Process Plant Start-up & Troubleshooting: One-Week Course

24 – 28 May 2027
Madrid (Spain)

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MERCURY

Process Plant Start-up & Troubleshooting: One-Week Course

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Process Plant Start-up & Troubleshooting: One-Week Course is a one-week course on bringing an installed or revamped plant from mechanical completion to steady operation, and on finding and fixing the faults that appear along the way. It suits engineers, supervisors and technical staff who take part in commissioning. You complete a Start-up Troubleshooting Playbook for your own plant. Mercury Training Center runs this compact edition of the subject.

About This Course

New and revamped plants lose weeks when checks are skipped, handovers are unclear and the first faults are chased by guesswork. To follow the course you should already work on operations, maintenance or engineering tasks in a process plant. You practice on start-up sequences and fault cases, then apply each step to your own site.

Who It Is For

- People who oversee a plant's handover from construction to operations
- People who run or maintain process equipment during first fill and initial operation
- People who commission instruments, control loops and rotating machinery
- People who plan commissioning work, track its progress and report on it
- People who investigate repeat process faults and lead the fix

This course is not for readers new to process plants, who are better served by an introductory course on plant operations, or for project managers who need contracts and budgets in depth, who are better served by a capital project management course.

Competencies You Will Build

- Commissioning sequencing: orders checks and handovers so each system is proven before the next depends on it.
- Readiness verification: confirms completion, integrity and isolation before a system is filled.
- Start-up progress control: tracks work against plan with earned value and acts on slippage early.
- Structured fault finding: separates symptoms from causes and tests one hypothesis at a time.
- Loss analysis: names the losses and wastes behind poor speed, quality or cost.
- Cross-functional coordination: keeps operators, maintainers and designers working from one fault record.

What You Will Be Able to Do

By the end of the course you will be able to:

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- From a plant's system list, build a commissioning sequence with hold points and acceptance criteria.
- Given a punch list and spare parts register, decide which items block start-up and which can follow.
- Using earned value figures, judge whether a start-up schedule is on track and where to add effort.
- Given an abnormal trend after start-up, narrow it to a likely cause with a problem analysis tool.
- From a set of repeat faults, rank the losses by effect and propose standards and indicators to hold the gain.
- Using a risk register, set safety and quality controls for the first weeks of operation.

Course Content

Day 1: Preparing the Plant for Start-up

- Commissioning Organization, Roles and Handover Responsibilities
- Commissioning Strategy and System-by-System Sequencing
- Mechanical Completion and Integrity Checks Before Energizing
- Preparing and Isolating Process Plant for First Fill
- Cost Estimation and Spare Parts Planning for Initial Operation

Day 2: Testing, Acceptance and Initial Operation

- Pre-Commissioning and Operational Tests on Utilities and Process Systems
- Machinery Commissioning: Pumps, Compressors and Rotating Equipment
- Instrumentation and Control System Loop Checks
- Start-up Procedures for Initial Operation of a Revamped Section
- Testing and Acceptance Criteria at Performance Handover

Day 3: Controlling Risk and Progress

- Short-Cut Planning Methods for Commissioning Activities
- Progress Monitoring With Earned Value Analysis
- Commissioning Risk Register and Hazard Review
- Safety and Quality Controls During the First Weeks of Operation
- Group Dynamics, Motivation and Change Management on the Start-up Team

Day 4: Structured Troubleshooting Methods

- Performance Defined by Speed, Quality and Cost Variables
- Asset-Based Versus Business Process-Based Fault Analysis
- Six Big Losses and Seven Wastes Applied to Plant Performance
- Maturity Indexing: Planning, Control, Congruence and Empowerment
- Problem Analysis Tools, Variable Relationship Analysis and TRIZ Principles

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Day 5: Troubleshooting Practice on Plant Cases

- Exercise: Commissioning Sequence Review for a Revamped Section
- Exercise: Fault Diagnosis on a Post-Start-up Trend
- Exercise: Loss Ranking and Corrective Action Selection
- Operator, Maintainer and Designer Interface: Standards, KPIs and Life Cycle Costing
- Completing Your Start-up Troubleshooting Playbook

Case Studies and Exercises

The following are suggested activities.

- Case study: After a revamp, a reactor feed loop at a chemical plant will not hold its setpoint; you decide whether the instrument, valve or tuning is at fault.
- Case study: A water treatment facility is handed over with an open punch list; you decide which items must close before first fill.
- Exercise: A gas processing train misses its throughput after start-up; you produce a loss ranking and a short corrective plan.
- Exercise: A food processing line's commissioning falls behind; you produce an earned value status and a recovery sequence.

What You Take Back

The Start-up Troubleshooting Playbook is a working file you build across the one week around your own plant. In your first month back, use it to check readiness before the next system start-up and to run the first fault investigations with one shared method.

- A commissioning sequence with hold points and acceptance criteria
- A start-up readiness checklist covering integrity, isolation and spares
- A fault-finding worksheet linking symptoms, hypotheses and tests
- A loss register with the standards and indicators that hold each fix

Quick Answers FAQ

What should I know before a process plant start-up and troubleshooting course?

You should already work with process equipment, read P&IDs and follow operating procedures. Earlier commissioning experience helps but is not required; the methods are built from the basics.

How does a one-week plant start-up and troubleshooting course differ from a two-week edition?

The one-week course covers commissioning stages, start-up checks and structured fault finding. A two-week edition adds a second week on troubleshooting and continuous improvement for readers who lead long-term performance work.

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What is the difference between pre-commissioning and commissioning in a process plant?

Pre-commissioning proves equipment without process fluids: flushing, pressure tests, loop checks and motor runs. Commissioning introduces the process medium and brings systems into operation under control, ending with acceptance tests before normal operation.

What do I take back from a process plant start-up and troubleshooting course?

You take back the Start-up Troubleshooting Playbook, built on your own plant. It holds a commissioning sequence, a readiness checklist, a fault-finding worksheet and a loss register you can use at the next start-up.

For Your Manager

After the course, the team member will be able to sequence commissioning checks, confirm readiness before a system is started and lead structured investigations of the first faults. They return with a Start-up Troubleshooting Playbook built on the plant's own systems, first used at the next start-up, shutdown restart or revamp handover.

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