Biogas Upgrading
with Membrane Technology

GAS UPGRADING

Organic energy worldwide
Biogas the All-Rounder

Biogas is an all-rounder: In addition to the conventional use for the production of power and heat, biogas can be upgraded to natural gas quality and be fed into the local natural gas grid as biomethane without any additions. This is a future-oriented, lucrative step towards sustainable, eco-friendly energy supply.

Easy and Flexible Gas Upgrading

In the first stage of the biogas processing, the biogas is pre-dried, scrubbed and desulphurised with active carbon. Before the actual gas separation process takes place, the gas must be compressed to 8-15 bar. Subsequently, the CO₂ and water vapour are separated from the methane. Special polymer membranes through which the raw gas is forced have been developed for this process stage. The membranes are able to separate the CO₂, H₂O and CH₄ molecules due to their different sizes and solution behaviours. For instance, CO₂ molecules are smaller than methane and pass through the micro- pores of the membranes faster than methane. The three-stage separation of WELTEC BIOPOWER can reduce the methane slip to less than 0.5 percent.

Owing to the upstream compression, the separated methane has the optimum pressure for direct feed-in into the natural gas grid in most cases. This advantage saves costs by eliminating the need for an additional compressor and enables economic use of WELTEC biogas processing even for smaller plants.

One-Stop Provider

Based on its comprehensive experience, WELTEC BIOPOWER delivers customer-specific solutions under consideration of the respective upgrading volume. The result: Interface-free systems that comprise everything from the AD plant to the entire upgrading technology to the technical and biological customer service.

BENEFITS

- Methane yield of up to 99 percent through multi-stage procedure
- Intelligent control ensures uninterrupted gas feed-in
- Extremely high plant availability and low maintenance overhead thanks to durable membranes
- Easy to operate
- Quick installation thanks to compact container setup (plug and play)
- Fast start-up of system (3-5 minutes)
- Modular structure enables extensions
- Separation of the molecules without any additional aids such as chemicals or water
- Separation without any further need for heat
- No downstream dryer required
- Feed-in into the natural gas grid possible without additional compressor
- Heat recovery via the compressor
- Seamless overall process

These benefits mean low plant and operating costs for you!