MERCURY

LPG Terminal Design and Plant Operations Safety Course

11 – 15 April 2027
Manama (Bahrain)



Dubai - UAE: +971 4 450 5697
Istanbul - Türkiye: +90 539 599 1206
Amman - Jordan: +962 79 712 3347

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Ref: 16013_1067880 **Date:** 11 – 15 April 2027 **Location:** Manama (Bahrain) **Fees:** 4900 Euro

Introduction to LPG Terminal Design and Plant Operations Safety:

LPG Liquefied Petroleum Gas terminals are vital to global energy supply chains and require meticulous planning and design to ensure safety and operational efficiency. The LPG Terminal Design and Plant Operations Safety course provides a deep, technical understanding of LPG terminal design, plant operational safety, and compliance with modern industrial regulations.

The LPG Terminal Design and Plant Operations Safety training course covers foundational concepts and advanced practices for effectively managing LPG infrastructure. With increasing demand for energy and stringent regulatory requirements, professionals must be well-versed in both terminal design concepts and LPG safety protocols.

This LPG Terminal Design and Plant Operations Safety training program bridges the knowledge gap by blending theoretical models with real-world applications. Participants will gain practical expertise in LPG plant operations, terminal layout planning, hazard assessment, and safety instrumentation.

The LPG Terminal Design and Plant Operations Safety program provides comprehensive guidance on emergency response, incident management, and integrating sustainability. Learners will learn how to design, operate, and manage LPG terminals aligned with global best practices and modern plant operational safety standards.

Targeted Groups:

This LPG Terminal Design and Plant Operations Safety training course targets professionals seeking specialized knowledge and skills:

- Engineers and designers are working on the design and planning of oil terminal infrastructure.
- Safety officers focused on improving LPG safety and risk control.
- HSE professionals manage health, safety, and environmental protocols.
- Operations and maintenance staff are involved in daily LPG terminal operations.
- Compliance and regulatory affairs personnel in the energy and gas sectors.
- Project managers are responsible for the construction or upgrade of LPG plants.
- Emergency response teams are involved in planning for hazard mitigation.
- Technicians are working on the design of the marine terminal and equipment handling.
- Industrial professionals are transitioning into roles in LPG terminal design.
- Energy consultants are aiming to optimize safety across petrochemical terminals.

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Course Objectives:

Participants will achieve the following objectives by completing the LPG Terminal Design and Plant Operations Safety course:

- Understand key concepts in terminal design, structure, and layout.
- Recognize the properties of LPG and evaluate potential hazards.
- Apply structured risk assessment techniques in terminal environments.
- Analyze national and international LPG regulations for compliance.
- Demonstrate the ability to implement safety procedures in storage and transfer.
- Utilize instrumentation and control systems to reduce operational risks.
- Conduct incident investigations and develop preventive strategies.
- Develop and implement effective emergency response plans.
- Optimize LPG handling processes through design-based improvements.
- Monitor and enhance operational safety using safety audits and metrics.
- Communicate safety protocols to terminal personnel.
- Plan terminal maintenance operations with minimal compromise to safety.
- Incorporate environmental protection strategies into operational planning.
- Lead initiatives for continuous improvement in plant safety.
- Adapt to emerging technologies in terminal automation and safety.
- Develop competency frameworks for LPG safety training programs.
- Apply best practices for LPG terminal operations under varied conditions.
- Align terminal processes with organizational safety objectives.

Targeted Competencies:

Participants will gain the following competencies during the LPG Terminal Design and Plant Operations Safety program:

- In-depth understanding of LPG terminal design and infrastructure.
- Capability to conduct thorough hazard identification and analysis.
- Skill in applying plant operational safety measures.
- Competency in implementing emergency preparedness plans.
- Expertise in LPG safety strategies and training implementation.
- Knowledge of national and international regulatory frameworks.
- Proficiency in safe LPG storage and distribution techniques.
- Technical skill in process automation and instrumentation.
- Experience in post-incident analysis and root cause identification.

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Course Content:

Unit 1: Fundamentals of LPG Terminal Design:

- Physical and chemical properties of LPG.
- Components and subsystems in a typical LPG terminal.
- Design considerations for terminal layout and access.
- Construction materials and compatibility with LPG.
- Terminal design concept: flow, space, and safety integration.
- Designing for operational efficiency and emergency access.
- Engineering solutions for safe LPG storage tanks.
- Automation and control systems in LPG terminal design.
- Best practices for oil terminal design in hazardous environments.
- Environmental impact assessments for terminal locations.
- Marine loading arms and marine terminal design features.
- Compliance with national and international design codes.

Unit 2: Safety and Risk Management in LPG Operations:

- Hazard identification techniques: HAZOP, What-If, and FMEA.
- Safety zoning and hazardous area classification.
- Fire and explosion protection systems design.
- Emergency isolation valves and shutdown systems.
- LPG safety tips for operators and engineers.
- Role of process safety management in LPG terminals.
- Gas detection technology: fixed and portable systems.
- PPE protocols for high-risk LPG environments.
- Leak prevention systems and secondary containment.
- Risk-based inspections and safety audit planning.
- Legal responsibilities of terminal operators.
- Developing a proactive safety culture.

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Unit 3: LPG Storage, Handling, and Distribution:

- Design and selection of pressurized vs refrigerated tanks.
- Operation of LPG pumps, compressors, and valves.
- Designing LPG transfer systems for maximum safety.
- Preventive maintenance of loading arms and pipelines.
- Best practices for managing bulk storage facilities.
- Regulatory requirements for land and marine transport.
- Truck, rail, and ship loading/unloading safety procedures.
- Emission reduction through vapor recovery systems.
- Handling LPG in extreme weather conditions.
- Designing for flexibility in product flow and storage.
- Spill management during LPG transfer and handling.
- Implementing safe shutdown procedures.

Unit 4: Emergency Response and Incident Management:

- Structure and components of an effective ERP.
- Firefighting system design for LPG terminal fires.
- Coordination with external agencies and authorities.
- Spill containment tools and procedures.
- Learning from global LPG terminal accidents.
- Conducting emergency response drills and simulations.
- Role of SCADA and emergency alarm systems.
- Communication protocols during crises.
- Business continuity planning and post-incident recovery.
- Corrective action reporting and implementation.
- Integrating technology into incident management systems.
- Training terminal staff for emergency roles.

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Unit 5: Advanced Safety Practices and Regulatory Compliance:

- Global standards: NFPA, API, ISO compliance.
- Documentation and reporting for regulatory inspections.
- Inspection methods: visual, ultrasonic, and integrity testing.
- Utilization of automation to enhance plant operational safety.
- Safety training programs and certification processes.
- Competency assessments for operational roles.
- LPG safety training for new and experienced employees.
- Environmental management systems in LPG facilities.
- Carbon footprint tracking and emissions monitoring.
- Auditing for continuous safety performance improvement.
- Integrating sustainability in LPG terminal operations.
- Preparing for technological shifts in LPG plant design.

Final Insights & Key Takeaways:

Ensuring a secure and efficient LPG terminal requires a fusion of engineering expertise, safety knowledge, and compliance awareness. This LPG Terminal Design and Plant Operations Safety training empowers professionals to elevate operational safety and efficiency through well-informed design and procedures. With practical tools and real-world applications, participants will return equipped to lead improvements in safety and performance. Building a robust safety culture in LPG infrastructure is not only critical but also achievable through continuous learning and proactive planning.