

Process Plant Troubleshooting and Problem-Solving Training Course

4 – 8 April 2027
Doha

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Overview

Process Plant Troubleshooting and Problem-Solving Training Course is a one-week advanced course for process engineers, operations leaders, maintenance teams, and technical specialists who leave with a Process Plant Troubleshooting and Problem-Solving Decision Pack. Participants apply process data validation, material and energy balance diagnostics, equipment and control interaction analysis, hypothesis testing, field verification, root cause analysis, and recurrence prevention to plant performance problems. Agile Leaders Training Center presents this course on process plant troubleshooting and problem solving.

Who Should Attend

- Functions responsible for diagnosing process deviations and production losses
- Teams responsible for operating stability and response to plant upsets
- Personnel responsible for maintenance coordination and technical fault isolation
- Groups responsible for process control performance and measurement integrity
- Technical specialists responsible for root cause analysis and corrective action

The course assumes participants interpret process trends, operating evidence, or maintenance findings at work; it leaves out detailed equipment design and component teardown methods.

Departments and Industries

The course supports departments and industries that diagnose, resolve, and prevent process performance problems.

- Process engineering and technical services departments
- Operations, production, and control room functions
- Maintenance, reliability, and inspection teams
- Oil, gas, refining, and petrochemical operations
- Chemical, food, water, and utility processing facilities
- Pharmaceutical and industrial manufacturing organizations

Learning Objectives

By the end of this course, participants will be able to:

- Analyze process symptoms and define diagnostic boundaries
- Evaluate process data quality and operating evidence
- Use flow maps and material-energy balances to isolate faults
- Build and test competing causal hypotheses
- Diagnose process, equipment, control, and measurement interactions
- Prioritize corrective actions and recurrence controls

Course Agenda

Day 1: Frame the Process Problem

- Process Symptom and Impact Statement
- Process Flow and Operating Context Map
- Normal Operating Envelope Comparison
- Data Source and Instrument Validity Checklist
- Troubleshooting Scope and Boundary Register

Day 2: Build the Evidence Base

- Historian Trend and Event Timeline
- Material and Energy Balance Diagnostic
- Process Variable Relationship Matrix
- Equipment and Control Interaction Map
- Evidence Quality and Gap Log

Day 3: Test Causes and Isolate Faults

- Causal Hypothesis Tree
- Cause-and-Effect Logic Diagram
- Fault Isolation Test Plan
- Field Verification and Sampling Sheet
- Hypothesis Evidence Ranking Matrix

Day 4: Resolve Causes and Prevent Recurrence

- Root Cause Analysis Evidence Chain
- Corrective Action Option Scorecard
- Process Risk and Change Interface Review
- Corrective and Preventive Action Register
- Recurrence Control and Learning Review

Day 5: Practice Process Plant Troubleshooting

- Suggested Exercise: Define a Process Symptom
- Suggested Exercise: Validate a Process Data Set
- Suggested Exercise: Test Competing Causes
- Suggested Exercise: Select Corrective Actions
- Capstone Exercise: Present a Process Plant Troubleshooting and Problem-Solving Decision Pack

Practical Exercises

The course uses suggested activities to convert plant evidence into traceable diagnostic and corrective decisions.

- Suggested activity: reconstruct a process deviation from operating records, trends, observations, and instrument checks.
- Suggested activity: use flow relationships and material-energy evidence to separate process, equipment, control, and measurement causes.
- Suggested activity: rank competing hypotheses, design safe verification tests, and record the evidence for each conclusion.
- Suggested activity: present corrective actions, change interfaces, recurrence controls, and unresolved evidence to decision makers.

FAQs

Who suits process plant troubleshooting training, and what does it assume?

Process, operations, maintenance, reliability, control, and technical-support functions suit the training. It assumes experience interpreting operating trends, plant observations, engineering evidence, or maintenance findings.

How does process plant troubleshooting differ from equipment failure analysis?

Process plant troubleshooting traces behavior across flows, balances, variables, instruments, controls, and equipment interactions. Equipment failure analysis concentrates on the physical failure mechanisms and evidence associated with a component or asset.

How does process data validation improve plant troubleshooting?

Process data validation tests whether trends, instruments, samples, timestamps, and operating records are credible before they support a diagnosis. It reduces the risk of treating a measurement problem as a process fault.

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How are competing causes tested in process plant troubleshooting?

Competing causes are expressed as hypotheses, checked against all available evidence, ranked by explanatory strength, and challenged through controlled tests or field verification that can eliminate alternatives.

How does root cause analysis prevent recurring process plant problems?

Root cause analysis links the observed symptom to immediate, technical, and systemic causes. Corrective actions then address the evidence-supported causes, while ownership, monitoring, change controls, and learning reviews help prevent recurrence.

Conclusion

Participants take a Process Plant Troubleshooting and Problem-Solving Decision Pack back to their organization. It connects symptoms, validated process evidence, balance diagnostics, causal hypotheses, field tests, root causes, corrective choices, and recurrence controls. Teams can use the pack to coordinate investigations, challenge assumptions, document decisions, and communicate unresolved risk.