Training - Properties, Storage and Transfer of LPG

PSTGPL-EN-P | **Face-to-face only** | **4 days**

From the properties of Liquefied Petroleum Gas (LPG), the storage, loading/unloading equipment and associated hazards, this training course aims to meet the needs for safe operation in LPG depots, chemical and petrochemical terminals

Level

Knowledge

Public

Staff (field operators, panel operators, shift leaders, young engineers and terminal managers) involved in LPG storage and transfer activities. By extension, any person involved in depot LPG activities (technicians & engineers in Maintenance, Projects, Engineering, Logistics, SHE)

Objectives

Attendees will be able to implement the following skills:

- Describe the procedures for sampling liquefied gases related to the quality criteria and their compositions
- List, according to the regulations, the characteristics of the equipment used for storage, transfer, (de-)loading.
- List the operating rules, guaranteeing safety, to ensure good pumping conditions and to remedy malfunctions of the associated equipment
- Appreciate operating instructions for safe operation

Pedagogical & technical resources

- The pedagogy is active and refers essentially to participants' experience. The documentation delivered to the participants as training medium is also a reference document useful after the training session
- Case studies based on industrial situations

Assessment of achievements

- Trainees are assessed throughout the training through practical application phases and interactions with the trainer
- A final on-the-spot evaluation may also be carried out at the end of the course and/or at the end of each module using tests designed to verify the learners' understanding and assimilation of the knowledge linked to the training objectives

Prerequisites

No prerequisites are necessary to follow this course

Responsable

IFP Training instructors, with expertise in the field and trained in modern teaching methods adapted to the specific needs of learners from the professional world

Program

LPG PROPERTIES — 0.5 day

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Origins and main components of different liquefied gas: propane, butane, autogas, ethylene, propylene, butadiene, butenes, ammonia.
Main properties related to storage, transfer and different uses: liquid & gas densities, vapor pressure, water content, corrosivity, odor, toxicity.
LPG's finished products specifications and standard tests.

STORAGE TANKS 1 day

Different types: spheres, bullets, semi buried storage, refrigerated storage, underground storage.
Storage operation: equipment, circuits, instrumentation, water purge, sampling...
Safety equipment: safety valves, level switches, fail safe valve, hydraulic check-valve, excess flow valve, water injection, fire & gas detection. Fire protection.

ROTATING EQUIPMENT FOR TRANSFER 0.75 day

Simplified technology of centrifugal pumps, different types of centrifugal pumps used for LPG transfer. Total head, yield, horsepower and motor intensity. Operation of centrifugal pumps, start-up, shutdown, decommissioning, field checks, troubleshooting and operational solutions. Safe operation.
Simplified technology of reciprocating compressors, field checks, troubleshooting and operational solutions. Safe operation.

LOADING & UNLOADING OPERATIONS 0.75 day

Equipment in connection with loading and unloading facilities. Corresponding safe operating conditions.
Marine bulk loading/unloading:

- Basic tankers description. Different loading stations layouts, isolation flange or grounding.
- Loading arms and safety accessories: manual and hydraulic control, quick coupling, movement detection, breakaway coupling, drainage systems.
- Fixed firefighting equipment on board, on shore, safety checklist.

Tank truck and railcar bulk loading/unloading:

- Truck and railcar loading stations: hoses or loading arms, gas phase/liquid phase connections, quantity measurement and control systems.
- Safety and operating equipment on tank trucks and railcars: vessel's hydraulic or pneumatic valves, high level switch, Gestra type valves, breakaway coupling, drainage systems, fire & gas detection, fixed firefighting equipment.
- Procedures.

PRODUCT HAZARDS & OPERATING PREVENTIVE MEASURES 1 day

Flammability:

- Flammability conditions, flammability limits, different types of gas detectors.

Product hazards for the human being:

- Toxics, exposure limits, Safety Datasheet.
- Low temperature burn.

Fluid behavior hazards:

- Heat addition/removal consequences on closed circuit: pressurization, thermal expansion, vessel under vacuum, temperature drop due to vaporization, icing...
- LPG storage pressure control: vapor condensation, cooling systems.
- BLEVE: description of the phenomenon, different consequences, prevention and mitigation.

Examples of different hazardous situations and correct behavior: normal operating conditions (operator field check, purges, sampling), incidents (leak, fire), startup/shutdown operations, maintenance activities...

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Please contact our disabled persons referent to check the accessibility of this training program : referent.handicap@ifptraining.com

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