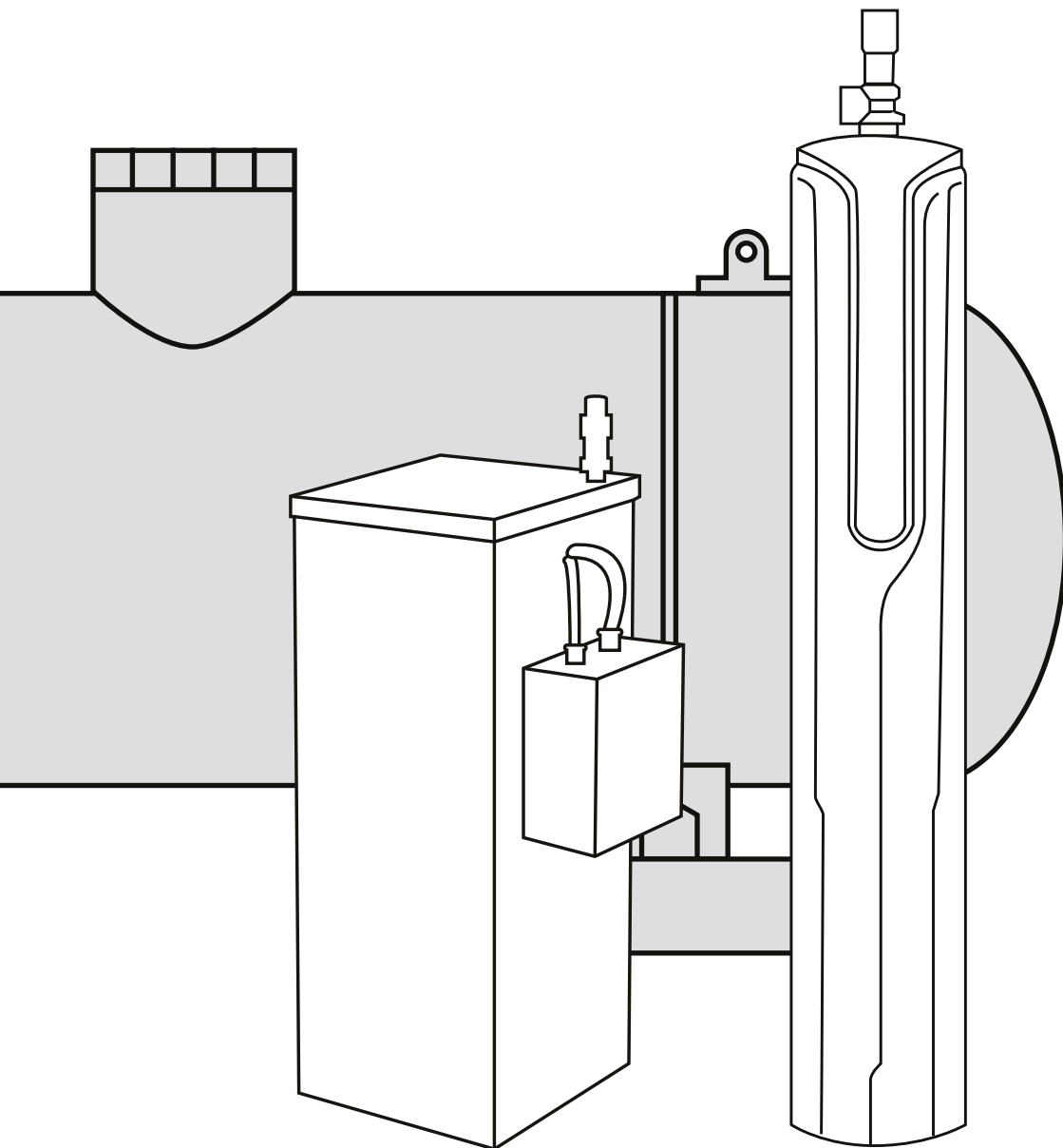


MAKEEN
ENERGY

LPG Vaporizer

An investment
that will secure
your profit





Who needs a vaporizer? And why is it important?

"Vaporizers are only for cold climates" – An often-heard statement and common knowledge since, well, forever. But what if we told you that is a common misconception?

