Gas Network Design and Piping Operations Analysis Training Course

8 – 12 February 2027
Madrid

AGILE LEADERS
Training Center

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Ref: 1668_225490 **Date:** 8 – 12 February 2027 **Location:** Madrid **Fees:** 6500 Euro

Overview

Gas Network Design and Piping Operations Analysis Training Course is a one-week course for gas network, piping, operations, maintenance and project engineering teams, who leave with a Gas Network Design and Operations Analysis. The course connects gas network design, hydraulic analysis, flow and pressure analysis, pipe sizing, commissioning, pipeline integrity and troubleshooting. Participants make design and operating assumptions traceable through models, registers and decision checks. Agile Leaders Training Center develops practical gas network engineering capability.

Who Should Attend

- Teams responsible for gas network design basis and configuration
- Teams responsible for piping calculations, materials and components
- Teams responsible for pressure control, protection and commissioning
- Teams responsible for pipeline operations and performance monitoring
- Teams responsible for integrity indicators and fault diagnosis

The course assumes participants work with engineering drawings, operating data or piping decisions and leaves out country-specific regulatory compliance, certification preparation and specialist software instruction.

Departments and Industries

The course supports departments and industries that design, operate, maintain or evaluate pressurized gas and piping networks.

- Gas transmission and distribution engineering
- Oil, gas and energy operations
- Utilities and industrial facilities
- Engineering design and project delivery
- Maintenance, reliability and asset integrity

Learning Objectives

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

- Build a gas network design basis and configuration
- Analyze flow, pressure and demand scenarios
- Apply pipe-sizing, material and component criteria
- Evaluate control, protection and commissioning requirements
- Diagnose operating performance and integrity indicators
- Build a gas network design and operations analysis

Course Agenda

Day 1: Design Basis and System Requirements

- Gas Network Functional Requirement Register
- ASME B31.8 Scope and Design Criteria Map
- Demand Case and Operating Envelope Matrix
- Network Topology and Boundary Condition Diagram
- Design Assumption and Data Quality Log

Day 2: Hydraulic and Pipe-Sizing Analysis

- Steady-State Flow and Pressure Balance Model
- Pressure Profile and Critical Node Analysis
- Pipe Diameter and Velocity Sizing Sheet
- Pressure Loss and Capacity Scenario Grid
- Hydraulic Model Calibration Check

Day 3: Piping, Control and Protection

- Pipe Material and Design Factor Selection Matrix
- Valve Regulator and Component Duty Schedule
- Pressure Control and Setpoint Philosophy
- Overpressure Protection and Isolation Logic
- Network Configuration and Resilience Assessment

Day 4: Commissioning and Operating Analysis

- Pressure Test and Acceptance Evidence Checklist
- Purging Line-Pack and Startup Sequence Plan
- Operating Performance and Exception Dashboard
- Pipeline Integrity Threat and Indicator Register
- Abnormal Condition Troubleshooting Decision Tree

Day 5: Gas Network Engineering Practice

- Exercise: Define a Network Design Basis
- Exercise: Build a Flow and Pressure Profile
- Exercise: Size Piping and Select Components
- Exercise: Diagnose an Operating Performance Exception
- Capstone: Gas Network Design and Operations Analysis

Practical Exercises

Suggested activities use transmission, distribution, utility and industrial gas-network scenarios.

- Suggested activity: convert demand, pressure and boundary assumptions into a network configuration and design basis
- Suggested activity: compare pipe-size options through capacity, velocity and pressure-loss scenarios
- Suggested activity: map control valves, regulators, isolation and overpressure protection to operating duties
- Suggested activity: investigate an abnormal pressure pattern using performance, integrity and commissioning evidence

FAQs

Who should take gas network design and piping operations analysis training, and what does it assume?

Gas network design and piping operations analysis training suits engineering teams that work with drawings, demand data, pressure information, components, commissioning or operating decisions and can apply basic engineering calculations.

How does gas network design differ from general piping design training?

Gas network design connects distributed demands, network topology, pressure profiles, controls and operating interactions; general piping design training often focuses more broadly on individual lines, equipment connections and mechanical details.

How does hydraulic analysis support gas network pipe sizing?

Hydraulic analysis supports pipe sizing by testing demand, pressure loss, velocity, capacity and critical-node performance across operating scenarios before diameter decisions are finalized.

What belongs in a gas network commissioning analysis?

A gas network commissioning analysis brings together acceptance evidence, pressure-test records, purging and startup sequences, valve and regulator settings, operating boundaries and initial performance observations.

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How are pipeline integrity indicators used in gas network operations?

Pipeline integrity indicators help operating teams connect threats, condition evidence, pressure behavior, inspection findings and exceptions so assessment and mitigation priorities remain traceable.

Conclusion

Participants take back a Gas Network Design and Operations Analysis containing requirements, hydraulic models, sizing decisions, component duties, control logic, commissioning checks, performance measures and integrity indicators. The analysis makes design assumptions and operating limits visible. It helps engineering, operations and maintenance teams coordinate network decisions from concept through service.