

# MemGas™

the ultimate valorisation  
of biogas to biomethane



## BIOETHANE



Biogas is a valuable source of renewable energy. It is produced by anaerobic purification of industrial wastewater, anaerobic digestion of sewage sludge and other organic waste, and the fermentation of organic material in covered landfills. Biogas can then be upgraded to electricity, heat or biomethane. The latter can serve as natural gas substitute being injected into the natural gas grid or serve as a «green» fuel for vehicles (bioCNG or bioLPG).

Our MemGas™ membrane technology purifies raw biogas into suitable biomethane (>97 % methane) to meet the requirements of its final use.

However, in order to be transformed into biomethane, a thorough purification of the biogas is necessary.

### MemGas™ process

Converting biogas into biomethane involves 3 main steps: Pre-treatment, compression and methane separation.

Membrane separation of biogas is a proven state-of-the-art technology for biomethane production. The technology is based on the permeability and selectivity of the membrane in respect to different gases.

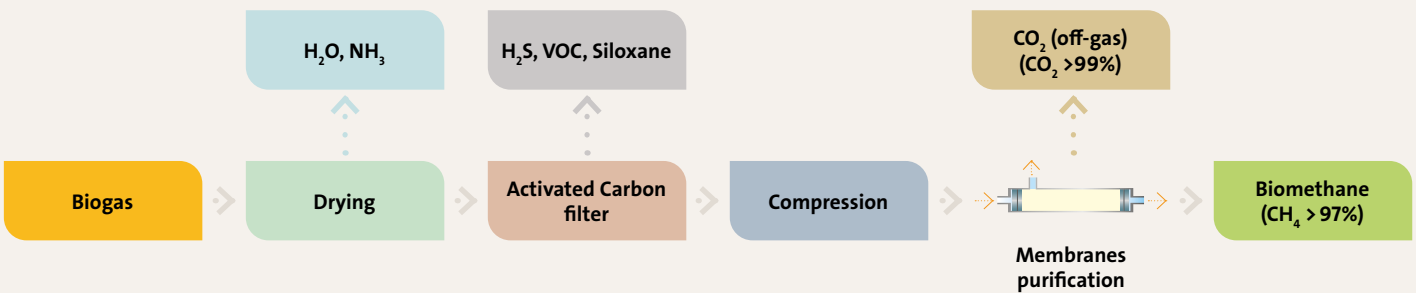


The biogas is pretreated in the drying and cleaning step to remove unwanted components such as H<sub>2</sub>S, VOC and H<sub>2</sub>O. After compression to 12 – 16 bar it passes through the high pressure gas separation membranes.

The membranes are arranged in cylindrical cartridges installed in a patented 3-stage set-up.

The performance of each plant is optimized to produce pure biomethane (97% CH<sub>4</sub>) within the requirements of our customer needs at the lowest environmental impact and an optimized CAPEX / OPEX ratio.

**Process description**



**Advantages MemGas™**

- > Safe and robust pre-treatment process for optimal membrane protection and non-stop biogas purification
- > Very high purification efficiency: > 99% methane yield in biomethane
- > Suitable for flow rates from 30 to 10,000 Nm<sup>3</sup>/h raw biogas
- > Low energy consumption of 0.3 to 0.4 kWh/Nm<sup>3</sup> raw biogas
- > Compressor heat recovery for enhanced energy balance
- > No chemicals, nor water consumption
- > Quick start up and easy maintenance system
- > Compact and preassembled process for easy installation
- > Fully automated and remote controlled (AQUAVISTA implementation possible)
- > Robust and very reliable with an availability rate > 95%

**EVONIK Membranes**

- > More than 300 references in the world
- > Membranes with the highest selectivity on the market
- > Patented 3-stage process configuration to achieve methane yields above 99%, as well as very high off-gas quality
- > Specific design tool for simulating the performance of the final installation at flexible biogas composition



**BIOTHANE**

Tanthofdreef 21, 2623 EW Delft, The Netherlands  
Tel: +31 (0)15 2700111

Biothane@veolia.com • www.biothanesolutions.com