



## ENERGY IN A BOTTLE

LPG stands for Liquefied Petroleum Gas. It is versatile, fast, clean, powerful, portable and most importantly, very safe. It is used in a wide range of applications: cooking, heating, refrigeration and lighting.

Petroleum products are obtained from crude oil by a long complex refining process that involves several units and serves different purposes.

LPG is a modern, affordable alternative to electricity. Since it comes in a bottle, it can be moved from room to room, taken outdoors or even next door.

In addition, LP gas is an energy that responds instantly. There are no power cuts with LP gas. It is non-toxic (not poisonous), clean-burning and non-pollutant to the atmosphere.

**A good mixture:** LPG is mainly Propane ( $C_3H_8$ ), Butane ( $C_4H_{10}$ ) or a mix of Propane and Butane. Since LPG has such a simple chemical structure, it is among the cleanest of any alternative fuels.

**Boiling point:** LPG's boiling point ranges from  $-42^{\circ}C$  to  $0^{\circ}C$  depending on its mixture percentage of Propane and Butane.

**Combustion:** The combustion of LPG produces carbon dioxide ( $CO_2$ ) and water vapour, but sufficient air must be available. Inadequate appliance flueing or ventilation can result in the production of carbon monoxide, which can be toxic.

**Vapour pressure:** LPG is stored as a liquid under pressure. It is almost colourless and its weight is approximately half that of an equivalent volume of water. The pressure inside a closed container in which LPG is stored is equal to the vapour pressure of the liquid and gaseous LPG in the container and corresponds to its temperature.

**LPG vapour is denser than air:** Butane is about twice as heavy as air and Propane about one-and-a-half times as heavy as air. Consequently, the vapour may flow along the ground and into drains, sinking to the lowest level of the surroundings and be ignited at a considerable distance from the source of leakage.

**Ignition temperature:** The temperature required to ignite LPG in the air is around  $500^{\circ}C$ .

**Calorific value:** The calorific value of LPG is about 2.5 times higher than that of main gas, so more heat is produced from the same volume of gas.

**Toxicity:** LPG is a colourless, odourless and non-toxic gas. It is supplied commercially with an added odorant to assist detection by smell. LPG is an excellent solvent of petroleum and rubber product and is generally non-corrosive to steel and copper alloys.

**Safety:** LPG is just as safe as any other fuel. In fact, it is safer than most fuels because neither LPG itself nor the end products that are produced by burning LPG in a suitable appliance are poisonous to inhale. Since LPG cannot burn without air, there can never be a 'flashback' into the cylinder. You can feel safe with LPG as the most thorough precautions are taken to ensure your safety. All you have to do is to handle it correctly while adhering to the simple instructions provided.

## TOTAL GAZ CYLINDERS



Bottled gas is available in a wide range of cylinders to fit any appliance. We offer a large range of cylinder sizes (5, 9, 12, 14, 19, 48kg), giving us the edge in catering for all kind of LPG installations.

All of our cylinders are protected against corrosion and are subjected to strict safety checks at each refill.

Our cylinders not only provide energy to industrial and agricultural facilities, public institutions, hotels, restaurants and catering units but are also equally suitable in the home for baking, cooking and heating.

Find out more about the different uses of LPG [here](#).

### Refills

Your Totalgaz dealer will exchange your empty bottle for a full one whenever required.

Should you no longer need it, please return it to your local dealer and claim back your deposit.

Don't hesitate to ask your Totalgaz dealer which cylinder is best suited to your application.

## RESIDENTIAL / DOMESTIC

It provides you with an instant cooking flame as well as with the correct amount of heat required. Moreover, LPG helps to keep your kitchen clean as it does not form any soot nor blacken your pan bottoms or kitchen ceiling.

### **Cooking**

No self-respecting chef would cook with anything else but gas. In fact, LPG is one of the major ingredients in the success of a good recipe and delicious meal. Its efficient flame provides you with instant heat and therefore makes cooking easy, enjoyable and clean. LPG does not leave any residue, does not taint your food and helps to prolong your cooking equipment's life span.

### **Heating**

What a pleasure it is to feel warm around an LPG fireplace or portable heater during a cold winter. Be it a heater or a main heating system, LPG will add a touch of extra warmth to your life wherever you are. You will also appreciate the safe and healthy side of an LPG heater due to the fact that it does not produce any sparks nor residue. Warmth, safety and comfort is all you expect from your home. LPG is the perfect solution to save money and energy, protecting you from harmful emissions.

