

Training - Operation, Maintenance and Inspection of Rotating Machinery



OMIRM-EN-P



Face-to-face only



10 days

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

Level

Skilled

Public

Engineers, supervisors and technical staff involved in rotating machinery maintenance and technical inspection

Objectives

Attendees will be able to implement the following skills:

- 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

Pedagogical & technical resources

- Interactive lecture
- Case studies based on industrial and actual feedback
- Practical work in workshops on actual equipment
- Use of dynamic simulators: pumps, compressors, steam turbines

Assessment of achievements

Quiz

Prerequisites

No prerequisites are necessary to follow this course

Responsible

IFP Training instructors, with expertise in the field and trained in modern teaching methods adapted to the specific needs of learners from the professional world

Program

CENTRIFUGAL PUMPS

2 days

Main parts: casing, rotor, mechanical seals, bearings, coupling, auxiliary systems.

Fluid flow key points with a pumping system.

Operation: performance curves, flow control, start-up and shutdown, general troubleshooting.

Maintenance: assembly and dismantling procedures, main checks.

Typical defaults and failure modes.

RECIPROCATING & CENTRIFUGAL COMPRESSORS

2 days

Main parts: casing, crankshaft/rotor, packings/mechanical seals, bearings, coupling, auxiliary systems.

Gas compression key points. Single and multistage compression.

Operation: performance curves, flow control, start-up and shutdown, monitoring, protection curves, general troubleshooting.

Maintenance: assembly and dismantling procedures, main checks.

Typical defaults and failure modes.

TURBINES & EXPANDERS

1 day

Various types of turbines: steam and gas turbines, expanders. Typical applications.

Main parts: casing, rotor, seals, governors, bearings, coupling, auxiliary systems.

Gas and steam expansion: key points.

Operation: performance curves, speed and power control, start-up and shutdown, monitoring, overspeed protection, general troubleshooting.

Maintenance: assembly and dismantling procedures, main checks.

Typical defaults and failure modes.

LUBRICATION SYSTEMS MAINTENANCE/OIL ANALYSIS

0.5 day

Purpose, different types of lubricants and lube systems.

Lubrication equipment maintenance: key points.

Oil analysis. Reports. Case studies.

BEARINGS MAINTENANCE

1 day

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 day

Different types of couplings and related problems.

Various alignment methods, tolerances.

ROTORS & SHAFTS

0.5 day

Balancing: API/ISO definitions, tolerances. Balancing methods.

Geometrical shaft checks.

RUPTURE MODES

1 day

Rupture mechanisms.

Surface damage

Fatigue, wear and tear. Rupture face analysis.

Case studies.

USE OF VIBRATION ANALYSIS

1.5 days

Different types of measurements and sensors.

Typology of typical defaults affecting rotating machinery.

Spectrum analysis and various techniques for diagnosis.

Case studies.

To French entities : IFP Training is referenced to DataDock ; you may contact your OPCO about potential funding.
Please contact our disabled persons referent to check the accessibility of this training program : referent.handicap@ifptraining.com