update and refresh their knowledge by attending this course.

## Training Language:

EN / AR

## Training Methodology:

- Presentation & Slides
- Audio Visual Aids
- Interactive Discussion
- Participatory Exercise
- Action Learning
- Class Activities
- Case Studies
- Workshops
- Simulation