According to popular belief, a mild climate with relatively stable temperatures makes vaporizers unnecessary as it provides enough energy to keep the natural vaporisation going inside an LPG tank. And yes, you can get by without a vaporizer. So why do we still claim the myth to be false? Simply because a vaporizer is the ultimate cost-saving device. Read on, and we will show you why.



Vaporizer ABC

Welcome to chemistry class

In order to fully understand the benefits of a vaporizer, we need to start by looking at how vaporisation actually works and why it is necessary.

Essentially, vaporisation is a phase change from liquid to vapour. Since it is transported and stored as a liquid under pressure, LPG must be converted to vapour before being combusted by LPG-consuming equipment. Insufficient vapour pressure will cause the equipment to shut down or produce less energy than required.

Vaporisation requires energy

With natural vaporisation, the phase change occurs within the tank and the gas leaves the tank as a vapour. When you draw gas from the tank, the pressure inside it drops and the liquid starts boiling. Part of the liquid then vaporises, pressure is restored and the liquid stops boiling. High ambient temperature increases the rate of vaporisation and thereby the outlet pressure. The higher the pressure, the more LPG you can draw from the tank.

If, on the other hand, the ambient temperature is too low, the system pressure drops because of a lack of natural vaporisation, in which case you may not be able to draw as much LPG as you need to run your equipment.

Tank size and liquid level play a crucial role

The energy (i.e. heat) needed for natural vaporisation is transferred from the surroundings through the tank walls to the liquid inside.

The surface where the liquid LPG is in contact with the tank walls is also known as the heat transfer area. This area becomes smaller the less LPG is in the tank.

As the liquid level decreases, the tank temperature – and with it the outlet pressure – drops until reaching a point where the tank is too cold for any natural vaporisation to take place. The lower limit can be up to 30 percent, which means that about one third of an LPG tank's capacity is actually useless – but you still pay for it.

Vaporisation by means of a vaporizer

Whereas natural vaporisation occurs within the tank, a vaporizer moves that process outside the tank. That means that instead of extracting vapour, you extract liquid LPG.

As explained above, vaporisation is necessary in order for you to draw LPG from your tank. The question now is whether you can rely on natural vaporisation or you need a vaporizer.



8 reasons for using a vaporizer

So, with the LPG and vaporisation basics in place, it is time to look at how vaporizers can benefit your business.

Here are the 8 most compelling reasons for installing a vaporizer:

- 1. Higher capacity (kg LPG/h) without investing in new tanks**

If you rely on natural vaporisation, there are only two ways to increase capacity: To install a bigger tank or add more tanks.
A vaporizer lets you draw as much LPG as you need from the tank – even the 30% which would be left unused when using natural vaporisation only.
- 2. Stable production all the time**

As mentioned before, natural vaporisation causes pressure drop and reduced capacity. The stable pressure provided by a vaporizer allows you to adjust your burners more accurately while avoiding the risk of your equipment unexpectedly shutting down or producing less energy than required.
- 3. Less tank filling operations**

No “useless” tank capacity means fewer deliveries and larger volume per delivery to the benefit of both gas retailers and consumers. As any transfer of gas from one vessel to another constitutes a potential risk, it is good for safety too. Add to that the environmental bonus of fewer emissions during transfer, and we certainly have a winner.
- 4. Makes it easier to use low-price butane**

Ok, back to chemistry class for a second. When mixed with propane, butane reduces the natural vaporisation rate and the tank outlet pressure. That is because butane is less volatile than propane and boils at -0.5°C whereas propane boils at -42°C . A vaporizer makes it easier to use a mixture of butane/propane or pure butane – and both are cheaper than pure propane. The vaporizer also prevents accumulation of butane, caused by its higher boiling point, so you can maintain a homogenous mixture.
- 5. No accumulation of oil and heavy ends in the tank**

When drawing liquid LPG from the tank into the vaporizer, any impurities in the gas are caught by a filter in the pipeline instead of accumulating as residue and reducing vaporising capacity. This makes potentially dangerous tank draining procedures unnecessary.
- 6. Higher capacity (kg LPG/h) when using underground tanks**

Safety concerns and local regulations make the use of underground tanks widespread in certain areas, and from a safety perspective they are a very good choice. But since an underground tank cannot absorb as much heat from its surroundings as its above-ground counterparts, its capacity is much lower when relying on natural vaporisation.

