Flare and Pressure Relief Systems Assurance Training Course

24 – 28 October 2027
Johannesburg

AGILE LEADERS
Training Center

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Ref: 1334_198607 **Date:** 24 – 28 October 2027 **Location:** Johannesburg **Fees:** 6000 Euro

Overview

Flare and Pressure Relief Systems Assurance Training Course is a one-week advanced course for process safety engineers, operations and maintenance personnel, relief-system specialists, and technical managers who leave with a Flare and Relief Assurance File. Participants connect overpressure scenarios, relief loads, network hydraulics, knockout drums, flare combustion, equipment integrity, operating limits, troubleshooting, and change control across the system lifecycle. Agile Leaders Training Center presents flare and pressure relief systems assurance as a process-safety engineering discipline.

Who Should Attend

- Functions responsible for pressure-relief design basis and scenario governance
- Teams responsible for flare-network operation and performance
- Personnel responsible for relief-device and disposal-system mechanical integrity
- Functions responsible for process-safety reviews and management of change
- Technical managers responsible for relief-system risk and lifecycle decisions

The course assumes participants already work with process engineering, operations, maintenance, inspection, or process safety, and it leaves out introductory thermodynamics, engineering licensure, and equipment certification.

Departments and Industries

The course supports departments and industries that manage pressure-relief and flare-system performance.

- Process engineering, process safety, and technical assurance functions
- Operations, maintenance, inspection, and reliability departments
- Refining, petrochemical, gas processing, and LNG facilities
- Oil and gas production, terminals, and storage operations
- Engineering contractors, equipment suppliers, and asset-integrity teams

Learning Objectives

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

- Analyze overpressure scenarios and relief-system design basis
- Evaluate relief loads, device selection, and disposal paths
- Apply flare-header and knockout-drum hydraulic checks
- Diagnose combustion, operating, and mechanical-integrity problems
- Prioritize safeguards, inspection findings, and change decisions
- Build a lifecycle assurance and troubleshooting file

Course Agenda

Day 1: Relief System Design Basis

- API 520 Relief Device Selection Framework
- API 521 Overpressure Scenario Register
- Relief-System Design Basis Document Map
- Protected Equipment and Disposal Path Matrix
- Relief Scenario Credibility Review Method

Day 2: Loads and Network Hydraulics

- Individual Relief Load Calculation Sheet
- Simultaneous Scenario Load Combination Matrix
- Flare Header Backpressure Hydraulic Profile
- Inlet and Outlet Pressure-Loss Check
- Knockout Drum Capacity and Liquid-Handling Screen

Day 3: Flare Equipment and Combustion

- API 537 Flare Equipment Configuration Map
- Seal, Purge, and Flashback Protection Checklist
- Ignition and Flame Detection Reliability Test
- Heating Value and Combustion Performance Envelope
- Radiation, Noise, Smoke, and Dispersion Review

Day 4: Integrity and Operational Assurance

- Relief Device Inspection and Test Register
- Flare Availability and Operating Limit Dashboard
- Failure Mode and Troubleshooting Decision Tree
- Management of Change Impact Review
- Relief-System Deviation and Risk Action Log

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Day 5: Flare and Relief Practice

- Exercise: Overpressure Scenario Challenge
- Exercise: Relief Load and Header Review
- Exercise: Flare Performance Diagnosis
- Exercise: Mechanical Integrity and Change Evaluation
- Capstone Exercise: Flare and Relief Assurance File

Practical Exercises

The course uses suggested activities drawn from refineries, gas-processing plants, petrochemical units, and storage terminals.

- Suggested activity: build an overpressure scenario register and trace each credible case to its protected equipment, relief device, and disposal route.
- Suggested activity: review relief loads, simultaneous cases, backpressure, header constraints, and knockout-drum liquid handling for a process unit.
- Suggested activity: diagnose poor flare performance using gas properties, operating data, ignition status, assist media, smoke, and equipment condition.
- Suggested activity: assemble an assurance file linking design basis, inspection history, operating limits, deviations, changes, and risk actions.

FAQs

What is flare and pressure relief systems assurance?

Flare and pressure relief systems assurance connects design basis, credible overpressure scenarios, relief loads, disposal-network capacity, flare performance, equipment integrity, operating controls, and change management.

Who suits flare and pressure relief systems training, and what does it assume?

Flare and pressure relief systems training suits experienced process safety, engineering, operations, maintenance, inspection, and reliability personnel who already work with process equipment or protective systems.

How does flare and pressure relief systems training differ from relief-valve sizing training?

Flare and pressure relief systems training examines the whole protective path and lifecycle, while relief-valve sizing training concentrates mainly on device capacity and selection for defined cases.

How are flare-system hydraulic constraints evaluated?

Flare-system hydraulic constraints are evaluated by linking credible loads, simultaneous scenarios, inlet and outlet losses, header backpressure, knockout-drum performance, disposal capacity, and equipment operating limits.

How should flare and relief-system integrity problems be managed?

Integrity problems should be managed through defined inspection and testing, condition evidence, failure analysis, risk-based actions, operating safeguards, change review, accountable ownership, and verified closeout.

Conclusion

The course integrates relief scenarios, load determination, network hydraulics, flare equipment, combustion performance, mechanical integrity, operations, and change control. Participants take back a Flare and Relief Assurance File containing registers, matrices, calculation sheets, checklists, profiles, decision trees, and action logs. The file changes how their organizations govern relief-system risk across the asset lifecycle.