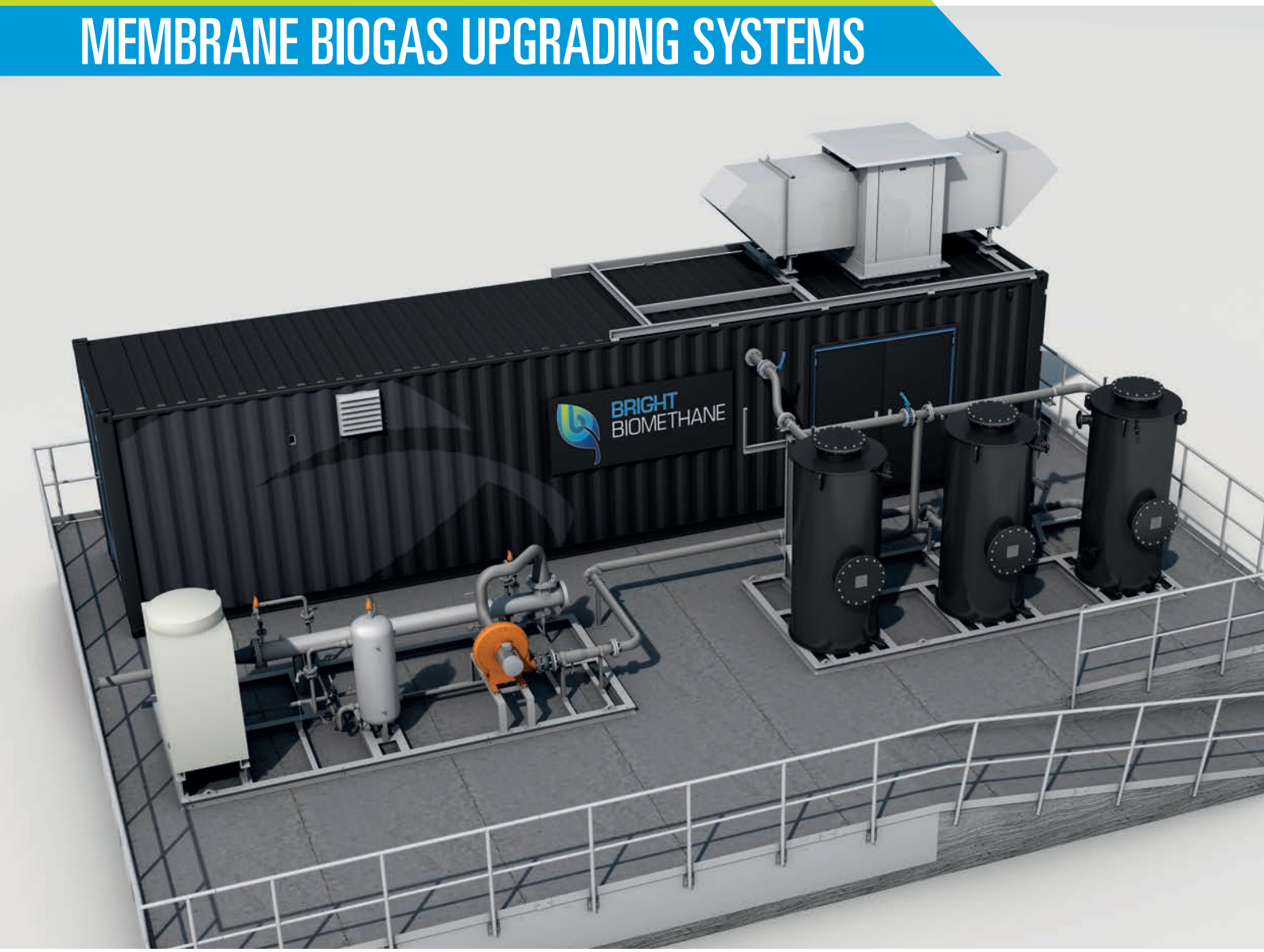
EN

BRIGHT BIOMETHANE

MOST EXPERIENCED SUPPLIER OF MEMBRANE BIOGAS UPGRADING SYSTEMS



WWW.BRIGHTBIOMETHANE.COM

RELIABLE

EXPERIENCE

QUICK TO GRID

PATENTED

PROFITABILITY

LIQUID CO_2

NO CHEMICALS
NO WASTE(WATER)

GAS TREATMENT

BIOGAS UPGRADING SYSTEMS

Proven membrane technology achieving more than 97% operational availability. System is easily integrated with a biogas plant, provides optimal gas cleaning, a robust design, an advanced patented control system and the assurance of 24/7 service support.

