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COURSE BROCHURE

Overhung and Between-Bearing Pump Design Training Course

21 – 25 March 2027
Online

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Registered in the United Kingdom and Saudi Arabia

Overhung and Between-Bearing Pump Design Training Course

Ref: 1740_63824 **Date:** 21 – 25 March 2027 **Location:** Online **Fees:** 2900 GBP

Overhung and Between-Bearing Pump Design is a 1-week training course for rotating equipment engineers and pump maintenance supervisors who must choose, specify and look after centrifugal pumps, and it ends with a pump configuration selection file for one live duty. Plants run pumps longer between overhauls, so rotor support decides seal life and outage time. Jupiter Prime Training delivers this course on overhung and between-bearing pump design.

Why Overhung and Between-Bearing Pump Design Matters Now

Three pressures shape pump choice today: operators demanding longer mean time between repairs, energy managers questioning oversized impellers, and maintenance crews with less time on site. An overhung pump chosen for a duty that needs a between-bearing rotor suffers shaft deflection, seal leaks and bearing distress; the reverse wastes capital and floor space. Matching configuration to duty cuts unplanned trips in refineries and water utilities. The course rests on accepted centrifugal pump practice for hydraulic selection, rotor dynamics and mechanical seal arrangement.

Who Gains Most from Overhung and Between-Bearing Pump Design

- Engineers who write pump data sheets and approve vendor offers
- Supervisors who plan overhauls, impeller trims and seal replacements
- Reliability specialists who track repeat failures on pump trains
- Process engineers who set flow, head and suction conditions
- Inspectors who witness performance tests and mechanical run checks

A site pump group that sends its design, maintenance and process members together gains most, leaving with one shared view of rotor support.

Overhung and Between-Bearing Pump Design Capabilities

Participants work from casing drawings, curves and failure records.

- Distinguish single-stage overhung, inline and between-bearing multistage layouts — for the pump type chosen on a data sheet
- Calculate suction margin and best efficiency point position — for the operating window agreed with process engineers
- Assess shaft deflection and critical speed limits — for impeller trim and speed change requests
- Specify seal chamber size, flush plan and bearing housing — for vendor bid evaluation
- Weigh axially split against radially split casings — for high pressure and high temperature service
- Build maintenance tasks matched to each configuration — for overhaul scope and spares holding

Key Overhung and Between-Bearing Pump Design Terms

- Overhung pump — a centrifugal pump whose impeller sits on a shaft end beyond its bearings, typical for single-stage general duties.
- Between-bearing pump — a pump whose impellers sit on a shaft supported by bearings at both ends, used for high flow or multistage duties.
- Best efficiency point — the flow at which a pump converts shaft power to hydraulic power most efficiently and runs with least radial load.
- Net positive suction head — the margin of suction pressure above vapour pressure that keeps liquid from flashing at the impeller eye.
- Shaft deflection — the bending of the pump shaft under radial hydraulic load, which shortens seal and bearing life when excessive.
- Seal chamber — the cavity around the shaft that houses the mechanical seal and receives its flush or cooling fluid.

Overhung and Between-Bearing Pump Design Day by Day

Day 1: Configuration Families and Duty

- Overhung Flexibly Coupled Layouts — Where Single-Stage Duties Fit
- Vertical Inline And Close-Coupled Pumps — Space And Piping Load Choices
- Between-Bearing Single And Two-Stage Rotors — High Flow Service Selection
- Multistage Barrel And Ring Section Pumps — High Head Duty Matching
- Pump Classification Charts — Shortlisting Configurations For A Duty

Day 2: Hydraulic Design and Curves

- Head, Flow And Efficiency Curves — Locating The Operating Window
- Specific Speed And Suction Specific Speed — Impeller Geometry Limits
- Suction Margin And Cavitation Assessment — Inlet Piping Decisions
- System Curve Overlay — Parallel And Series Operation Choices
- Impeller Trim And Speed Change Rules — Meeting Revised Duty

Day 3: Rotor, Shaft and Bearing Arrangements

- Shaft Stiffness Ratio And Deflection Checks — Overhung Limits
- Rolling Element Versus Hydrodynamic Bearings — Load And Speed Choices
- Critical Speed And Rotor Dynamics Screening — Multistage Reliability
- Axial Thrust Balancing Drums And Discs — Between-Bearing Rotor Design
- Bearing Housing Lubrication And Cooling — Oil Mist Or Ring Oil Selection

Day 4: Casings, Seals and Maintenance Planning

- Axially And Radially Split Casings — Pressure And Access Trade-Offs
- Seal Chamber Dimensions And Flush Plans — Seal Life Decisions
- Wear Ring Clearances And Internal Leakage — Overhaul Acceptance Limits
- Configuration-Specific Overhaul Sequences — Outage Duration Planning
- Vibration And Bearing Temperature Baselines — Condition Monitoring Set-Up

Day 5: Practising the Pump Configuration Selection File

- Duty Shortlist From Classification Charts — Applying Day One Families
- Curve And Suction Margin Review — Applying Day Two Hydraulics
- Rotor And Bearing Suitability Check — Applying Day Three Mechanics
- Vendor Offer Comparison Matrix — Bid Clarification Points
- Pump Configuration Selection File — Recommendation For One Live Duty

Applying Overhung and Between-Bearing Pump Design After the Course

- Review data sheets of the worst bad actor pumps against shaft deflection and best efficiency point limits.
- Lead a seal chamber and flush plan audit on overhung process pumps and propose changes for the next outage.

Overhung and Between-Bearing Pump Design Questions FAQ

What is overhung and between-bearing pump design and why does it matter now?

It is the practice of choosing how a centrifugal pump rotor is supported to suit its duty. It matters now because longer run lengths punish a poor configuration choice through seal leaks and bearing failures.

Which roles gain most from overhung and between-bearing pump design?

Rotating equipment engineers and pump maintenance supervisors gain most. Process and reliability engineers also benefit, as they shape the data sheet and operating window.

How does overhung and between-bearing pump design differ from a pump sizing course?

It focuses on rotor support, casing and seal arrangements rather than system calculations alone. A sizing course sets flow and head; this one decides which construction delivers that duty reliably.

What do you bring back from overhung and between-bearing pump design?

You bring back a pump configuration selection file for one duty from your own site. It holds the shortlist, curve review, rotor checks and vendor comparison.

Overhung and Between-Bearing Pump Design: The Way Forward

The pump configuration selection file first informs whether a troublesome duty should stay overhung or move to a between-bearing pump at its next replacement. Rotating equipment engineers and supervisors use it to set replacement and overhaul scope. After its first use, revisit the suction margin and seal flush assumptions, as these usually change once real operating data is reviewed.