OPERATIONS OF PUMPS, PARAMETERS, PERFORMANCE & PRODUCTION REPORTS PRD057

COURSE DESCRIPTION

This course designed to understand the principles of specification and classification of pumps to achieve the optimize operation. The course will be conducted as lecturers and attendees will be actively encouraged to participate. The course content will be fully illustrated with actual data of pumps' parameters and performance cases to aid understanding and help to overcome any difficult problems. Comprehensive course notes will be provided, which will form a valuable source of reference afterwards.

COURSE OBJECTIVES

By the end of this training course, participants will:

- Have good understanding of pumps classifications.
- Have full understanding of pumps' performance curves and characteristics.
- Be familiar of pumps' operations problems.
- Have good understanding of pumps maintenance and optimization.
- Have a fully understanding of the internal forces and mechanical criteria.

WHO SHOULD ATTEND

- Mechanical engineers
- Mechanical supervisor
- Field maintenance engineers
- Production operators
- Production supervisors
- Production engineers
- Field maintenance supervisors and operators.
- Safety engineers

COURSE DURATION

5 Working Days

COURSE OUTLINES

1. Day One
    - Classification of Pumps
    - Overview of Various Types of Pumps based on Design and Application
    - Centrifugal machines and positive displacement machines.
    - Pump performance- flow in pump.
    - Velocities triangle.
    - Internal flow and energy losses
2. Day Two
    - World Standards and Codes related to Pump Design
    - Main Elements of Centrifugal Pump Construction
    - Design of Pump-suction Piping
    - Selection and Sizing of Centrifugal Pump.
    - Solving Problems in Operation
    - Centrifugal Pumps: Maintaining NPSH and Prevention of Cavitation
3. Day Three
    - Reciprocating & Rotary Pumps
    - Centrifugal Compressors: Anti-surge Control and Choke Conditions
    - Reciprocating & Rotary Compressors
    - Safety Issues, troubleshooting and Problem Solving of Rotating Equipment
    - Changes in characteristics vs. rotation.
    - Viscosity t shape and cavitation pipe system.
    - Liquid flow in pipes and friction losses
    - Application to a stand – by pump circuit.
4. Day Four
    - Operating conditions.
    - Performance & Production Report
    - Shaft sage.
    - Coupling and balancing and ring clearances.
    - Mechanical seal selection.
    - Frication face heating.
    - Start – up.
    - Priming.

5. Day Five

- Shutdown and survey.
- Vibration levels and noises.
- Main causes of damage.
- Bearing housing temperatures and motor intensity.
- Case studies.
- The maintenance excellence pyramid
- Reliability through the operator: Total Productive Maintenance
- Reliability by design: Reliability Centered Maintenance
- Optimizing Maintenance & Replacement Decisions