

Operation, Maintenance & Inspection of Rotating Machinery - Part 2

5 days

MTM/OMIRM2

Overview

LEVEL

Knowledge

PURPOSE

This course provides key competencies related to rotating machinery operation and maintenance tasks.

LEARNING OBJECTIVES

Upon completion of the course, participants will be able to:

- explain how to operate rotating machinery (pumps, compressors, steam turbines),
- explain the key points for fluid flow and gas compression/expansion theory and practical applications,
- list the key points for rotating machinery maintenance and inspection operations,
- explain how to achieve these operations,
- list the main failure modes related to each here above listed rotating machinery,
- participate in the machinery reliability improvement process.

WAYS AND MEANS

Interactive lecture.
Case studies based on industrial and actual feedback.

LEARNING ASSESSMENT

Quiz.

PREREQUISITES

Basic knowledges in engineering.

Agenda

LUBRICATION SYSTEMS MAINTENANCE/OIL ANALYSIS

0.5 d

Purpose, different types of lubricants and lube systems.
Lubrication equipment maintenance: key points.
Oil analysis. Reports. Case studies.

BEARINGS MAINTENANCE

1 d

Antifriction bearings: clearances/interferences assessments and checks, assembly procedures.
Sleeve and tilt pad journal and thrust bearings:
Shaft rotation in an oil bearing.
Clearances checks.
Instrumentation checks and fitting procedures.
Case studies.

COUPLINGS & ALIGNMENT

0.5 d

Different types of couplings and related problems.
Various alignment methods, tolerances.

ROTORS & SHAFTS

0.5 d

Balancing: API/ISO definitions, tolerances. Balancing methods.
Geometrical shaft checks.

RUPTURE MODES

1 d

Rupture mechanisms.
Surface damage
Fatigue, wear and tear. Rupture face analysis.
Case studies.

USE OF VIBRATION ANALYSIS

1.5 d

Different types of measurements and sensors.
Typology of typical defaults affecting rotating machinery.
Spectrum analysis and various techniques for diagnosis.
Case studies.