JUPITER PRIME

Consulting • Training • Advisory

جوبيتر برايم للاستشارات والتدريب

COURSE BROCHURE

# Advanced Process Plant Start-up and Commissioning Training Course

**jupiterprime.uk**

info@jupiterprime.uk

Registered in the United Kingdom and Saudi Arabia

# Advanced Process Plant Start-up and Commissioning Training Course

Process Plant Start-up and Commissioning is the subject of this 2-week advanced training course for commissioning engineers, start-up managers and project operations leads, who prepare a Commissioning and Start-up Execution Plan for a new or revamped unit. Compressed schedules, complex control systems and owners expecting early nameplate output make the move from construction to operation the riskiest project phase. Jupiter Prime Training offers this course in process plant start-up and commissioning.

## Why Process Plant Start-up and Commissioning Matters Now

Three pressures shape commissioning today: projects that squeeze completion and start-up into shrinking windows, digital control and safety systems that need far more loop and function testing than older plants, and operating teams who inherit plants with incomplete documentation. A project that commissions well hands over clean systems, starts up safely and reaches design rates quickly; one that commissions badly carries punch items into operation, suffers repeated trips and loses early production. The course rests on the systems completion approach, Operational Readiness and Assurance ORA practice, the Pre-Startup Safety Review PSSR and Management of Change MOC.

## Who Gains Most from Process Plant Start-up and Commissioning

- Engineers responsible for testing and energising systems from mechanical completion to first feed
- Managers accountable for start-up sequence, readiness and the safety of first introduction of hydrocarbons or chemicals
- Operations leads who accept systems from projects and prepare crews, procedures and spares
- Completions coordinators who track punch lists, certificates and handover dossiers
- Control and instrument specialists who run loop checks and function tests

A joint project and operations group that sends its commissioning manager, operations lead and completions coordinator together gains most, because handover depends on all three agreeing the same boundaries.

## Process Plant Start-up and Commissioning Capabilities

Participants leave able to plan commissioning by system, control the flow of certificates and punch items, and lead a safe first start-up through to performance testing.

- Design a system and subsystem breakdown for completion and commissioning — informing project schedulers
- Build pre-commissioning and commissioning test sequences — serving discipline engineers
- Specify handover dossiers, certificates and punch list rules — protecting the receiving operations team
- Apply pre-startup safety reviews and readiness checks — supporting site leadership and safety managers
- Plan cold and hot commissioning and first start-up — guiding shift crews and vendors
- Assess performance test results against contracted figures — informing owners and contractors

## Key Process Plant Start-up and Commissioning Terms

- Mechanical Completion — the point at which a system is built and tested to design, ready for pre-commissioning activities.
- Pre-Commissioning — non-operating checks such as flushing, pressure testing, drying and loop checks before process fluids are introduced.
- Punch List — a register of outstanding defects or incomplete items, graded by whether they must close before handover or start-up.
- Cold Commissioning — testing equipment and systems with inert or utility fluids before process fluids and heat are introduced.
- Pre-Startup Safety Review — a structured check that construction, procedures, training and hazards are in order before first start-up.
- Performance Test Run — a defined operating period proving a plant meets contracted capacity, quality and consumption figures.

## Process Plant Start-up and Commissioning Day by Day

## Day 1: From Construction to Operation

- Project Phase Boundaries — Defining Completion, Commissioning and Start-up Scope
- Operational Readiness and Assurance — Preparing People, Procedures and Spares
- Commissioning Organisation Models — Sharing Roles Between Contractor and Owner
- Refinery and Utility Plant Lessons — Learning From Delayed Start-ups
- Commissioning Philosophy Document — Setting Principles Before Detailed Planning

## Day 2: Systemisation and Planning

- System and Subsystem Breakdown — Dividing the Plant for Testing and Handover
- Commissioning Schedule Logic — Sequencing Utilities Before Process Systems
- Completions Management Software — Tracking Certificates and Progress
- Resource and Vendor Planning — Securing Specialists at the Right Time
- Commissioning Risk Register — Anticipating Schedule and Safety Threats

## Day 3: Mechanical Completion and Punch Lists

- Inspection and Test Records — Proving Systems Are Built to Design
- Punch List Categorisation — Deciding What Must Close Before Handover
- Walkdowns With Operations — Catching Operability Issues Early
- Mechanical Completion Certificates — Formalising System Readiness
- Document and Drawing Turnover — Delivering As-Built Information