### **Lighting**

Candles may be romantic but are not so practical in situations where light is required. Wherever you are, outside or inside, or in the middle of nowhere, your LPG-fired lighter will be there to illuminate your way. You will also be able to appreciate the natural repellent effect that an LPG-powered light has on insects in the wild. It is the ideal solution for the patio, at the pool-side, on a camping expedition or wherever you may need outdoor lighting.

### **Braaing**

Inviting friends over to savour your famous marinated steak-on-the-barbie will be transformed from a simple South African braai into an extravagant gourmet experience. Call them at noon and tell them to be at your place by 1pm... After all, it's possible with a gas barbecue. It's simple, safe and easy to use. In addition, thanks to a gas barbecue and patio heater, you will be able to enjoy those special occasions throughout the year.

## COMMERCIAL USES OF LPG

LPG energy can be used in many commercial applications and is ideal and economical for cooking and cooling equipment, space heaters, boilers and more. Besides being flexible, reliable and affordable, LPG can offer considerable economic and environmental benefits over the use of oil, solid fuel or electricity. In fact, LPG generates heat which is instantly available and readily controlled. Thanks to its reduced carbon emissions, LPG is environmentally cleaner which means that appliances therefore require less maintenance than with any other fuel.

For this usage, Totalgaz has a wide range of bulk tanks that can be buried underground or installed above the ground. Alternatively, the tanks may be replaced by cylinders for smaller installations. A multi-occupancy site can also be devised with a supply from a central storage tank through an individual meter to restaurants or commercial sites.

## **Heating**

LPG is used for heating purposes in many factories, warehouses, showrooms and industrial units. LPG-powered radiant heaters are often used in these environments because of their quick response and specific directional heating. Very easily controlled with thermostats and time switches, these heaters create a comfortable working environment where productivity can consequently be optimised.

The versatility of Totalgaz LPG allows you to have heat, light and power wherever and whenever you need it. Looking beyond these industries, LPG also powers a vast range of economical and environmentally responsible machinery.

LPG can be used in many applications in the industrial sector namely in space- and process-heating, powering industrial ovens, production of food, kilns, furnaces, production of packing material as well as in powering forklift trucks in warehouses.

## **Ceramic**

LPG is one of the best choices of energy in this particular industry. Ceramics made of clay require a high heating value in order to dry and become hard and solid. Easily controllable, LPG provides clean combustion and is therefore advantageous in the maintenance process. Burners and kilns have to be maintained less often causing less downtime, with the consequence of saving costs and increasing productivity. As a choice energy, LPG is widely used in pottery, roofing, ceramic tiles and sanitary ware.

## **Food Processing**

LPG is widely used in many food processing systems because of its clean burning properties. Bakeries and the manufacturers of biscuits, chips and chocolate are inclined to choose LPG as their preferred energy option as their products will not be exposed to the risk of contamination. In addition, this energy is also used in slaughterhouse for the cleaning of facilities and sterilisation, pork butchery in the process of cooking, drying and smoking as well as in the dairy industry for pasteurisation.

## **Metal Processing**

Metallurgy uses heat treatments to meet the demand for highly specialised metals. Heat treatment consists in modifying the original structure of the metal or alloy in order to obtain mechanical specifications. This is done while using a precise thermal cycle that includes heating, maintaining a high temperature and cooling. Some heat treatments need a controlled atmospheric environment and the production of such an environment is possible in furnaces where LPG is used since combustion products have no contact with the furnace wall (thus avoiding any oxidation processes). Using LPG in this process allows the industry to manufacture products of a higher quality thanks to its flexible usage and low maintenance costs. LPG can also be used in applications involving surface treatment such as paint drying and galvanisation.

## **Textile**

The textile industry consists of three groups, namely:

- Natural textiles: cotton, wool, linen, silk,
- Artificial textiles: derived from natural products
- Synthetic textiles: 100% chemical products with a high degree of polymerisation.

The textile industry requires a number of energy-consuming processes for which LPG is found to be a suitable fuel. These processes are:

- Heating of the bath (cleaning, bleaching, dyeing)
- Drying, thread singeing and polymerisation
- Ironing

Totalgaz LPG has multiple advantages in that it is clean and flexible, easy to maintain and produces a high thermal yield.

### **Printing**

The manufacture of pulp, paper and cardboard consumes a considerable amount of energy. If fuel oil is to be commonly used in manufacturing pulp, it is possible for LPG to find many applications in paper, cardboard manufacturing processes and printing. In colour printing, the paper has to go several times through the rotary press as it requires a fast ink drying process. It is therefore always better to use the decentralised heating solution rather than the centralised steam solution in these processes as it offers more advantages: modular heating, easy regulation of gas output, cleanliness and environmental care.

