Ingenieurbuero Buse GmbH

Biogas Upgrading
With Gas Exchange Membranes

A Process Of
Ingenieurbuero Buse GmbH

Germany

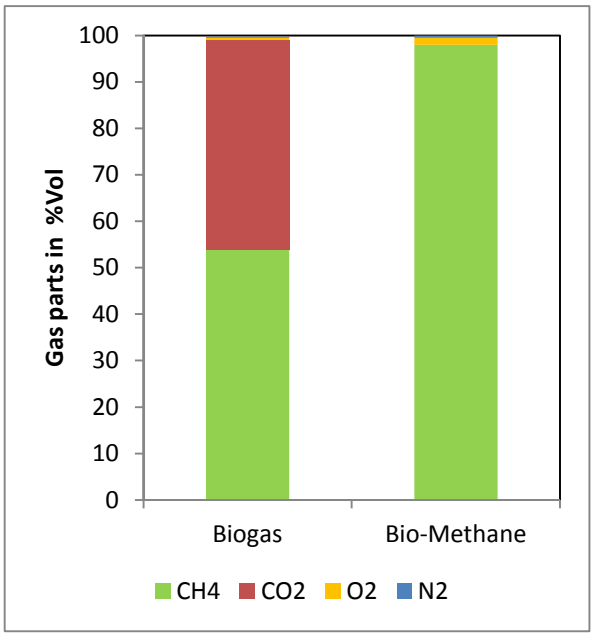
Ing-Buse

Process Engineering ▪ Process Automation ▪ Commissioning

Biogas upgrading with gas exchange membranes – the development by Ingenieurbuero Buse GmbH

The Ingenieurbuero Buse GmbH Biogas Upgrading Process

In the bio methane industry, our company acts as a plant builder. In a company owned pilot plant in technical scale, bio methane is continuously treated to upgrade it to natural gas quality. The upgrading method has been developed independently by our company. It is a patent pending process PCT/EP2012/052956.
The Ingenieurbuero Buse GmbH offers consulting, design, construction and commissioning of biogas upgrading plants.



***Source: Biogas from renewable primary products plant; DVGW G 262**

Targets of biogas upgrading

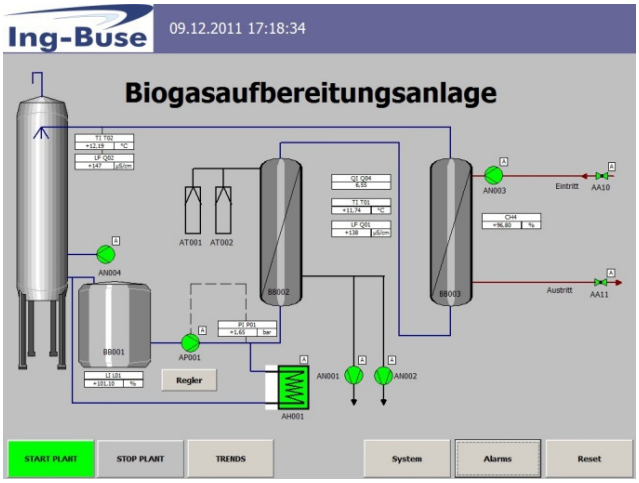
As well as the energy source methane (CH_4) biogas contains huge amounts of obstructive carbon dioxide (CO_2) and also significant levels of corrosive hydrogen sulfide (H_2S).

The methane content is usually around 50 – 60%. The other 40 – 50% are various unwanted gases.

With the gas treatment described below an enrichment of the methane concentration to 95% or higher is possible.

State of development

The new membrane process is currently in a very promising test phase which has been running for 18 months.
The pilot plant is set up on a biogas producer's site and works with a partial flow of the biogas.
The partial flow of the biogas will be conditioned and examined in order to optimize the process and to enable the scale up of the design to industrial plants sizes.
In this actual case the biogas is dried and desulfurized.