## Day 4: Pre-Commissioning Activities

- Flushing, Blowing and Cleaning — Removing Debris From Lines and Vessels
- Hydrostatic and Pneumatic Testing — Confirming Pressure Integrity
- Drying and Inerting — Preparing Systems for Process Fluids
- Rotating Equipment Run-In — Proving Machines Before Process Service
- Reinstatement and Leak Testing — Closing Systems After Temporary Works

## Day 5: Instrumentation and Control Checks

- Loop Checks and Calibration Records — Confirming Signals End to End
- Control Narrative Testing — Verifying Sequences Match Design Intent
- Safety Instrumented Function Testing — Proving Trips Before Start-up
- Alarm and Interlock Verification — Confirming Settings and Bypass Controls
- Distributed Control System Graphics Review — Preparing Operators' Screens

## Day 6: Handover and Readiness

- System Handover Dossiers — Transferring Custody From Project to Operations
- Ready for Start-up Certificates — Linking Handover to Safety Reviews
- Pre-Startup Safety Review — Checking Hazards, Procedures and Training
- Operating Procedures and Training Records — Confirming Crew Readiness
- Management of Change During Commissioning — Controlling Field Modifications

## Day 7: Cold Commissioning

- Utility Systems Commissioning — Bringing Water, Air, Steam and Power Online
- Inert and Water Circulation Runs — Testing Pumps, Valves and Controls
- Fired Equipment Dry-Out — Curing Refractory Before Hot Service
- Control Tuning With Utilities — Stabilising Loops Before Process Fluids
- Cold Commissioning Acceptance — Deciding Readiness for Hot Phase

## Day 8: Hot Commissioning and First Start-up

- Introduction of Process Fluids — Managing First Feed Safely
- Start-up Sequence Procedures — Bringing Units Online in Order
- Start-up Hazards and Contingencies — Preparing for Trips and Leaks
- Vendor Support During Start-up — Coordinating Specialist Interventions
- Start-up Logbooks and Event Records — Capturing Lessons in Real Time

## Day 9: Ramp-Up and Performance Testing

- Ramp-Up Planning — Raising Rates While Stabilising Quality
- Performance Test Protocols — Defining Measurements and Acceptance Criteria
- Contractual Performance Assessment — Comparing Results With Contract Figures
- Early Operations Defect Management — Closing Post-Start-up Punch Items
- Close-Out Reports and Lessons Learned — Feeding the Next Project

## Day 10: Practising the Commissioning and Start-up Execution Plan

- Systemisation Exercise — Applying System Breakdown to a Sample Unit
- Handover Simulation — Using Certificates, Punch Lists and Safety Reviews
- Start-up Sequence Workout — Testing Order, Hold Points and Contingencies
- Peer Challenge of Performance Test Plans — Strengthening Acceptance Criteria
- Commissioning and Start-up Execution Plan — Completing Systems, Sequence and Readiness Gates

## Applying Process Plant Start-up and Commissioning After the Course

- Review the system breakdown and punch list categories for a live project and align them with the operations team.
- Run a pre-startup safety review checklist against one system scheduled for start-up and close the gaps found.

## Process Plant Start-up and Commissioning Questions FAQ

### What is process plant start-up and commissioning and why does it matter now?

It is the structured move of a plant from construction through testing to safe, stable operation. It matters now because compressed schedules and complex control systems make this phase the riskiest and costliest point in a project.

### Which roles gain most from process plant start-up and commissioning training?

Commissioning engineers, start-up managers, operations leads and completions coordinators gain most. They plan system testing, accept handovers and lead first start-up, so systemisation, punch list control and readiness reviews shape their daily decisions.

### How does process plant start-up and commissioning differ from a project management course?

It focuses on the technical handover from building a plant to running it. A project management course covers scope, cost and schedule control, while this subject plans testing, certification, safety reviews and the first introduction of process fluids.

## What do you bring back from process plant start-up and commissioning training?

You bring back a Commissioning and Start-up Execution Plan for a unit you support. It sets out systems, test sequences, handover rules, readiness gates and start-up steps, ready to align with project and operations teams.

## Process Plant Start-up and Commissioning: The Way Forward

The Commissioning and Start-up Execution Plan first informs the order in which systems are tested and handed over. Commissioning engineers, start-up managers and operations leads use it to coordinate crews, vendors and safety reviews. After the first system reaches hot commissioning, it is worth revisiting punch list categories, since early start-up often reveals which items truly needed closing first.