ClimateAdvanced® **Treatment**

Biogas Drying

Biogas Treatment Systems

ADVANTAGES AND BENEFITS OF THE SOLUTION

Lower water content results in **higher methane content**, **enhancing the efficiency** of cogeneration engines and turbines

Prevents corrosion by eliminating water condensation in pipelines, where it could form acids when it reacts with other substances

In addition to water, other **dissolved compounds** like H_2S, siloxanes, and VOCs can also be removed

DESCRIPTION OF THE TECHNOLOGY

Biogas is a gas mixture mainly composed of methane and carbon dioxide, typically produced through anaerobic digestion in landfills, composting plants, and wastewater treatment plants (WWTPs). In addition to methane and carbon dioxide, it may contain **water vapour** and traces of other compounds, which can hinder the energy uses of the biogas.

Typically, biogas leaving the digester is saturated with moisture. It is highly recommended to eliminate the moisture, regardless of whether the biogas is intended for use in cogeneration engines or for conversion to biomethane. This is because moisture can condense in the equipment causing corrosion damage.

SUEZ AIR & CLIMATE's **biogas drying** system can be employed as a preliminary step for such equipment.

The process begins with cooling the biogas stream to 5°C using a water chiller with a high-efficiency heat exchanger. Then, **condensed water is separated** via a cyclonic separator.

The water chiller, **heat exchanger, and centrifugal separator** are the three key components of the biogas drying system. These components have been specifically designed for biogas applications, ensuring safe and reliable operations.

DESIGN AND PERFORMANCE DATA

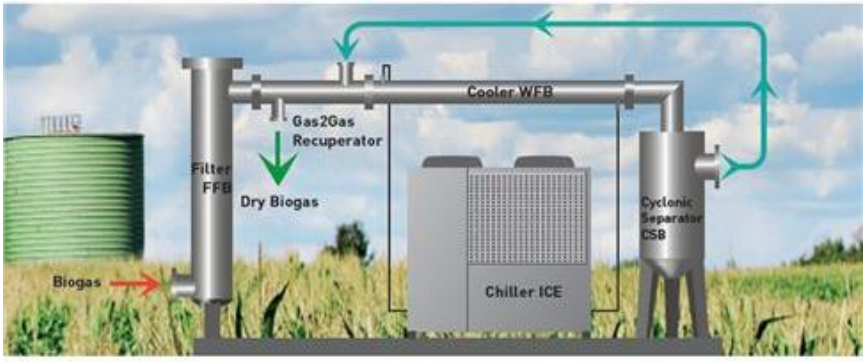
- **Chiller:** Cooling Capacity 5-360kW; special coating for corrosive environments; pump and tanks integrated into the casing; microprocessor-controlled; ambient range from -20°C to +50°C; compatible scroll refrigerant compressor and motor protection (IP54).

- **Heat Exchanger:** Flow rates compatible with the chiller's cooling capacity; suitable for both vertical and horizontal installation; maximum working pressure of 0.5 barg.

- **Droplet Separator:** Parts in contact with biogas are made of AISI304 or AISI316L, while non-contact parts are made of AISI304; suitable for both vertical and horizontal installation; maximum working pressure of 0.5 barg.

SUEZ AIR & CLIMATE offers a turnkey solution mounted on a pre-assembled skid that is compact, robust, and easy to handle. It has been designed for outdoor installations, delivering high performance even under challenging operating conditions, with a consistent focus on energy efficiency.

For applications where the drying syste... is installed downstream of the blower, a specially designed Gas-to-Gas heat exchanger is used. This device reduces the inlet temperature of moist biogas while simultaneously warming the dry biogas. Energy savings are achieved by lowering the chiller's required cooling capacity and eliminating the need for an additional heat source to reheat the dry biogas.



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