



# Maintenance Of Centrifugal Pumps



## Introduction:

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The course will introduce delegates to the different types of pumps and their associated terminology. Centrifugal pumps, packing, mechanical seals and sealing systems, bearings and couplings will all be discussed. The application of the different types of pumps will be discussed along with their suitability for different operational duties. Pump operation, troubleshooting and maintenance will be dealt with in depth

## Who Should Attend?

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This course is directed towards Supervisors, Team Leaders and Managers in Maintenance, Engineering, Mechanical and Production. The course will also benefit anyone who wishes to update themselves on pump technology, judge the suitability of different types of pumps for their needs, and learn how to operate and maintain them for the benefit of their organizations

## Course Objectives:

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**By the end of this course delegates will be able to:**

- Have an understanding of centrifugal pumps.
- Be able to operate pumps as close as possible to the design efficiency.
- Will be able to monitor pump efficiency, availability and reliability.
- understand the working and the operation of the pumps
- analyze the technical solutions applied in their units
- establish a diagnosis of the incidents, and participate in the troubleshooting meetings
- bring essential elements for choosing a pump
- Have learnt about selection, operation and maintenance strategies.
- Be able to troubleshoot pump problems.

## **Course Outline:**

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### **Pump Terminology and Performance**

- Introduction
- Pump Terminology
- Net Positive Suction Head (NPSH)
- Cavitation
- Pump Performance
- Hydraulic Pulsations and Pipe Vibration

### **Centrifugal Pumps**

- Centrifugal Pump Theory
- Understanding Pump Curves
- Matching Pumps with Drivers
- Pump Wear Rings and Balance Lines
- Multi-Stage Pumps

- Performance Analysis
- Failure Mechanisms – identification and monitoring

## **Seals and Bearings**

- Conventional Packing Glands
- Mechanical Seals
- Seal Failure Mechanisms
- Trouble Shooting Seal Failures
- Maintenance and Repair of Mechanical Seals
- Design and Operation of Rolling Element Bearings
- Bearings – failure modes and how to extend life
- Reliability
- Couplings
- Alignment
- Planned Maintenance - Predictive and Preventive
- Vibration Analysis of Centrifugal Pumps