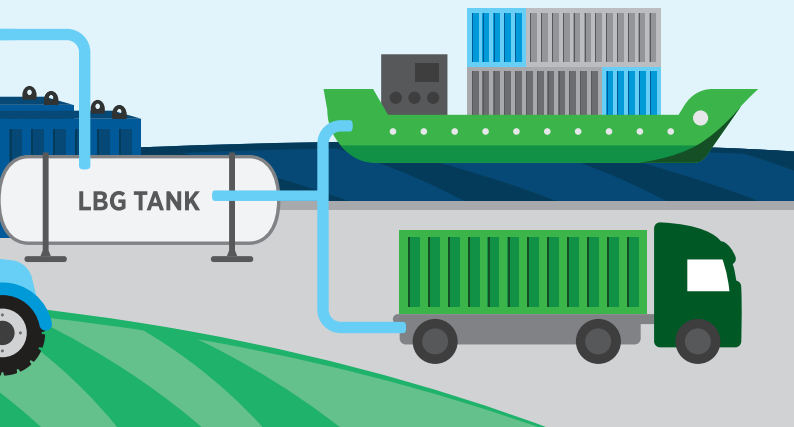


What is LBG?

From manure to responsible fuel
– the 7-step journey in liquefied
biogas (LBG) production.



If organic matter breaks down in an oxygen-free environment, we get biogas. It is virtually identical to natural gas, but more sustainable since we do not need to extract fossil resources to create it. Even better, if we turn this biogas into a liquid, it becomes LBG, or liquefied biogas – a highly compact, highly effective energy source that burns cleanly and helps protect our climate.

For the transport sector, LBG has the potential to greatly reduce harmful emissions from trucks and ships. Biogas comes from resources that are already part of the carbon circulation – such as manure. If we develop our capacity to use these resources, we move towards a more sustainable future.

Here is an example of how LBG production is a responsible solution that can lead to immediate gains for both people and planet:



Plants absorb CO₂ and get eaten by livestock

All green things need carbon dioxide (CO₂) in order to perform photosynthesis. They absorb this CO₂ from the air, binding it in the process. When plants get eaten by livestock, this carbon becomes part of the animal – and some of it gets expelled as manure.



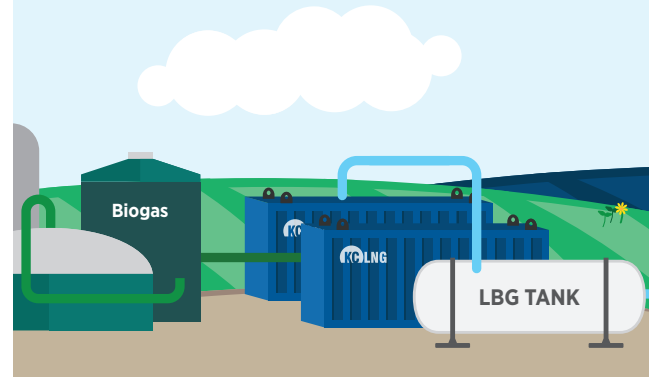
Manure from animal agriculture is collected

Most of Denmark's biogas production – about 75% – comes from animal manure. This manure is rich in methane (a greenhouse gas that is 25 times stronger than CO₂) that seeps into the atmosphere if the manure is spread directly on the farmer's field.



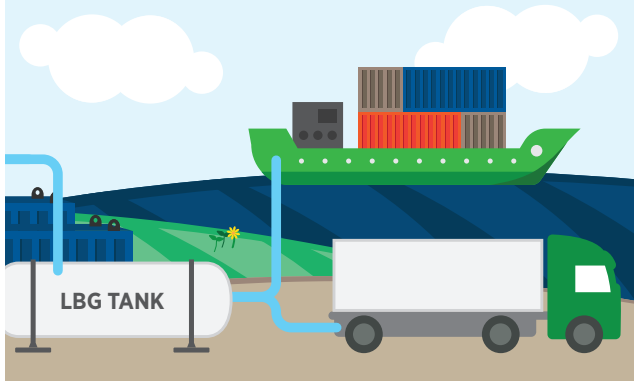
Degassing separates the methane

Degassing manure in a biogas plant collects the methane in tanks. We can then convert it into fuel for trucks and ships by turning it into LBG – liquefied biogas. This can be done directly at the biogas plant, or the biogas can be transferred via the gas grid to a remote liquefaction plant.



LBG can be used for refuelling and bunkering

The degassed and liquefied biogas is an efficient and highly compact source of energy that is easy to transport. It is therefore ideal for trucks and ships that have previously been reliant on diesel – and it saves our atmosphere from large amounts of CO₂ and other harmful pollutants.



Biogas reduces CO₂ emissions

One kilogram of methane is equivalent to approx. 25 kg of CO₂ – but when that same amount of methane burns in a truck or ship engine, it only emits 2.5 kg CO₂. In other words, the amount of methane equal to 25 kg of CO₂ decreases to only 2.5 kg CO₂. As a result, the process reduces the manure's impact on the climate by 90%. The small amount of CO₂ that ends up in the atmosphere gets re-absorbed by plants – and the cycle can start anew, indefinitely.



The climate pay-off is immediate

Trucks that run on biogas already exist. Truck companies can transition to this greener fuel immediately. Other green technologies for trucks and ships are still potentially many years away from being viable.



When viewed across the entire production cycle, biogas leads to a 179-202% reduction in CO₂ emissions compared to diesel.*

*According to a study by the European Parliament



Plants benefit from degassed manure

When the degassed manure returns to the farmer, it can still be used as a fertiliser. In fact, it is now even better: it is less smelly than before, and plants can more easily absorb its nutrients.



KC LNG is Kosan Crisplant's division under MAKEEN Energy dedicated to small-scale liquefied green gas solutions. We design, manufacture and deliver liquefaction, bunkering and refuelling solutions, e.g. facilities for both the production and transfer of liquefied natural gas (LNG) and liquefied biogas (LBG) – clean and highly cost-efficient fuels. Besides turnkey installations, we can assist you with service offers, after-sales packages, consultancy, engineering and facility management.

Scalability, zero-emission, customisation and mobility are our 4 core principles that we focus on implementing in every solution. No matter what kind of solution or service we provide, we always make sure to tailor the product exactly to your needs.

Feel free to contact us for more information about our liquefied green gas solutions



Kosan Crisplant is a project-oriented corporation that supplies equipment, plants and services for filling and maintenance of LPG cylinders. Since 1951, we have delivered close to 3,000 LPG filling facilities to customers in more than 140 countries all over the world. Always with integrity, reliability and technological excellence.

MAKEEN
ENERGY

MAKEEN Energy is a global, market-leading corporation that delivers equipment, solutions and services to the energy industry. We employ approx. 1,300 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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