7. Increased tank lifetime

Natural vaporisation makes the tank surface cold and covered in dew; the perfect conditions for algae and rust. A vaporizer can help reduce maintenance costs and extend the lifetime of the tank.

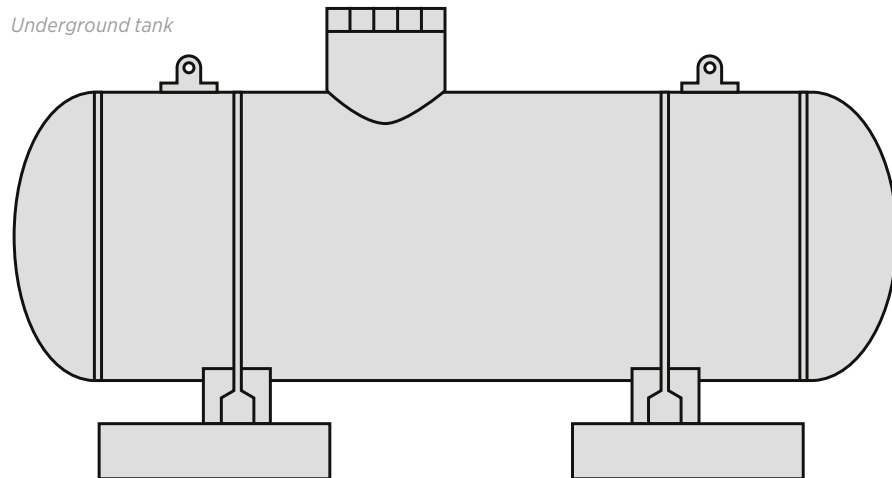
8. Savings on pipe installations

Placing the vaporizer close to the consuming equipment lets you have liquid pipelines almost all the way. And as they can be designed with a smaller diameter, they cost less. Even vapour pipelines can be downsized due to more stable pressure.

How to know if your tank needs a vaporizer?

When estimating whether your business would in fact benefit from having a vaporizer installed, the decision is based on a worst case scenario estimate. In other words, we estimate the natural vapour ability of your equipment at the least favourable conditions to ensure that your production will be running no matter what happens, i.e. the lowest temperature your tank will reach and the maximum capacity you will need to draw from your tank and therefore the minimum level of LPG in the tank.

Please contact MAKEEN Gas Equipment if you think that a vaporizer may be just what your business needs in order to reach its full potential.



The following 'Data detection scheme' helps us to estimate your business' needs by filling out the grey spaces.

Data detection scheme

Product	Vaporizers		MAKEEN ENERGY
Sales rep.			
Customer		Date of request	
Quantity		Delivery date	
	<input checked="" type="checkbox"/>		
1. Energy need	1A		kg LPG per hour or
	1B		kW per hour or
	1C		BTU/h
2. Specification needs	2A	ATEX	
	2B	CE	
	2C	FM	
	2D	None	
3. Gas mixture	3A		% propane
	3B		% butane
4. Electrical power available	4A	None	
	4B	1 x 220-240 VAC	
	4C	3 x 400 VAC	
	4D	Other	
5. Location of vaporizer	5A	In building	
	5B	Next to building or tank	
	5C	Away from tank or building	
6. Temperature range	6A		minimum °C
	6B		maximum °C
7. Other equipment needed for the vaporizer installation	7A	Electrical connection kit	
	7B	Strainer	
	7C	Values before and after vaporizer	
	7D	Stand (for Torrex)	
	7E	Economy valve	
	7F	Heavy end drain kit	

MAKEEN ENERGY

MAKEEN Gas Equipment (formerly KC ProSupply) offers a wide range of high-quality gas equipment and components along with expert guidance from the beginning to the end of your project. In that way, our one-stop shop philosophy – and many warehouses around the world – provides you with much more than just a product.

MAKEEN Energy is a global, market-leading corporation that delivers equipment, solutions and services to the energy industry. We employ approx. 4,000 people across 6 continents and operate in over 140 countries. With our global reach, local presence and decades of experience, we can deliver responsible solutions that make a difference to people and planet.

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makeengasequipment.com/locations

for more details on your local MAKEEN Gas
Equipment contact

