

Liquefied Petroleum Gas (LPG) is a derived product either extracted from natural gas (about two thirds of LPG global consumption) or produced in refineries during the conversion process. This gas is compressed and liquefied in order to facilitate transportation and storage.

Mostly composed of butane and propane it has many uses including heating in residential and commercial properties. Stored in tanks or bottles, it can indeed be used as an alternative in remote areas where no gas main network connection is possible. The additional interest of LPG is its high heating value which makes it a valuable energy.

However, this hydrocarbon is by definition highly flammable and explosive (due to its massive compression, 1 litre of liquid LPG equals 270 litres of gaseous LPG), Teledyne Gas & Flame Detection can provide solutions and expert guidance on your needs.

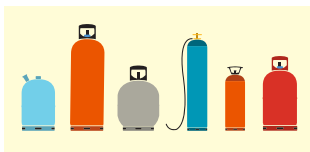
We can distinguish three main areas with LPG hazards:

- Filling stations (where gas is LPG is stored in bottles)
- Storage areas (where gas is stored to be distributed)
- Industrial sector (where LPG is stored and used as energy)
- Autogas filling stations (where LPG is sold as car fuel)

Risk & detected gas

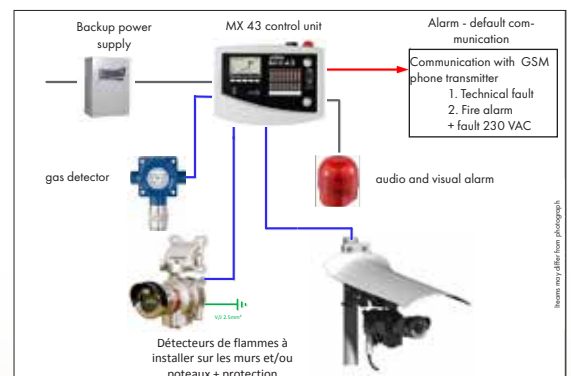
- Explosion
- Fire

LPG gas cylinders storage regulations



In some Europe and Middle East regions, some strict regulations may apply to the storage of gas cylinders and recommend the use of gas & flame detection to ensure site and staff safety. Teledyne Gas and Flame Detection offers a wide range of gas and flame detection systems in compliance with these regulations.

As an example, the system represented here enables gas and flame detection on empty and full cylinders storage racks and on loading and unloading bays. The install of this gas and flame detection system makes this site compliant with local regulations (in France, code of practice 4718 - 21th of Sept. 2017 makes compulsory to have gas and flame detection for storage sites of above 6 tons).



LPG - Liquid Petroleum Gas

Application note

LPG filling station operation

A LPG filling station consists of:

- A LPG storage tank
- A loading / unloading post
- A center of filling bottle, called carrousel
- A LPG pump
- A LPG compressor



Typically, butane or propane comes under pressure in trucks and is stored in spherical tanks before being packaged in bottle. The filling ability varies from one centre to another. The centres fill around 1000 bottles per hour.

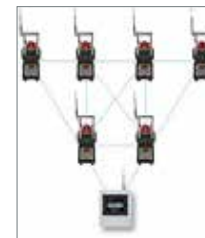
Here the different steps before bottle filling:



BM 25: a wireless, proven in use and transportable 5-gas detector

The BM25 is the perfect solution for mobile or temporary work applications, team protection, area surveillance, or places where fixed detection systems are not suitable.

Proven in use, with more than 12,000 in the field, this transportable gas detector is already used in many filling stations. Designed to detect one to five gases, its radio communication allows several wireless BM 25 devices to communicate on the same network or to send information wirelessly to a controller.



Where to position the monitors

1: Identify the potentially dangerous areas:

- Loading and unloading areas
- Storage areas
- Pump & compressor
- Carrousel.

2: Determine if the leak is permanent (infrared detection) or occasional (catalytic detection). Carrousel: Permanent Leak so GD10.

3: Wind study.