Having constructed the world's first commercial plant for upgrading biogas using a 3-stage membrane system, Bright Biomethane successfully uses this proven design in its systems operating today.

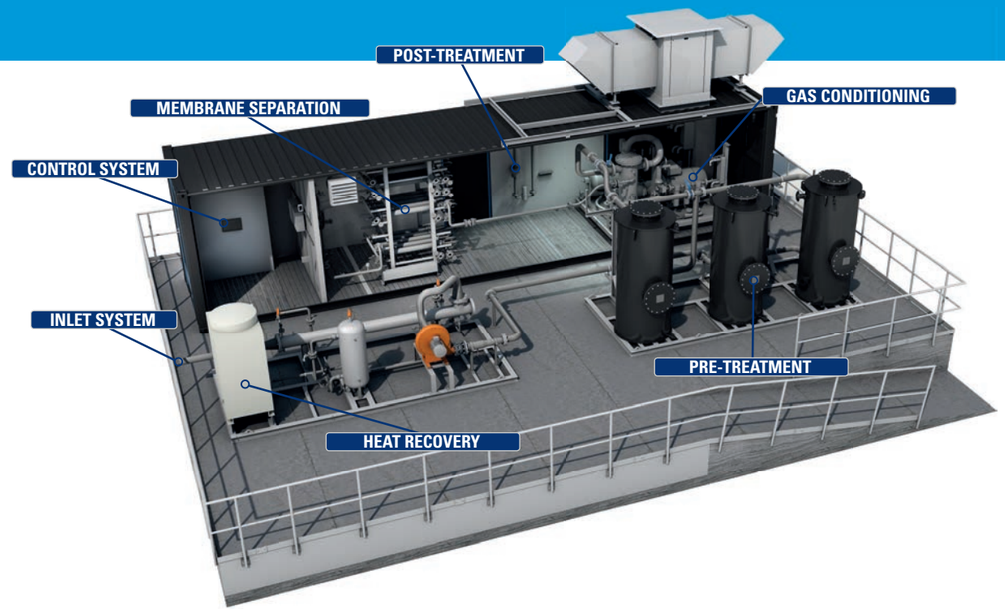
The advanced design and patented control system makes it possible to inject specification compliant biomethane to grid within a few minutes of start-up. Another option is to use the gas as transport fuel (CNG). Other technologies can take much longer to start up with resultant methane losses and operational inconvenience. Bright Biomethane plant operators have the option to stop and start the facility at their convenience with minimal methane loss and no wasted energy consumption.

99.5% methane recovery, more than any other system. The lowest electricity consumption (0,22 kWh/Nm^3 biogas). No heat required for the biogas upgrading process. Heat recovery (> 0,25 kWt/Nm^3 biogas) covering the main energy consumption of the biogas facility. Competitive price level.