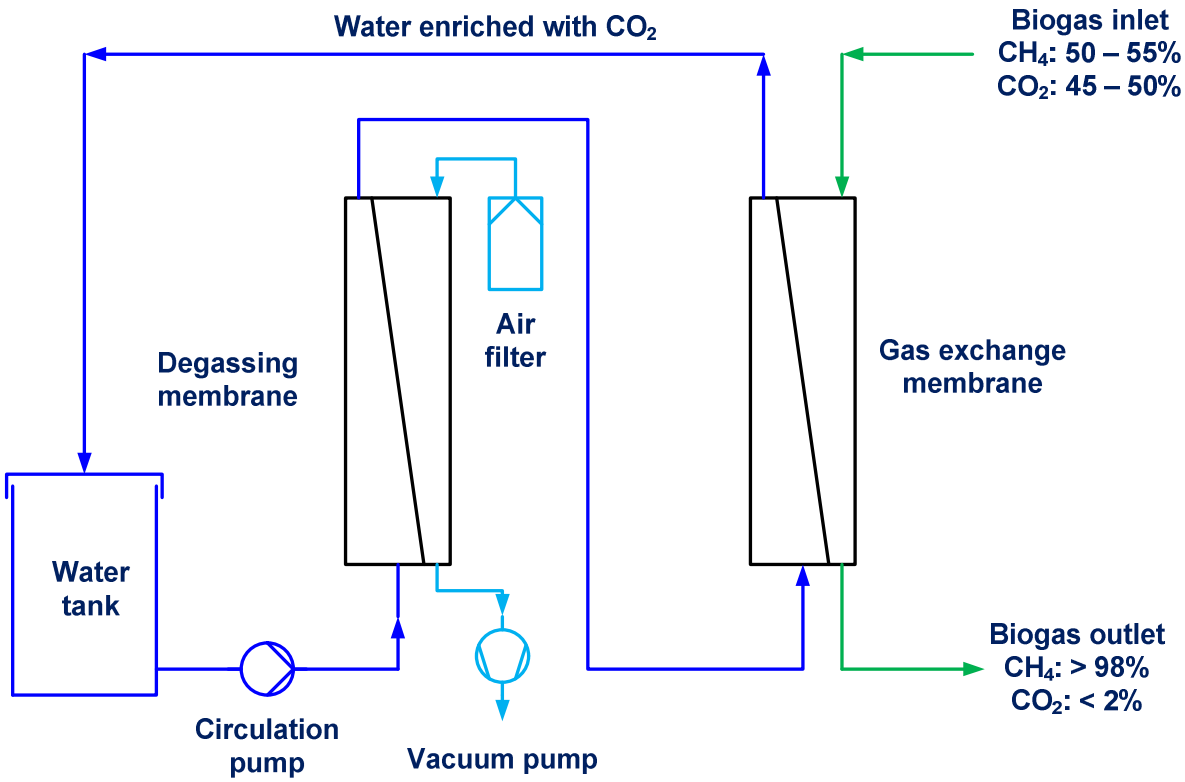
The Plant concept

Conditioning in two steps

The gas purification is carried out by the compounding of two processes

Step 1: CO_2 removal by degassing membrane
First water will be pumped from the circulation tank through the degassing membrane
► Removal of CO_2 from the circulating water will be done by using strip gas (ambient air)

Step 2: CO_2 absorption from the biogas by using a gas exchange membrane
The de-gassed water flows through a gas exchange membrane and the CO2 of the biogas goes through the membrane into the water.
► The CO_2 components of the biogases will be absorbed by the degassed water



Advantages of the process

- Energy use is much lower compared to known existing processes
- Low space requirements due to the application of membrane technology
- Low water consumption
- No chemical use
- Low maintenance and operating expenses

Ingenieurbuero Buse GmbH

Your partner for a variety of tasks

Abstract from actual projects in 2011/12

Process technical services

- Project management and process planning of a high-purity water treatment plant
  Client: Purita GmbH. End customer: Bosch Solar Energy AG
- Preparation of the functional description of a seawater treatment plant for boiler feed water
  Client: Veolia Water Systems Deutschland GmbH. End customer: RWE Emshaven
- Preparation of the functional description and function plans of a water pretreatment plant for boiler feed water
  Client: Veolia Water Systems Deutschland GmbH. End customer: Stadtwerke Bonn
- Process dimensioning for a seawater desalination plant (ultrafiltration – reverse osmosis plant)
  Client: TIG Hamburg. End customer: BP, London
- Consulting and optimizing of an existing high purity water treatment
  Client: Robert Bosch GmbH

Piloting and research

- Piloting of a waste water treatment plant for retention of heavy metals
  Client: Robert Bosch GmbH
- Operating a pilot plant for biogas conditioning
  Client: Ingenieurbuero Buse GmbH
- Development of a tracking system for solar thermal purposes
  Client: Solarlite GmbH

Commissioning

- Commissioning of a water treatment plant for the beverage industry in Novosibirsk, Russia
  Client: Veolia Water Systems Deutschland GmbH. End customer: EFES Novosibirsk
- Commissioning of a boiler feed water treatment plant from sea water in in Oran, Algeria
  Client: Veolia Water Systems Deutschland GmbH. End customer: Uhde GmbH
- Commissioning of a solar thermal power plant in Kanchanaburi, Thailand. Client: Solarlite GmbH, End customer: TSE Thailand
- Commissioning of a treatment plant for the precipitation of silica particles produced during grinding in the semiconductor industry in Reutlingen, Germany
  Client: Purita GmbH. End customer: Robert Bosch GmbH
- Commissioning of a water treatment plant for the beverage industry in Jerewan, Armenia
  Client: Veolia Water Systems Deutschland GmbH. End customer: Pepsi Armenia/ Jermuk International
- Commissioning of a waste water recycle plant for the beverage industry in Leiden, Netherlands
  Client: Veolia Water Systems Deutschland GmbH. End customer: Heineken International
- Commissioning of a water pretreatment plant for boiler feed water
  Client: Veolia Water Systems Deutschland GmbH. End customer: Stadtwerke Bonn
- Commissioning of a seawater treatment plant for boiler feed water
  Client: Veolia Water Systems Deutschland GmbH. End customer: RWE Eemshaven

How to get in touch with us

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