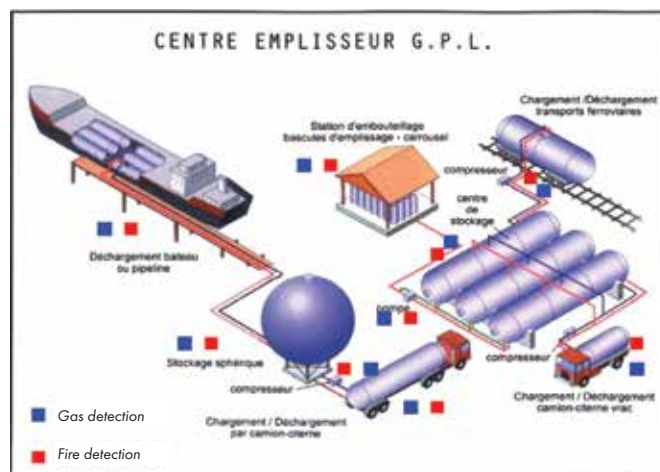
4: Place the gas and flame detectors at the unloading boat.

5: Position gas detectors in the retention pool under the gas storage tank.

6: Gas detector will be placed in the different areas of the filling chain (painting, weighing...).

7: Position flame detectors upward and looking down the carrousel to supervise the inflammation risks. Don't forget to consider:

- Obstacle presence which could hide fire
- Maximal detection distance
- Possible false alarm sources.



8: Install gas detectors in triangulation around carrousel for a better site monitoring.

9: Flameproof accessories (beacons and flash) will be used in unloading and loading, compressor, and storage areas.

10: Fire Detection: In administration buildings, optical smoke detectors can be used. In technical buildings, heat detectors which measure a temperature threshold and rate-of-rise detectors which measure a temperature gradient can be used.

LPG - Autogas petrol stations



LPG can also be used as an economical and cleaner alternative fuel for car engines. Car running on LPG have an extended engine life and their gas emissions are reduced. There are more than 14 million cars in Europe running on auto gas, serviced by more than 30 000 filling stations.

Worldwide regulations recommend the installation of a proper gas detection system in filling stations providing autogas (name given to LPG fuel for cars).

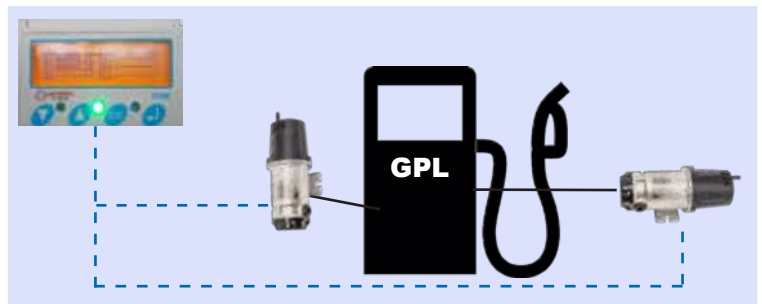
Teledyne Gas & Flame Detection has elaborated a specific and proven-in-use solution to monitor LPG leaks in autogas filling stations: two GD10 detectors detect and relay gas levels information to the Echo100 controller. When alarm levels (quantity of gas detected in the atmosphere) are reached the controller turns on the configured relays. For ease of maintenance and installation, the LPG detection kit is a "plug & play" system that only needs to be connected to power supply.



LPG detection kit

« Plug&Play » LPG detection kit

This specific detection kit is dedicated to GPL detection and comprises 2 GD10 connected to an ECHO100 controller.



Industrial use of LPG

The industrial sector uses LPG in a variety of applications as an alternative source of energy for any process where heating is involved (furnaces, kilns); as fuel for electricity generation or production machines (steam boilers, rotary press etc.); or for any transportation vehicles (forklifts & trucks). Out of this non-exhaustive list, similar hazards can be encountered in many industrial plants where LPG is stored and daily used.



Grain drying



Asphalt concrete manufacture



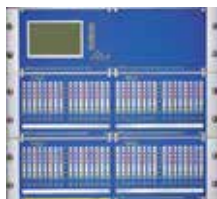
Canning factory

LPG - Liquid Petroleum Gas

Application note

Teledyne Gas & Flame Detection applicable products

Gas & flame detection - fixed range



MX 62 control unit:

To centralize information and activate the needed security system.



DF-TV7

Flame detector Recommended for its long detection distance.



Spyglass

Open path gas detector



GD10

The infrared GD10 detector: used because of a reduced maintenance and an appreciable cost reduction.



OLCT 60

The catalytic OLCT 100/OLCT 60 detectors: according to your needs, with or without display, non intrusive calibration...



OLCT 100

Transportable-gas detection



BM 25

Wireless, transportable, 5-gas area monitor

Portable solutions



PS200



Calibration and gas testing station



Protégé ZM



PS500

Other products



MX 32v2



MX 43



700 Series



Alarm system



CXT

