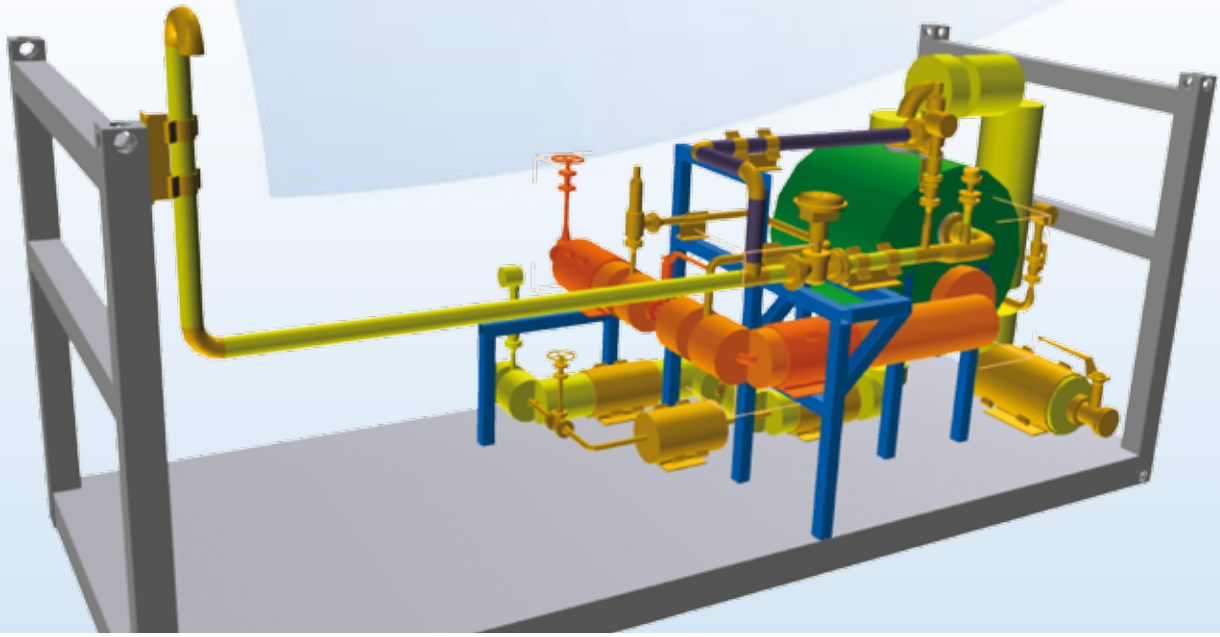
TGE Gas Engineering

# MINI / MICRO SCALE PLANTS FOR LIQUEFIED BIO GAS



## INTRODUCTION

Stricter emissions and noise regulations and low spot prices for liquefied natural gas (LNG) at world-scale terminals, are the key drivers for LNG to replace traditional oil-based fuels in marine and heavy vehicle engines, power generation and process industries. Upcoming regulations, same for the traditional oil based fuels, requiring a certain content of bio based fuel, are promoting first bio liquefaction plants. It is expected that the market demand for liquefied bio gas (LBG) will grow in the near future.

TGE has developed innovative solutions for mini /micro scale liquefaction of natural gas to provide cost effective state of the art solutions that are tailored to our customer's requirements.

## MINI SCALE PLANTS (UP TO 3 t/h) FOR LIQUEFIED BIO GAS

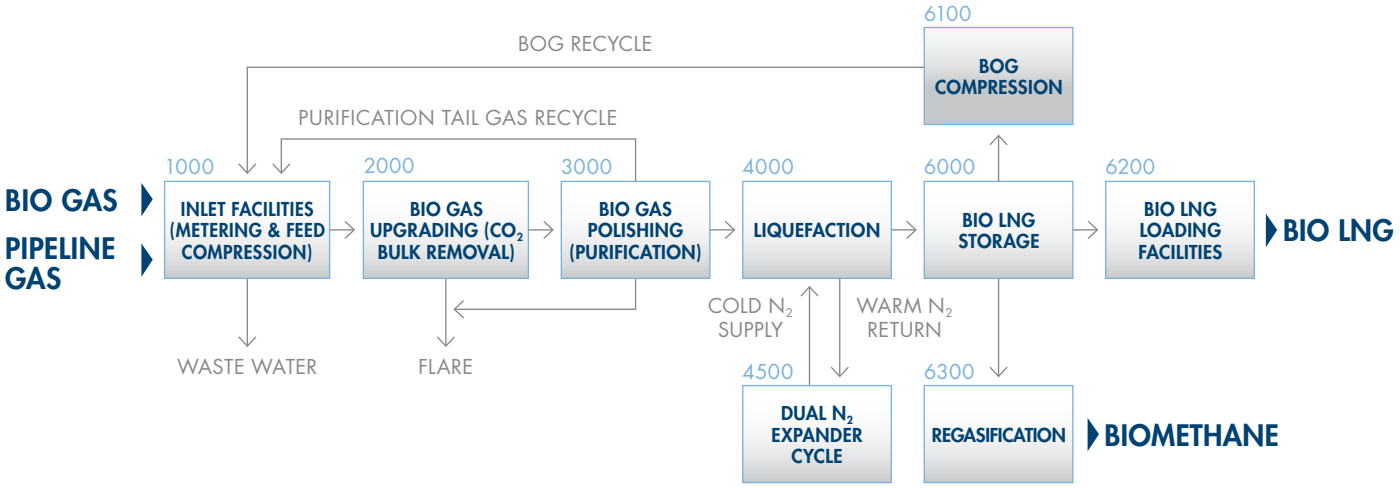
The plant is designed to process 1,000 to 5,500 $Nm^3/h$ bio gas and produce 600 $Nm^3/h$ – 3,000 $Nm^3/h$ biomethane, equivalent to 10 to 65 tons/day LBG production.

## TECHNICAL DATA

- Bio gas /biomethane pre-treatment via PSA adsorption or classical amine wash unit
- Biomethane liquefaction through Nitrogen Expander Cycle or classical Single Mixed Refrigerant Cycle (SMRC)
- LBG stored in vacuum insulated semi-pressurised storage tanks
- LBG Distribution via truck loading or rail car loading

## ADVANTAGES

- LBG production units are each time state of the art processes which ensure our customers always best profitability on their project
- TGE delivers the whole chain (Design, Procurement, Delivery, Construction, Commissioning, Start-Up, Training, Inspection)
- TGE can deliver all Liquefaction Technologies (SMR Single Mixed Refrigerant /Nitrogen Expander Cycle,…)
- LBG can be stored in pressurised containers or higher volumes in flat bottom tanks
- LBG distribution via trucks, trains and vessels




# MICRO SCALE PLANTS (UP TO 10 t/day) FOR LBG

The plant is designed to process 200 to 600 $Nm^3/h$ of biomethane, equivalent to 3 to 10 tons per day.

## TECHNICAL DATA

- Movable 20 foot skid on trailer
- Biomethane pre-treatment via PSA adsorption
- Liquefaction in a plate fin heat exchanger against liquid nitrogen
- LBG storage directly in movable semi-pressurised containers

## ADVANTAGES

- Simple process /compact, robust system
- Minimising of rotating equipment
- Low investment due to reduced equipment
- Movability on trailer for flexible locations and different business models
- Simplified permitting due to movable solution

**For further information**
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03/17 Data sheet: Mini /Micro scale Plants

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