

# OPERATION AND MAINTENANCE OF ROTATING EQUIPMENT

## MCE003

### COURSE DESCRIPTION

The high cost of maintenance has prompted many organizations to view the management of the maintenance function with more urgency. The increase in the size and complexity of the rotating equipment has resulted in maintenance being accepted as an important mainstream function in such companies.

This course provides the participants with the means to properly operate and support the rotating equipment in a way based on the good acquaintance with the modern technologies applied in this field.

### COURSE GOAL

To enhance the delegate knowledge, skills, and abilities necessary to give him some practical exposure to help maintain the rotating equipment in good operational conditions and cope with the emergency cases of breakdown.

### COURSE OBJECTIVES

By the end of this course, participant will be able to:

- Be familiar with technology and operation of rotating machines.
- Understand the relationship between operation and Performance
- Understand the mechanical aspect of rotating machines.
- Be familiar with common troubles of rotating machines
- Be familiar with technology and maintenance of the machine components.

### WHO SHOULD ATTEND

- Technical Personnel in charge of production
- Maintenance and Operation Engineers
- Operators
- Supervisors
- Engineering Managers

### COURSE DURATION

5 Working Days

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## COURSE OUTLINES

### 1. Technology and operation of rotating machines.

- General Aspects of Machine Technology.
  - Main parts of the machines: casing, rotor, bearing, coupling.
  - Auxiliaries: flushing, heating and cooling, lubrication systems.
  - Maintenance: assembly and dismounting procedures, inspection, clearance, adjustment and alignment.
- Operation and Performance
- Process Aspect.
  - Running parameters, head, flow, rpm, and efficiency.
  - Characteristic curves. Regulation. Start-up, routine survey. Effect of internal wear.
- Mechanical Aspect.
  - Stress in machines. Influence on lifetime, on damage. Failure prevention; monitoring, repair quality.
- Common Troubles
  - Internal leakages. Unbalancing. Wear and ruptures, vibration.

### 2. Technology and Maintenance of the Machine components.

- Lubrication.
  - Purpose, lube roles, different types of oil and grease. Practical aspect.
- Bearings.
  - Anti-friction bearings: types, lifetime, mounting, applications, related problems.
  - Plain and pad bearings, thrust bearings; operation, maintenance, incidents.
- Coupling and Alignment.
  - Different types of couplings, related problems.
  - Different methods of alignment using comparators, tolerances, practical aspects.
- Sealing Devices for Pumps and Compressors.
  - Mechanical pump seals, types, operation, related problems. Installation, geometrical checks.
  - Other seals for positive displacement pumps and reciprocating compressors.
- Rotors and Shafts.
  - Balancing: eccentricity, tolerances.
  - Assembling on shaft: effect on balancing.
  - Geometrical shaft controls.