Gas Solutions
A Wärtsilä Business

Efficient biogas liquefaction for high value bioLNG

Gas Solutions biogas liquefaction plants are based on the Mixed Refrigerant – MR – Process. The MR process is optimized for biogas liquefaction in the range of 10 to 50 tons per day.

The MR liquefaction process creates high value bioLNG as it is produced subcooled at -160⁰C and can therefore be used as transport fuel and use the same infrastructure as fossil LNG. bioLNG from Gas Solutions MR liquefaction process can be seamlessly mixed with or fully replace, fossil LNG.

By far the largest operational cost for biogas liquefaction is electricity. The MR process provides the lowest electrical consumption and does not require any other external process media consumption. This means that the MR process solution provides the lowest operational cost for liquefying biogas to high value bioLNG.

The MR process is built on using standard components with a purpose-built gas condenser, the "coldbox".

The process medias run in closed loops and have zero methane slip.

The plant delivery concept is based on modular building blocks resulting in a compact footprint and minimum disturbance at site. The process modules are self-contained and require no additional housing. bioLNG storage tanks and export station to tank-trucks are included. The plants are designed for unmanned control with integration to the biogas plant's overall control system.

Gas Solutions MR biogas liquefaction plants are designed for full integration with Puregas CA biogas upgrading & polishing plants. The MR plant can also be delivered as a stand-alone liquefaction plant to integrate with other upgrading & polishing techniques.

Why biogas liquefaction with MR process?

- Lowest operational cost
- bioLNG delivered at -160^{0}C for seamless integration with LNG uses and infrastructures
- Robust process built on standard components
- Quick installation based on FAT tested process modules
- Compact footprint, no housing required
- bioLNG storage and export included
- Designed for unmanned operation

MR range and key characteristics

MR size	Capacity (tons per day)	Storage tank (m³ / tons)
10	10	100 / 40
17	17	170 /70
25	25	250 /100
35	35	350 /140
50	50	350 /140

Biogas saturated at 40 C and 60% CH4, biomethane at 4 barg.

Power consumption < 0.75 kWh/kg bioLNG at ambient temperature 15 ^{0}C and bioLNG at -160^{0}C

Operational window 50 – 100%

About Wärtsilä

Wärtsilä Gas Solutions, is a market leader with innovative systems and lifecycle solutions for the gas value chain. One of our main focus areas are the biogas solutions, beside our already strong presence in handling of gas in the maritime industry (storage, fuel, transfer and BOG management), gas to power and liquefaction. Our biogas business has facilities and personnel in Denmark, Sweden, Norway, Finland, Germany, UK and USA. We help our customers on their journey towards a sustainable future through a focus on lifecycle performance, innovation and digitalisation.

Wärtsilä Biogas solutions