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COURSE BROCHURE

Rotating Machine Mechanics for Graduate Engineers Training Course

7 – 11 March 2027
Online

Rotating Machine Mechanics for Graduate Engineers Training Course

Ref: 1672_61299 **Date:** 7 – 11 March 2027 **Location:** Online **Fees:** 2900 GBP

Rotating Machine Mechanics for Graduate Engineers is a 1-week training course for newly qualified mechanical engineers and junior rotating equipment specialists who must explain how pumps, compressors, turbines and their drivers actually work, producing a machine walkdown and component logbook. Many plants are losing experienced machinery engineers to retirement faster than new graduates gain shop-floor understanding. Jupiter Prime Training runs this course to give early-career engineers a confident grasp of rotating machine mechanics.

Why Rotating Machine Mechanics for Graduate Engineers Matters Now

Three pressures shape this subject: a generation of senior machinery engineers leaving plants, graduates arriving with strong theory but little contact with real casings and couplings, and operators who expect new engineers to join overhaul crews within months. A plant whose graduates can read a pump curve, recognise a mechanical seal arrangement and judge an alignment report closes the knowledge gap quickly; one that leaves them to learn by accident repeats old mistakes. The course draws on centrifugal and positive displacement machine theory, affinity laws, rolling element and hydrodynamic bearing principles, and rotor balancing grades.

Who Gains Most from Rotating Machine Mechanics for Graduate Engineers

- Graduates joining mechanical maintenance or machinery engineering sections
- Junior engineers supporting overhauls of pumps, fans and compressors
- Early-career specialists asked to review vendor drawings and datasheets
- Engineers moving into rotating plant from static equipment or projects
- Trainees on structured development rotations through operating units

A plant gains most when its graduate intake attends as a cohort and later walks down the same machines together with a senior mentor.

Rotating Machine Mechanics for Graduate Engineers Capabilities

Participants leave able to look at a running machine and explain its flow path, load path and the parts most likely to wear.

- Apply pump curves and affinity laws to duty point changes — operations requests
- Assess compressor and turbine stage arrangements from cross-section drawings — overhaul planning
- Specify bearing types, fits and lubrication for given loads and speeds — spare parts choices
- Weigh mechanical seal arrangements and flush plans against process fluids — seal selection
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Test shaft alignment and balance readings against acceptance limits — commissioning sign-off
- Communicate machine condition clearly to supervisors and senior engineers — shift handovers

Key Rotating Machine Mechanics for Graduate Engineers Terms

- Best efficiency point — the flow at which a pump or compressor converts input power to useful output most efficiently.
- Net positive suction head — the margin of suction pressure above vapour pressure that keeps a pump free of cavitation.
- Affinity laws — rules linking a machine's speed or impeller diameter to its flow, head and power.
- Mechanical seal — a rotating and stationary face pair that stops process fluid leaking along a pump or compressor shaft.
- Soft foot — a machine foot that does not sit flat on its base, distorting the casing when bolted down.
- Critical speed — a shaft speed that matches a natural frequency of the rotor, causing high vibration.

Rotating Machine Mechanics for Graduate Engineers Day by Day

Day 1: Machines in the Plant Context

- Rotating Machine Families — Centrifugal, Positive Displacement and Axial Duties
- Process Flow Diagrams and Machine Tags — Locating Machines in a Unit
- Drivers and Power Trains — Electric Motors, Steam Turbines and Gearboxes
- Machine Datasheets — Reading Rated Duty, Materials and Limits
- Plant Walkdown Routine — Observing Noise, Heat, Leaks and Vibration

Day 2: Pumps and Fluid Behaviour

- Pump Performance Curves — Locating Best Efficiency Point and Duty
- Affinity Laws — Predicting Effects of Speed and Impeller Changes
- Net Positive Suction Head Margins — Avoiding Cavitation Damage
- Positive Displacement Pump Behaviour — Handling Relief and Pulsation
- Pump Cross-Section Drawings — Naming Impellers, Wear Rings and Casings

Day 3: Compressors, Turbines and Fans

- Centrifugal Compressor Stages — Reading Head, Surge and Stonewall Limits
- Reciprocating Compressor Mechanics — Valves, Rings and Rod Loads
- Steam Turbine Construction — Nozzles, Blading and Governing Valves
- Gas Turbine Sections — Following Air From Inlet to Exhaust
- Industrial Fan Types — Matching Blade Design to Airflow Needs

Day 4: Bearings, Seals, Shafts and Couplings

- Rolling Element Bearing Selection — Load, Speed and Fit Choices
- Hydrodynamic Journal and Thrust Bearings — Oil Film and Clearance Checks
- Mechanical Seal Arrangements and Flush Plans — Matching Seals to Fluids
- Shaft Alignment Methods — Reverse Dial and Laser Readings Compared
- Rotor Balancing Grades and Coupling Types — Limiting Transmitted Forces

Day 5: Practising the Machine Walkdown and Component Logbook

- Cooling Water Pump Case — Applying Curves and Suction Checks
- Air Compressor Case — Applying Stage and Valve Knowledge
- Turbine-Driven Fan Case — Applying Alignment and Bearing Checks
- Mentor Review Questions — Testing Explanations With a Senior Engineer
- Machine Walkdown and Component Logbook — Recording Duty, Parts and Observations

Applying Rotating Machine Mechanics for Graduate Engineers After the Course

- Walk down three critical pumps on your unit and plot each duty point on its performance curve.
- Shadow the next alignment job and compare the recorded readings with the acceptance limits taught.

Rotating Machine Mechanics for Graduate Engineers Questions FAQ

What is rotating machine mechanics for graduate engineers, and why does it matter now?

It is a grounding in how pumps, compressors, turbines and fans move fluid and carry load through shafts, bearings and seals. It matters now because experienced machinery engineers are retiring and graduates must take over sooner.

Which roles gain most from rotating machine mechanics for graduate engineers?

Graduate mechanical engineers, junior machinery specialists and engineers transferring from static plant gain most. Examples come from refinery process units and municipal water pumping.

How does rotating machine mechanics for graduate engineers differ from a reliability engineering course?

It explains how machines work and what their parts do. Reliability engineering courses assume that knowledge and focus on failure statistics, maintenance strategy and life data modelling.

What do you bring back from rotating machine mechanics for graduate engineers?

You bring back a logbook of machine duties, components and observations for typical plant machines.

Rotating Machine Mechanics for Graduate Engineers: The Way Forward

The machine walkdown and component logbook records each machine's duty, main parts and observed condition. Its first use is preparing for the graduate's first overhaul. Graduates and their mentors keep it up to date, and after six months the logbook deserves a mentor review to see which machines still feel unfamiliar.