



# Maintenance Reliability & Rotating Equipment Engineering



## Introduction:

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Pumps and compressors are the tow pieces of equipment which are used in almost all manufacturing and processing plants. The effectiveness of their selection, specifications, operations, maintenance and troubleshooting has tremendous impact on plant productivity. An understanding of the basic principles involved, how they work, what can go wrong, troubleshooting and preventive maintenance can go a long way to increase productivity. In addition, pumps and compressors are generally critical machines in any production process, and hence it is vital that maintenance is most effective for these units.

## Who Should Attend?

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Plant and process engineers, operators, supervisors and team leaders and managers in maintenance engineering and production. It is suitable for those who expects to become involved at any stage in project application and applicable maintenance technologies. The seminar will also benefit anyone who wishes to update themselves on pump and compressor technology, judge the suitability of different types of pumps and compressors for their needs, and learn how to operate and maintain them for the benefit of their organizations.

## Methodology:

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This interactive Training will be highly interactive, with opportunities to advance your opinions and ideas and will include;

- Lectures
- Workshop & Work Presentation
- Case Studies and Practical Exercise
- Videos and General Discussions

## Course Objectives:

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### What you will learn

- The role of maintenance
- Maintenance methods
- Reliability tools
- Rotor repair techniques
- Balancing
- Shaft alignment
- Maintenance of centrifugal pumps
- Maintenance of centrifugal compressors
- Maintenance of steam turbines
- Maintenance of gas turbines.

## Course Outline:

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### DAY 1

- Rotating equipment overview
- Fluid mechanics and systems, an overview

- Pump fundamentals
- Pump selection and sizing
- Pump installation and operation

## **DAY 2**

- Compressor installation and operation
- Alignment and mechanical consideration
- Antifriction and hydrodynamic bearings
- Flexible coupling installation and operation

## **DAY 3**

- The effect of a gas density change
- Compressor selection and sizing
- Compressor design and maintenance
- Shaft sealing

## **DAY 4**

- Steam turbine function and types
- Steam turbine operation and maintenance
- Gas turbine types, applications and operation
- Gas turbine performance and maintenance

## **DAY 5**

- Functions and failures, predictive and preventive maintenance
- Failure consequences and analysis
- Steam turbine troubleshooting
- Pumps and compressors system troubleshooting

## **Summary and open discussion**