CONCEPT

LPG Operations, Storage and Safety: Terminals, Filling Plants and Distribution

27 – 31 December 2026
Dammam - Eastern Province five-star



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Ref: 501_16761 **Date:** 27 – 31 December 2026 **Location:** Dammam - Eastern Province five-star **Fees:** 19500 SAR

Introduction:

LPG operations fail most often at the everyday interfaces: an overfilled cylinder, a road tanker unloaded without bonding, a relief valve left out of test or a heavier-than-air leak drifting into a drain. Because propane and butane are stored as pressurised liquids, a small release can escalate to a vapour cloud fire or a BLEVE. This Core Concept course equips plant, terminal, filling and distribution staff to run LPG storage, transfer, cylinder filling and delivery safely, and to check facilities against NFPA 58 principles. Participants complete an LPG Facility Safety and Operations Audit Report.

Course Objectives:

- Characterise propane, butane and commercial mixes by vapour pressure, vapour density and flammable behaviour and set handling limits from them
- Operate spheres, bullets and refrigerated LPG storage within fill limits, pressure envelopes and relief valve settings
- Carry out road tanker, rail tank car and gas carrier loading and unloading with bonding, vapour balance and emergency shut-off controls
- Supervise cylinder filling by mass, leak testing and periodic cylinder requalification in a filling plant
- Plan bulk and cylinder distribution from terminal to depot and end user with supply, inventory and pricing basics in view
- Assess BLEVE, vapour cloud and gas detection safeguards and audit an LPG facility against NFPA 58 requirements

Target Audience:

- Operators who run LPG storage spheres, bullets and refrigerated tanks at plants and terminals
- Transfer crews who load and unload road tankers, rail tank cars and gas carriers at LPG gantries and berths
- Filling plant staff who fill, check-weigh, leak test and requalify LPG cylinders
- Distribution and depot staff who schedule bulk and cylinder deliveries to customers
- HSE staff responsible for fire protection, gas detection and emergency response at LPG sites
- Maintenance technicians who service relief valves, pumps, compressors and filling equipment in LPG service

Course Outline:

Day 1: LPG Properties, Supply Sources and Market Basics

- Propane, Butane and Commercial Mix Specifications with Seasonal Blend Variation
- Vapour Pressure Versus Temperature Curves and Liquid Expansion Allowance
- Heavier-Than-Air Vapour Behaviour, Flammable Limits and Asphyxiation Risk
- LPG Supply Sources: Gas Processing Plants, Refineries and Import Cargoes
- LPG Pricing Basics: Contract Price Benchmarks, Freight and Margin Build-Up

Day 2: LPG Storage Systems and NFPA 58 Code Requirements

- NFPA 58 Liquefied Petroleum Gas Code Structure and Scope at Overview
- Pressurised Spheres and Bullets Designed to the ASME Pressure Vessel Code
- Refrigerated LPG Storage Versus Pressurised Storage Selection
- Maximum Fill Limits, Level Gauges and High-Level Alarm Checks
- Tank Spacing, Separation Distances and Mounded Vessel Options

Day 3: Tanker, Rail and Ship Transfer and Cylinder Filling Plant Operations

- Road Tanker Loading Gantry Sequence: Earthing, Vapour Balance and Excess Flow Valves
- Rail Tank Car Unloading with Compressors, Pumps and Transfer Hoses
- Refrigerated and Pressurised Gas Carrier Cargo Transfer at LPG Terminals
- Cylinder Filling Carousel, Check-Weighing and Leak Test Station Procedures
- Cylinder Inspection, Hydrostatic Testing and Requalification Records

Day 4: Relief, Fire Protection, BLEVE and Emergency Response

- Pressure Relief Valve Sizing Basis, Set Pressure and Test Interval Records
- Deluge and Water Spray Cooling Systems and Passive Fire Protection Coatings
- BLEVE Mechanism and Lessons from the Feyzin and San Juanico Incidents
- Fixed Gas Detection Layout, Odorant Checks and Low-Point Leak Monitoring
- LPG Emergency Response Plan: Isolation, Evacuation Zones and Fire Service Interface

Day 5: LPG Distribution Logistics and the Facility Safety Audit

- Bulk Delivery Routing, Depot Inventory and Customer Tank Top-Up Planning
- Cylinder Exchange Logistics, Returnable Asset Tracking and Depot Stacking Rules
- Walkthrough Exercise: Storage Area, Loading Gantry and Filling Hall Inspection
- LPG Audit Checklist Scoring Against NFPA 58 Requirements
- LPG Facility Safety and Operations Audit Report Presentation and Peer Review

Skills You Will Gain:

- LPG Property Assessment
- Pressurised Storage Operation
- Bulk Transfer Control
- Cylinder Filling Supervision
- Relief and Fire Protection Checks
- Gas Detection Management
- LPG Distribution Planning
- Facility Safety Auditing

Why Attend This Course:

- Return with an LPG Facility Safety and Operations Audit Report scored against NFPA 58 requirements for a site you know
- Recognise the early signs of an overfilled vessel, a failing relief valve or a low-lying leak before they become incidents
- Speak the same language as terminal, filling plant, logistics and HSE colleagues on fill limits, bonding and isolation
- Compare LPG storage, filling and delivery practice with staff from producers, terminals and cylinder distributors

Conclusion:

Safe and reliable LPG supply depends on disciplined control of a pressurised liquid at every step from storage to the customer. The week moves from LPG properties, supply and pricing basics, through storage design and NFPA 58 requirements, to tanker, rail, ship and cylinder filling operations, then to relief, fire protection, BLEVE prevention, gas detection and emergency response. The final day covers bulk and cylinder distribution logistics and closes with an inspection walkthrough and an LPG Facility Safety and Operations Audit Report for peer review.