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COURSE BROCHURE

# Boiler Feed and Condensate Pump Maintenance Training Course

8 – 12 February 2027
Madrid

# Boiler Feed and Condensate Pump Maintenance Training Course

**Ref:** 1412_52743 **Date:** 8 – 12 February 2027 **Location:** Madrid **Fees:** 6200 GBP

Boiler Feed and Condensate Pump Maintenance is a 1-week training course for mechanical engineers, rotating equipment technicians and power plant maintenance staff, built around a pump train health dossier that ranks each feed, condensate and cooling water pump by condition and risk. Steam turbine availability now depends on pumps running longer between outages with fewer specialists. Jupiter Prime Training delivers this boiler feed and condensate pump maintenance course.

## Why Boiler Feed and Condensate Pump Maintenance Matters Now

Three forces shape this work today. Flexible generation pushes feed pumps through frequent start-ups and low-flow running, which accelerates recirculation damage and seal wear. Experienced rotating equipment staff are retiring, so diagnostic judgement must be written down and shared. Asset owners also expect pump decisions to sit inside a formal asset plan. Healthy feed pumps protect turbine output; neglected ones bring cavitated impellers and wiped bearings. The course draws on ISO 55001 for asset management and EN 13306 for maintenance terminology.

## Who Gains Most from Boiler Feed and Condensate Pump Maintenance

- Engineers responsible for feedwater and condensate system performance and pump selection
- Technicians who dismantle, rebuild and align multistage pumps and their drivers
- Condition monitoring staff who collect vibration, temperature and oil readings on pump trains
- Maintenance planners who schedule pump overhauls around turbine and boiler outages
- Shift supervisors who start, change over and protect standby pumps during operation

A steam unit gains most when its mechanical, monitoring and planning staff attend together.

## Boiler Feed and Condensate Pump Maintenance Capabilities

Participants move from reading pump curves to defending a repair or run decision on a specific feed or condensate pump.

- Calculate available and required NPSH for condensate extraction duty — deaerator level and suction design choices
- Assess balance drum, balance disc and thrust bearing condition — overhaul scope for multistage feed pumps
- Specify mechanical seal and flushing arrangements for hot feedwater — seal life and leakage decisions
- Apply laser shaft alignment with thermal growth offsets — driver and gearbox reliability
- Interpret vibration spectra and bearing temperatures — run, watch or stop decisions for shift teams
- Build a pump train ranking by condition and consequence — outage planners and plant managers

## Key Boiler Feed and Condensate Pump Maintenance Terms

- NPSH margin — the difference between suction head available at the pump and the head it needs to avoid cavitation.
- Balance drum — a rotating piston on a multistage pump that offsets most of the axial thrust created by the impellers.
- Minimum continuous flow — the lowest flow a pump can run at steadily without overheating or damaging recirculation.
- Recirculation valve — an automatic valve that returns part of the discharge flow to protect the pump at low load.
- Thermal growth offset — the deliberate cold misalignment that lets shafts line up once pump and driver reach running temperature.
- Wear ring clearance — the gap between impeller and casing rings that controls internal leakage and pump efficiency.

## Boiler Feed and Condensate Pump Maintenance Day by Day

## Day 1: Feedwater and Condensate Cycle Duties

- Rankine Cycle Pump Positions — Where Each Pump Limits Turbine Output
- Multistage Barrel and Ring Section Designs — Pump Type Selection
- Performance Curves and System Curves — Operating Point and Parallel Running
- Deaerator Level and Suction Pressure — Feed Pump Protection Margins
- Cooling Water Circulating Pumps — Condenser Vacuum and Heat Rate

## Day 2: Hydraulic Limits and Cavitation

- NPSH Available Versus Required Calculation — Condensate Extraction Suction Design
- Suction Recirculation and Low-Flow Damage — Minimum Flow Settings
- Recirculation Valve Sizing and Testing — Start-Up and Part-Load Protection
- Impeller Erosion Mapping — Material and Repair Choices
- Variable Speed Drives and Hydraulic Couplings — Flexible Load Operation

## Day 3: Rotor, Seals and Bearings

- Axial Thrust Balancing Devices — Balance Drum and Disc Inspection Scope
- Mechanical Seal Plans for Hot Feedwater — Cooling and Flush Selection
- Tilting Pad and Rolling Element Bearings — Lubrication and Temperature Limits
- Wear Ring Clearance Measurement — Efficiency Recovery at Overhaul
- Rotor Runout and Balance Checks — Rebuild Acceptance Criteria

## Day 4: Alignment and Condition Monitoring

- Laser Alignment with Thermal Growth Offsets — Driver and Gearbox Life
- Soft Foot and Pipe Strain Correction — Baseplate and Piping Fixes
- Vibration Spectrum Patterns for Pumps — Fault Identification on Shift
- Oil Analysis and Bearing Temperature Trends — Intervention Timing
- Thermodynamic Efficiency Testing — Overhaul Timing by Lost Performance

## Day 5: Practising the Pump Train Health Dossier

- NPSH and Minimum Flow Review of a Feed Train — Applied Hydraulic Checks
- Seal and Bearing Failure Case Analysis — Applied Root Cause Findings
- Alignment and Vibration Record Review — Applied Monitoring Evidence
- Criticality Ranking Under ISO 55001 Principles — Outage Scope Priorities
- Pump Train Health Dossier — Ranked Condition and Risk Record

## Applying Boiler Feed and Condensate Pump Maintenance After the Course

- Recalculate NPSH margin and minimum flow settings for every condensate extraction pump and agree corrections with operations.
- Lead a joint alignment and vibration review of the main feed pump train and log thermal growth offsets for the next outage.

## Boiler Feed and Condensate Pump Maintenance Questions FAQ

### What is boiler feed and condensate pump maintenance and why does it matter now?

It is the care of the centrifugal pumps that move water through the steam cycle. Low-flow running and fewer specialists make them a frequent cause of lost turbine output.

### Which roles gain most from boiler feed and condensate pump maintenance?

Mechanical engineers, rotating equipment technicians, monitoring staff and planners gain most.

## How does boiler feed and condensate pump maintenance differ from a general pump course?

It concentrates on hot, high-pressure multistage duties tied to a steam turbine. It covers deaerator suction, balance devices and thermal growth rather than general pump selection.

## What do you bring back from boiler feed and condensate pump maintenance?

You bring back a ranked record of your pump trains. It joins hydraulic margins, seal findings and vibration trends so outages target the riskiest pumps first.

## Boiler Feed and Condensate Pump Maintenance: The Way Forward

The pump train health dossier first informs which feed or condensate pump enters the next outage scope. Planners use it to sequence work, engineers to justify spares and supervisors to set watch limits. After its first outage cycle, revisit the minimum flow settings and thermal growth offsets, since running data often shifts the ranking.