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COURSE BROCHURE

# Flowline and Pipeline Corrosion Resistant Alloy Selection Training Course

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Amman

**jupiterprime.uk**

info@jupiterprime.uk

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# Flowline and Pipeline Corrosion Resistant Alloy Selection Training Course

**Ref:** 2884_110233 **Date:** 1 – 5 August 2027 **Location:** Amman **Fees:** 4200 GBP

Flowline and Pipeline Corrosion Resistant Alloy Selection is a 1-week training course for materials and pipeline design engineers who must choose between carbon steel, clad, lined and solid alloy pipe, producing a material selection report for a flowline or pipeline. Hotter, sourer streams now push many lines beyond inhibited carbon steel. Jupiter Prime Training runs this course for engineers who sign off that choice.

## Why Flowline and Pipeline Corrosion Resistant Alloy Selection Matters Now

Three pressures shape alloy choice on flowlines today. Maturing reservoirs deliver more water, hydrogen sulphide and carbon dioxide, eroding allowances that once sufficed. Owners demand longer design lives, which favours alloy pipe but raises capital outlay and welding risk. Supply of nickel-rich grades and bonded pipe remains slow. A line chosen well runs for decades; one chosen badly cracks, pits or needs replacement. The course rests on recognised sour service qualification practice and corrosion rate prediction methods.

## Who Gains Most from Flowline and Pipeline Corrosion Resistant Alloy Selection

- Materials engineers who set grade limits for acid gas, chlorides and temperature
- Pipeline design engineers who balance wall thickness, allowance and pipe type
- Welding engineers who qualify girth welds for alloy pipe
- Corrosion engineers who weigh inhibition regimes against an upgrade to alloy pipe
- Procurement and quality engineers who write mill specifications and witness tests

Field development teams gain most when materials, design and welding engineers attend together.

## Flowline and Pipeline Corrosion Resistant Alloy Selection Capabilities

Participants turn fluid chemistry, temperature and design life into a defensible pipe material choice.

- Calculate carbon dioxide corrosion rates and required allowance for carbon steel options — design basis owners
- Assess sour service cracking risk from hydrogen sulphide partial pressure and in-situ pH — materials authorities
- Weigh clad, mechanically lined and solid alloy pipe on performance and installation method — project managers
- Specify duplex, super duplex and nickel alloy grades against chloride and temperature limits — procurement leads
- Test girth weld and heat input requirements for each candidate material — welding and construction contractors
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Build a lifecycle cost comparison of inhibited carbon steel against alloy pipe — investment approvers

## Key Flowline and Pipeline Corrosion Resistant Alloy Selection Terms

- Corrosion resistant alloy — a steel or nickel-based alloy whose chromium, molybdenum or nickel forms a passive film in produced fluids.
- Clad pipe — carbon steel pipe with an alloy layer metallurgically bonded to its bore.
- Mechanically lined pipe — carbon steel pipe with a thin alloy liner held by interference fit rather than a metallurgical bond.
- Sulphide stress cracking — brittle cracking of susceptible steel under stress in wet hydrogen sulphide.
- Pitting resistance equivalent number — an index from chromium, molybdenum and nitrogen content ranking stainless alloys against chloride pitting.
- Corrosion allowance — extra carbon steel wall that absorbs predicted metal loss over the design life.

## Flowline and Pipeline Corrosion Resistant Alloy Selection Day by Day

### Day 1: Fluid Severity and Design Life

- Produced Fluid Characterisation — Water Cut, Acid Gas And Chloride Profile
- Operating Envelope Mapping — Temperature, Pressure And Shut-In Conditions
- In-Situ pH Estimation — Effect Of Bicarbonate And Condensed Water
- Design Life And Intervention Targets — Owner Expectations For Inspection Intervals
- Material Option Long List — Carbon Steel, Clad, Lined And Solid Alloy

### Day 2: Carbon Steel Limits and Inhibition

- Carbon Dioxide Corrosion Rate Prediction — Flow Regime, Scale And Temperature Effects
- Corrosion Allowance Sizing — Wall Thickness Penalty Versus Design Life
- Inhibitor Availability Assumptions — Dosing Reliability And Remote Line Access
- Sour Service Hardness And Toughness Limits — Line Pipe And Weld Requirements
- Hydrogen Induced Cracking Resistance — Plate Chemistry And Mill Testing

### Day 3: Alloy Families and Environmental Limits

- Martensitic Stainless Grades — Sweet Service Use And Sour Limits
- Duplex And Super Duplex Steels — Chloride, Temperature And Hydrogen Sulphide Windows
- Austenitic And Nickel Alloys — Severe Sour And High Chloride Duty
- Pitting Resistance Ranking — Comparing Grades For Seawater And Brine Exposure
- Laboratory Qualification Testing — Cracking And Pitting Test Selection

## Day 4: Clad, Lined Pipe and Fabrication

- Metallurgically Clad Pipe — Roll Bonding, Weld Overlay And Bond Testing
- Mechanically Lined Pipe — Liner Collapse Risk During Reeling And Bending
- Girth Welding Of Alloy Pipe — Consumables, Heat Input And Back Purging
- Weld Inspection Methods — Radiography, Ultrasonic Testing And Ferrite Checks
- Galvanic Coupling And Isolation — Dissimilar Material Joints At Tie-Ins

## Day 5: Practising the Material Selection Report

- Selection Decision Matrix — Applying Fluid Severity And Alloy Limit Results
- Lifecycle Cost Comparison — Inhibited Carbon Steel Against Alloy Pipe
- Installation And Welding Risk Register — Matching Fabrication Constraints To Options
- Technical Assurance Challenge — Defending Assumptions Before Peer Engineers
- Material Selection Report For A Flowline Or Pipeline — Final Recommendation

## Applying Flowline and Pipeline Corrosion Resistant Alloy Selection After the Course

- Recalculate the carbon dioxide corrosion rate and allowance for one existing flowline.
- Lead a selection matrix session comparing clad, lined and solid alloy pipe for an upcoming tie-back.

## Flowline and Pipeline Corrosion Resistant Alloy Selection Questions FAQ

### What is flowline and pipeline corrosion resistant alloy selection and why does it matter now?

It is the choice of pipe material that will survive the produced fluid for the full design life. It matters now because sourer, hotter streams push many lines past inhibited carbon steel.

### Which roles gain most from flowline and pipeline corrosion resistant alloy selection?

Materials, pipeline design, welding, corrosion and procurement engineers gain most. You benefit most if you set grade limits or qualify alloy welds.

### How does flowline and pipeline corrosion resistant alloy selection differ from a general corrosion control course?

It concentrates on choosing the pipe material itself. A general corrosion control course covers inhibitors, coatings and monitoring broadly; this one compares pipe options for one line.

### What do you bring back from flowline and pipeline corrosion resistant alloy selection?

You bring back a documented selection report for a real flowline or pipeline. It records fluid severity, candidates, cost and the recommended pipe type.

## Flowline and Pipeline Corrosion Resistant Alloy Selection: The Way Forward

The material selection report for a flowline or pipeline first informs whether the design basis carries carbon steel with an allowance or an alloy option. Materials authorities, design leads and procurement teams use it to fix mill specifications and welding procedures. After the first inspection campaign, revisit the corrosion rate assumptions.