### **Chemicals Production**

A number of products are part of the field of chemical engineering, i.e.

- Polymers
- Paint
- Varnish
- Colourings and dyes
- Wax and polish.

A number of products are destined to:

- The food industry (aromas, flavours, spice extracts)
- The pharmaceutical industry

Although chemical engineering is the biggest user of steam boilers, LPG-powered heat-exchangers are recommended in a number of different stages of the process. By using LPG, the chemical processes are enhanced thanks to good temperature regulation attributes, very high yields of energy and low maintenance procedures that are required by this type of installation.

### **Forklifts**

Good for meeting air quality regulations in the workplace and technical demands for a modern handling (rapidity, power, flexibility, economy), LPG is nowadays the best response for the fuelling of thermal-engine trucks. Lead-free and soot-free, LPG has a very low rate of carbon monoxide emissions and is therefore the chosen energy when a pollution-free environment is critical. Should you invest in new forklifts trucks, there are many reasons why you should use LPG models.

## AGRICULTURAL USES FOR LPG

Clean, cost-effective and easily controllable, LPG can be used in any crop or agricultural application. Potatoes, wheat, maize and onions can all be dried economically and very efficiently thanks to LPG. From keeping livestock warm to providing a cleaner burning fuel for drying or growing any kind of agricultural product, LPG is used by farmers in dozens of different ways every day. Thanks to this 'modern' green fuel, farmers and growers are able to increase their output and improve the quality of their products.

### **Green House Heating**

The growth process of many fruits and vegetables in glasshouses and polytunnels can be improved by using LPG. In addition to being flexible and highly controllable, gas-powered systems can, in fact, provide the added advantage of releasing CO<sub>2</sub> as a by-product. The correct balance of CO<sub>2</sub> is the key ingredient to a successful horticultural crop.

### **Flame Weeding**

We are constantly looking for alternative methods to chemicals in order to grow more natural, agricultural products. LPG is often used in intensive cropping systems where a high level of heat is required in order to kill weeds, germs or diseases that may be present in the ground. Totalgaz can provide you with solutions to create a healthy seedbed economically, efficiently and environmentally friendly.

### **Crop Drying**

LPG is often used in this agricultural application because of its highly controllable nature. Whatever your crop, Totalgaz will supply you with the kind of fuel that can maintain an optimum drying temperature. Potatoes, wheat, maize, barley, etc can then be dried at an optimum level for the most suitable usage.

### **Poultry Rearing**

A reliable energy supply is a matter of life and death for poultry farmers. At Totalgaz we understand this special need for this important sector. Birds thrive on consistent levels of heat and on a stress-free environment in which to grow healthily. LPG produces the moist heat necessary to promote rapid growth as well as the feathering of chickens. Moreover, thanks to the clean properties of LPG feeds or broods do not run the danger of contamination. Taking into account that so much is at stake in your business, it will come as no surprise to you that we are striving to provide you with a consistent supply of heat and high levels of technical expertise.

### **Waste Incineration**

LPG-powered on-site incinerators are able to rapidly dispose of waste and unwanted byproducts. The high performance level of LPG and the intense heat generated will destroy any vermin and disease consequently minimising the risk of contamination. Totalgaz will provide you with a solution that will remove the threat of livestock loss as well as a solution that will guarantee complete control over the disposal process.

### **Distillation**

Distillation is the process of making spirits from fruit, cereals, plants and vegetables. The two main operations in spirit distillation are the heating of fermented preparations and the condensation of alcoholic vapours. LPG can therefore be used in this process thanks to its flexibility of use, environmentally friendly attributes and high yields of heat. The best cognacs are distilled using this process.

## BENEFITS OF USING LP GAS

The advantages of LPG are numerous. Here is why you should change to this form of energy. LP gas:

- Gives you an instant cooking flame.
- Is easy and instantaneous to light.
- Is easy to control. The blue flame is visible and its size is easily controlled over a wide range so that the required rate of heating can be obtained.
- Is non-poisonous and safe to use.
- Burns cleanly and does not produce any soot, smoke or smell during combustion, therefore leaving your kitchen clean.
- Is pure, and very consistent in quality.
- Adds to your comfort because cooking is quick and the kitchen does not get heated as with other fuels like wood or charcoal.
- Is available. Your LPG Totalgaz distributor delivers a refill cylinder free of charge at your home.
- Is compatible with many different appliances and easy to maintain. Totalgaz will give technical or service-related advice for any LPG installation.
- Is used in many different sectors, i.e. domestic, commercial, industrial, and agricultural.