Gas Transmission Pipeline Engineering and Network Design Course

19 – 23 September 2027
Johannesburg

AGILE LEADERS
Training Center

Gas Transmission Pipeline Engineering and Network Design Course

Ref: 1675_225984 **Date:** 19 – 23 September 2027 **Location:** Johannesburg **Fees:** 6000 Euro

Overview

Gas Transmission Pipeline Engineering and Network Design Course is a one-week professional course for engineers who plan, size and assure high-pressure gas transmission systems. Participants connect design basis, demand cases, hydraulic behaviour, route constraints, line-pipe selection, station interfaces, operability and integrity requirements. They leave with a Gas Transmission Network Design Basis and Assurance Package that records assumptions, calculations, interfaces and review evidence. Agile Leaders Training Center develops practical capability in gas transmission pipeline and network design.

Who Should Attend

- Pipeline engineers responsible for gas transmission system design
- Network designers and hydraulic modelling engineers
- Project engineers coordinating route, mechanical and station interfaces
- Integrity and corrosion engineers contributing to design decisions
- Technical managers reviewing pipeline design deliverables

The course assumes familiarity with engineering calculations and pipeline terminology. It excludes detailed compressor machinery design, construction supervision, distribution service networks and routine maintenance planning.

Departments and Industries

The course supports organisations that develop, expand or review high-pressure gas transmission infrastructure.

- Gas transmission and midstream operations
- Energy infrastructure development and engineering
- Engineering, procurement and construction organisations
- Independent design assurance and technical consulting
- Industrial gas supply and large energy-user networks

Learning Objectives

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

- Develop a traceable design basis and code applicability matrix
- Build demand, flow and pressure cases for pipeline hydraulic analysis
- Evaluate route corridors, crossings, class locations and geohazards
- Select diameter, line-pipe grade and wall thickness for defined cases
- Integrate compressor, metering, regulation and isolation requirements
- Apply integrity-by-design, operability and design assurance reviews

Course Agenda

Day 1: Design Basis and System Definition

- Gas Transmission System Boundary and Functional Map
- Applicable Codes, Standards and Project Requirements Matrix
- Supply, Demand and Operating Scenario Register
- Design Pressure, Temperature and Gas Property Basis
- Design Assurance Roles and Deliverable Register

Day 2: Hydraulic Analysis and Network Configuration

- Steady-State Flow and Pressure Case Definition
- Gas Property and Compressibility Inputs
- Diameter, Velocity and Pressure-Loss Assessment
- Looping, Branching and Network Configuration Comparison
- Hydraulic Model Assumption and Sensitivity Register

Day 3: Route, Materials and Mechanical Design

- Route Corridor, Crossing and Constraint Register
- Class Location and Design Factor Assessment
- Line-Pipe Grade and Product Specification Selection
- Wall-Thickness, Corrosion Allowance and Pressure Check
- Fracture Control, Stability and Geohazard Design Inputs

Day 4: Stations, Operability and Integrity by Design

- Compressor, Metering and Regulation Station Interface Map
- Valve Spacing, Isolation and Emergency Segmentation Review
- Pigging, Venting, Blowdown and Maintenance Access Provisions
- Corrosion Control and Integrity Threat Register
- Safety Studies, Safeguards and Operability Review Checklist

Day 5: Integrated Design Assurance Practice

- Exercise: Reconcile Demand Cases with Hydraulic Capacity
- Exercise: Review Route, Class Location and Crossing Decisions
- Exercise: Check Pipe Selection and Wall-Thickness Evidence
- Exercise: Resolve Station and Operability Interfaces
- Capstone: Gas Transmission Network Design Basis and Assurance Package

Practical Exercises

Suggested activities use a high-pressure transmission network connecting supply, compressor, metering and delivery nodes.

- Suggested activity: establish normal, peak, minimum and contingency flow cases
- Suggested activity: compare network configurations using pressure and velocity criteria
- Suggested activity: document a route and mechanical design decision with assumptions
- Suggested activity: conduct a multidisciplinary design assurance review

FAQs

Who should take gas transmission pipeline design training?

Gas transmission pipeline design training suits engineers and technical managers who develop or review high-pressure pipeline networks and need to connect hydraulic, mechanical, routing, station and integrity decisions.

How does gas transmission network design differ from gas distribution design?

Gas transmission network design addresses high-pressure, long-distance capacity, compression, major isolation and delivery interfaces. Distribution design focuses on lower-pressure local networks, service connections and end-user supply.

What does pipeline hydraulic analysis cover in this course?

Pipeline hydraulic analysis covers gas properties, flow and pressure cases, pressure loss, velocity, diameter selection, network configuration, compressor interfaces, sensitivity checks and model-result review.

How are engineering standards used during the course?

Participants learn to build an applicability matrix, identify governing project requirements and trace design decisions to the contractually applicable code edition. The course does not replace licensed standards or project-specific engineering approval.

AGILE LEADERS
Training Center

Conclusion

Participants take back a Gas Transmission Network Design Basis and Assurance Package containing system boundaries, demand cases, hydraulic results, route constraints, material and wall-thickness decisions, station interfaces, integrity provisions and review actions. The package helps multidisciplinary teams make assumptions visible and maintain a traceable basis for subsequent design development.