ABOUT LPG PROJECT

Energy is sometimes referred to as an “endless growth” industry with an insatiable appetite

for natural and financial resources. Despite sustained and targeted efforts – including

technological development - it is estimated that up to two billion people do not enjoy access

to modern energy, and that a further half-to-one billion have only limited access. This

problem has been addressed in many ways for many years but is far from resolution. Energy

demand generally increases with population but in many developing countries the rate of

population growth has exceeded the rate of increase in modern energy provision. Further, as

countries’ economic development proceeds, their per capita rate of commercial energy

consumption generally increases, adding to the problems of supply.

Liquefied Petroleum Gas (LPG) consists of a mixture of hydrocarbon gases, the two most

common being BUTANE and PROPANE. The separated propane and butane are used as LPG.

LPG is a Colour less and Odour less gas at Room Temperature.

LPG is a byproduct of natural gas extraction and crude oil refining.

Liquefied Gas is heavier than air and can therefore accumulate above the ground. This may lead

to LPG-'lakes'. It is common practice to add a foul-smelling odorant to the gas in order to reduce

the risk of explosions. Under modest pressure or in cooler conditions, it transforms into a liquid

state.

Around 60% of LPG stocks have been separated from raw gas and raw oil during the extraction of

natural gas and oil from the earth, and the remaining 40% are a byproduct when crude oil is

refined.

If made available as a cooking energy fuel it could help to reduce the use of wood and biomass in

households in developing countries.

LPG also appears as an accompanying gas during oil extraction. Each ton of raw oil contains 25 - 800 m3 accompanying gas. This is immedialely extracted in order to stabilise the raw oil. The

accompanying gases are then either processed or burnt on the spot. As part of the latter process - known as flaring - approximately 140 billion m3 of potential LPG are burnt every. This is equal to

approx. 70 million tons (or 5 % of the global gas consumption) or 30 - 35 billion USD[4].

LPG is a by-product of the oil and gas industry. The supply of LPG is therefore directly

dependent on the extraction of fossil fuels. As fossil fuel extraction increases, more LPG becomes

available. When it falls, LPG availability will also fall. While larger production capacities may

open up from the development of new fossil fuel sources, it has to be highlighted that most

conventional fossil fuel fields are already being exploited. Additional fossil fuel sources may be

harnessed from unconventional sources. However, these are mostly linked to significant

environmental risks.

More LPG may also be made available from accompanying gases that are currently being flared.

consumption of LPG occurs at the household level (49 %), followed by the use of LPG in the

petrochemical industry (21.6 %) and other industrial uses (11.8 %). Direct consumption in

refineries and finally the agricultural sector make up 2 % of global consumption. Other sectors

(e.g. Autogas) add up to an aggregated 9.3 % of total consumption[9]

LPG is used for the following purposes:

 Heating and Cooking - especially in locations that are not connected to local gas

distribution systems.  Auto gas - Consumption of auto gas is enhanced through low taxes. In 2008, more that 13

million cars ran on LPG globally. Industries are currently promoting the spread of car gas.  Furthermore, LPG is used for cooling and in the Petrochemical industry. The

petrochemical industry uses LPG for instance in the production of plastic[10]. In developing countries LPG is mainly used as a cooking fuel. The users are predominately

middle- to high-income households in regions with a supply network (mostly urban and peri- urban areas).

Since 2007, the global production capacity of LPG is growing faster than demand: In 2012,

there were 9.7 million tons of LPG availalbe in excess. This gap is currently widening. In 2012,

for example, consumption rose by 2 % whereas production rose by 3 %.

Despite excess capacities, LPG remains scarce in many regions - especially in the rural areas of

developing countries .This is mainly due to lacking supply networks, which are not able to supply

households with the excess LPG. Furthermore, the target group 'poor households' which is a

large potential customer group often targeted in international initiatives tends to dispose of too

little income to afford LPG.

LPG as a Cooking Fuel for Low-Income Households

The selection of the type of fuel during cooking is contingent of several factors. Factors

influencing the decision are availability, affordability, habits and the usability of the fuel. The

prevailing use of fire food in many developing countries is primarily because it is cheap (often

free) and widely available. In the future wood will remain the primary cooking fuel for rural

households[12]. An increase in LPG use could reduce the total amount of wood, coal and kerosene consumed. This

is the case in some cities where LPG is available. But households do not tend to fully replace one

fuel by another. Instead, they use a mix of fuels and a specific fuel is chosen according to

availability, affordability and convenience.

LPG Cooking Systems

A typical cooking system which uses LPG is made up of a steel cylinder filled with LPG, a

pressure controller, a tube connecting the cylinder to the pressure controller and the burner, and

finally the burner itself. The burner can consist of one or more cooking tops.

The size of the system depends on the size of the cylinder. Cylinders exist in various sizes e.g.:

2.0kg, 5 kg, 6Kg,12 kg,14.2Kg,19Kg,21Kg,33Kg,47Kg.Etc

SURVEY

A survey in 20 countries showed that low-income countries households mainly use cylinders

smaller than 6 kg[13]. Nevertheless, the majority of currently available LPG cylinders are larger

(up to 47.5 kg). This proves problematic for low-income households both in the acquisition as well

as the recharge of LPG.

Advantages of LPG

The main advantages of LPG provision of low-income households in comparison to conventional

fuels (wood, wood charcoal) are:

1. Health-related: The use of LPG reduces the interior air pollution by 90% in comparison

to traditional ways of burning biomass e.g.: three-stone fire[14][15]). As LPG burns almost

completely, the proportion of pollutants is reduced.

2. Environmental impacts-related: CO2 emissions are relatively low. Greenhouse gases

are reduced by 5-16 times per prepared meal compared to coal[16]. If LPG was used, the

wood consumption can be substantially reduced - 45 kg of LPG is sufficient to produce

the thermic energy of about half a ton of wood. In regions with low biomass availability,

or in regions where more than the sustainably available amount of biomass is burnt,

LPG could lead to a significant relief of biomass resources.

3. Further advantages: LPG stoves quickly supply heat and work more efficient than

stoves which burn biomass. The simple and precise regulation simplifies the cooking

process and can save time. Due to its high energy density, LPG is easily transportable.

View point

L.P.G. is ideal for thermal energy applications. Energy supply derived from liquid fuels and LPG

may require lower Initial Investment when compared to other sources. Liquid

and gaseous fuels are - and seem likely to remain - essential energy sources. LPG remains a key

component of modern energy supply.

LPG is a good substitute for petrol in spark ignition engines. Its clean burning properties in

a properly twined engine give reduced exhaust emissions, extended lubricant and spark

giving rise to the demand of LPG cylinders in Automobile Sector.