JUPITER PRIME

Consulting • Training • Advisory

جوبيتر برايم للاستشارات والتدريب

COURSE BROCHURE

Process Piping Weld Repair and Spool Replacement Training Course

23 – 27 May 2027
Muscat

jupiterprime.uk

info@jupiterprime.uk

Registered in the United Kingdom and Saudi Arabia

Process Piping Weld Repair and Spool Replacement Training Course

Ref: 2895_110529 **Date:** 23 – 27 May 2027 **Location:** Muscat **Fees:** 6500 GBP

Process Piping Weld Repair and Spool Replacement is a 1-week training course for plant piping engineers and maintenance supervisors who decide how damaged lines inside a refinery, gas plant or chemical unit are put right, and who leave with a piping repair method statement for one defect. Longer run lengths between turnarounds and ageing units mean more repairs must be planned while the plant is still operating. Jupiter Prime Training delivers this plant piping repair course.

Why Process Piping Weld Repair and Spool Replacement Matters Now

Three groups now shape how plant piping is repaired. Operations managers want defects fixed without a unit shutdown, which pushes towards clamps, sleeves and welding on live lines. Integrity engineers find more thinning, cracking and leaking small-bore connections as units age past their design life. Turnaround planners have shorter windows and need prefabricated spools ready before isolation. A wrong choice risks a weld that cracks on restart or a clamp left in place for years.

Who Gains Most from Process Piping Weld Repair and Spool Replacement

- Engineers who assess damaged lines and choose between temporary and permanent repair
- Supervisors who plan isolation, cutting, fit-up and rewelding in operating units
- Welding specialists who set preheat, filler metal and heat treatment for repair welds
- Inspectors who examine finished repairs and approve their return to service
- Turnaround planners who schedule spool fabrication and replacement windows

A plant maintenance department that sends its piping, welding and inspection staff together gains most.

Process Piping Weld Repair and Spool Replacement Capabilities

Participants learn to match each repair route to the defect, fluid and schedule.

- Assess wall loss, cracks and leaks to select a repair route — integrity engineers
- Weigh clamps, sleeves and weld overlays against full spool replacement — operations managers
- Specify preheat, filler metal and post-weld heat treatment for repair welds — welding specialists
- Design a spool replacement sequence with isolation and fit-up checks — turnaround planners
- Apply examination and pressure test requirements to completed repairs — return-to-service approval
- Build a register of temporary repairs with removal dates and limits — plant integrity records

Key Process Piping Weld Repair and Spool Replacement Terms

- Spool — a prefabricated length of pipe with fittings and flanges, made off line and installed as one piece.
- Temporary repair — a clamp, box or wrap that contains a defect until a permanent fix is made.
- Weld overlay — weld metal deposited on the outside of a thinned pipe wall to restore thickness.
- Post-weld heat treatment — controlled heating and cooling after welding to relieve stress and temper hard zones.
- Hot work permit — written approval that controls welding or cutting near flammable process fluids.
- Fit-up — the alignment and gap of two pipe ends before welding, checked before the root pass.

Process Piping Weld Repair and Spool Replacement Day by Day

Day 1: Damage Types and Repair Choices

- Wall Thinning, Pitting and Erosion Patterns — Sizing the Damaged Area
- Cracks at Branches and Small-Bore Connections — Vibration and Fatigue Causes
- Remaining Strength Screening — Repair Now or Monitor
- Repair Route Decision Matrix — Temporary, Permanent or Replace
- Fluid Hazard and Operating Conditions — Limits on Live-Line Methods

Day 2: Mechanical and Temporary Repairs

- Bolted Leak Clamps and Injection Boxes — Sealing Live Leaks
- Full Encirclement Welded Sleeves — Pressure-Containing Reinforcement
- Composite Wraps on Plant Lines — Temperature and Chemical Limits
- Weld Overlay on Thinned Walls — Restoring Thickness Without Cutting
- Temporary Repair Register — Inspection Intervals and Removal Dates

Day 3: Repair Welding Metallurgy and Heat Treatment

- Carbon, Low-Alloy and Stainless Repair Welds — Filler Metal Matching
- Preheat and Interpass Control — Avoiding Hard Zones and Cracking
- Local Post-Weld Heat Treatment Bands — Heater Layout and Thermocouples
- Welding on Lines in Service — Burn-Through and Cooling Rate Risks
- Repair Weld Procedure Selection — Matching Qualified Ranges to the Job

Day 4: Spool Replacement and Return to Service

- Isolation, Draining and Gas Freeing — Preparing Lines for Cutting
- Cold Cutting and Bevel Preparation — Removing the Damaged Section
- Spool Fabrication Drawings and Field Welds — Dimensional Control on Site
- Fit-Up, Alignment and Flange Bolting — Avoiding Locked-In Strain
- Examination, Pressure Test and Leak Check — Releasing the Line

Day 5: Practising the Piping Repair Method Statement

- Corroded Cooling Water Header in a Refinery — Applying Repair Route Choice
- Cracked Branch on a Chemical Plant Line — Applying Weld Repair and Heat Treatment
- Turnaround Spool Change on a Gas Unit — Applying Isolation and Fit-Up Steps
- Peer Challenge of Hot Work Risk — Defending Live-Line Choices
- Piping Repair Method Statement — Issuing Sequence, Hold Points and Test

Applying Process Piping Weld Repair and Spool Replacement After the Course

- Review the temporary repairs on one unit and set a removal or permanent fix date for each clamp and wrap.
- Prepare a repair method statement for the next planned spool change, including isolation, heat treatment and test steps.

Process Piping Weld Repair and Spool Replacement Questions FAQ

What is process piping weld repair and spool replacement, and why does it matter now?

It is the choice and execution of weld repairs, clamps, sleeves and replacement spools on plant piping. Longer run lengths and ageing units mean more repairs happen on operating plants with short windows.

Which roles gain most from process piping weld repair and spool replacement?

Plant piping engineers and maintenance supervisors gain most. Welding specialists, inspectors and turnaround planners who prepare and release repairs also benefit.

How does process piping weld repair and spool replacement differ from a pipeline repair course?

It covers piping inside plants, with branches, small-bore connections and heat treatment on site. A pipeline repair course deals with buried cross-country lines and their repair sleeves.

What do you bring back from process piping weld repair and spool replacement?

You bring back a piping repair method statement for one defect. It sets the repair route, welding and heat treatment, isolation steps, examination and test.

Process Piping Weld Repair and Spool Replacement: The Way Forward

The piping repair method statement first informs whether a defect can be fixed on line or must wait for a spool change at the next shutdown. Piping engineers, supervisors and inspectors use it to agree isolation, welding and test steps. After its first use, revisit the temporary repairs still in place.