

Overhung and Between-Bearings Pump Design Review Course

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Overview

Overhung and Between-Bearings Pump Design Review Course is a one-week advanced course for rotating equipment, mechanical, project, maintenance, and reliability engineers who review centrifugal pump configurations and application evidence. Participants compare OH and BB families, rotor support and load paths, casing and impeller arrangements, hydraulic selection, operating regions, piping and nozzle interfaces, bearings, seals, alignment, vibration evidence, and vendor documents. The course develops a Pump Configuration Review Pack and does not grant design authority, equipment approval, or certification. Agile Leaders Training Center delivers this specialist engineering course.

Who Should Attend

- Rotating equipment engineers reviewing pump configurations and vendor submissions
- Mechanical engineers evaluating rotor, casing, bearing, seal, and piping interfaces
- Project engineers coordinating process, mechanical, piping, and supplier information
- Maintenance engineers assessing configuration-related failure implications
- Reliability engineers interpreting alignment, vibration, and operating-envelope evidence

Participants should understand centrifugal pump fundamentals, basic hydraulic curves, and engineering drawings. Final equipment selection, design approval, fitness-for-service decisions, and site authorization remain outside the course.

Departments and Industries

The course supports process plants, refineries, chemical facilities, power generation, water systems, mining operations, and industrial projects where centrifugal pump configuration affects performance and reliability.

- Rotating equipment and mechanical engineering
- Projects, engineering assurance, and technical procurement
- Maintenance, reliability, and condition monitoring
- Process engineering and piping coordination
- Operations support and vendor-document control

Learning Objectives

By the end of this course, participants will be able to:

- Classify overhung and between-bearings pump families using a configuration decision map
- Analyze rotor support, radial and axial load paths, casing splits, and impeller arrangements
- Evaluate hydraulic duty, preferred and allowable operating regions, and application constraints
- Review nozzle orientation, piping geometry, external loads, alignment, and base interfaces
- Interpret bearing, seal, vibration, and condition evidence against configuration risks
- Integrate data sheets, curves, drawings, calculations, and inspection records into a Pump Configuration Review Pack

Course Agenda

Day 1: OH and BB Configuration Architecture

- OH and BB Pump Family Classification Decision Map
- Single-Stage and Multistage Arrangement Comparison Matrix
- Axially Split and Radially Split Casing Review Method
- Rotor Support, Shaft Span, and Load-Path Diagram
- Configuration Boundary and Engineering Responsibility Register

Day 2: Hydraulic Duty and Application Selection

- Duty Point, System Curve, and Pump Curve Evaluation Method
- Preferred and Allowable Operating Region Review Sheet
- Suction Condition, Cavitation Risk, and Margin Evidence Checklist
- Single-Entry, Double-Entry, and Multistage Impeller Selection Matrix
- Process Service and Materials Compatibility Question Set

Day 3: Mechanical Design and Piping Interfaces

- Shaft Deflection, Radial Load, and Axial Thrust Evidence Map
- Bearing Arrangement, Lubrication, and Support Stiffness Review
- Seal Arrangement and Leakage-Control Interface Checklist
- Nozzle Orientation, Piping Geometry, and External Load Review
- Baseplate, Coupling, Alignment, and Soft-Foot Evidence Matrix

Day 4: Reliability Evidence and Failure Implications

- Configuration-Specific Failure Mode and Effect Map
- Vibration Spectrum, Orbit, and Trend Evidence Review
- Bearing Temperature, Lubricant Condition, and Seal Performance Log
- Operating-Point Deviation and Recirculation Indicator Analysis
- Inspection Finding, Repair Boundary, and Escalation Decision Record

Day 5: Vendor Document Review and Configuration Decision

- Exercise: OH and BB Classification from General Arrangement Drawings
- Exercise: Hydraulic Curve and Operating-Envelope Review
- Exercise: Rotor, Bearing, Seal, and Piping Interface Assessment
- Exercise: Vendor Data Sheet and Exception Register Evaluation
- Capstone Exercise: Pump Configuration Review Pack

Practical Exercises

Guided exercises convert pump data and engineering evidence into traceable configuration decisions.

- Classify representative overhung and between-bearings arrangements
- Compare hydraulic duty with curve and operating-region evidence
- Trace rotor loads through shafts, bearings, casings, and supports
- Review piping, nozzle, alignment, vibration, and seal evidence
- Build a Pump Configuration Review Pack with findings and escalation points

FAQs

Is this a general pump operation and maintenance course?

No. It focuses on design-review evidence and application decisions for overhung and between-bearings centrifugal pump configurations.

Does the course cover both OH and BB pump families?

Yes. Participants compare configuration families, casing splits, rotor support, impeller arrangements, hydraulic application, piping interfaces, and reliability implications.

Does the course grant pump design authority?

No. It develops structured review capability. Final calculations, supplier acceptance, engineering approval, and equipment authorization remain with designated competent parties.

What documents are reviewed?

The course uses data sheets, pump and system curves, general arrangement drawings, rotor and bearing information, seal data, piping interfaces, vibration evidence, inspection findings, and exception registers.

What will participants take back to work?

A Pump Configuration Review Pack containing classification, hydraulic, mechanical, piping, reliability, document-review, finding, and escalation records.

Conclusion

Participants return able to distinguish OH and BB arrangements, evaluate application and interface evidence, identify configuration-related risks, and document review findings within defined engineering boundaries.

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