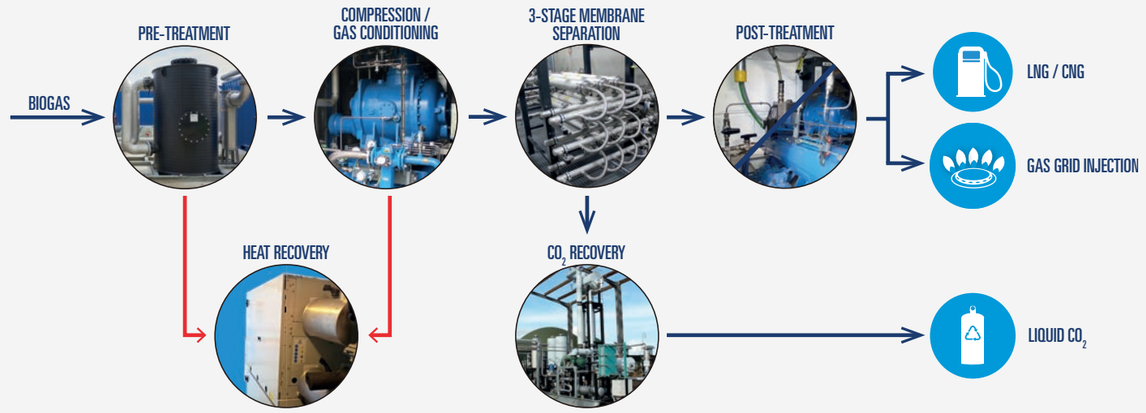
A Bright Biomethane CO_2 recovery unit can also be integrated with the standard 3 or 2 stage membrane upgrading systems. The high separation efficiency of the membranes means that the energy consumption of CO_2 liquification is much lower than conventional systems.

No water or chemicals are needed in the Bright Biomethane process which means that there are no disposal problems, such as acid water or chemicals that can be an unforeseen cost with other technologies.

Bright Biomethane is experienced in managing biogas produced from most forms of biomass feedstock, including municipal sludges and wastes. Based on this experience, reliable biogas pre-treatment solutions can be offered to ensure the correct biogas specification is achieved before upgrading.



THE BRIGHT BIOMETHANE PROCESS



TECHNOLOGY

In the membrane unit, the gas is separated by means of an imposed pressure difference over the membrane. Two gas streams will be obtained from the plant; a product gas, with a high methane value, and a CO_2-rich gas. As a result of highly selective membranes and the recuperation of methane, the highest possible methane yield can be achieved. Depending on the application, the gas can be upgraded to the preferred methane value.

APPLICATION

One of the applications is to inject the obtained gas into the national gas grid. It can also be used as transportation fuel (CNG/LNG) for vehicles. In both applications the patented 3 stage separation process ensures that the gas meets the requirements for a specific application. The residual heat and the CO_2 can also be utilised. A special heat recovery system can be installed to produce high temperature water and CO_2 may be recovered and liquefied to provide an additional value stream.

A BRIGHT IDEA FOR THE PERFECT BIOGAS UPGRADING SOLUTION.

BRIGHT SOLUTIONS

Bright Biomethane is the largest supplier and most experienced supplier of well-proven biogas upgrading systems. Our systems are available from **40 Nm³/hr to 5,000 Nm³/hr** (and higher).

By applying highly efficient membranes the separation of methane from biogas can reach an **efficiency of more than 99.5%** and render biomethane suitable for **injection in the national grid** or compression to **CNG or LNG** which can be used as vehicle fuel.

In addition to the production of biomethane the Bright Biomethane systems may be used to **recover and liquefy CO_2** to create an extra source of revenue for the plant owner.

For more information and a complete overview of our projects, please visit our website.

Biogas: 1,000 Nm³/hr Biomethane: 620 Nm³/hr

WAALWIJK, NETHERLANDS

The biogas plant is fed with over 30 **different waste streams**, including food waste, road side grass, industrial flotation grease, etc. The upgrade plant supplies gas to the grid and has an operational availability of > 97%.

Biogas: 1,000 Nm³/hr Biomethane: 550 Nm³/hr

HEREFORD, ENGLAND

The plant is fed with **manure**, **agricultural waste and apple pulp**. A 3-stage membrane upgrade system is integrated with a CO_2 recovery system. The plant can run with or without CO_2 recovery.

Biogas: 100 Nm³/hr Biomethane: 55 Nm³/hr

HÄRNÖSAND, SWEDEN

The biogas comes from **landfill gas and from municipal waste** digestion. The installation is suitable for a very cold climate (North of Sweden). The produced Bio-CNG is utilized as vehicle fuel.

Biogas: 190 Nm³/hr Biomethane: 107 Nm³/hr

TOURS, FRANCE

The installation is running on gas from a **municipal sludge** digester. The biomethane is injected into the national gas grid.

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