

WÄRTSILÄ BIOGAS LIQUEFACTION PLANT EGE BIOGASS, OSLO, NORWAY



1. STORAGE TANK AND EXPORT STATION

Stores the LBG in a pressurized storage tank of 180m³.

2. LIQUEFACTION UNIT

The liquefaction unit uses a mixed refrigerant technology, where one single MR compressor and one aluminium plate-fin heat exchanger (PFX) are the main components in the system.

3. PRE-TREATMENT UNIT

The gas pretreatment system reduces carbon dioxide (CO₂)

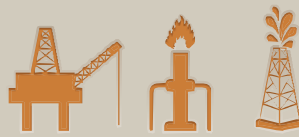
concentration down to the required level of 50 ppm and water (H₂O) to 1 ppm, in order to avoid freeze-out in the liquefaction process.

4. GLYCOL CHILLER AND DISTRIBUTION

A standard glycol chiller (pre-cooling unit) is incorporated to improve energy efficiency and to ensure stable operation of the mixed refrigerant process.

5. CONTROL SYSTEM

The control system is automatic, robust and easy-to-operate.



GRID GAS

SMALL SCALE GAS VALUE CHAIN

USING DIFFERENT KINDS
OF GAS SOURCES

BIOGAS UPGRADE

BIOGAS

LIQUEFACTION PLANT

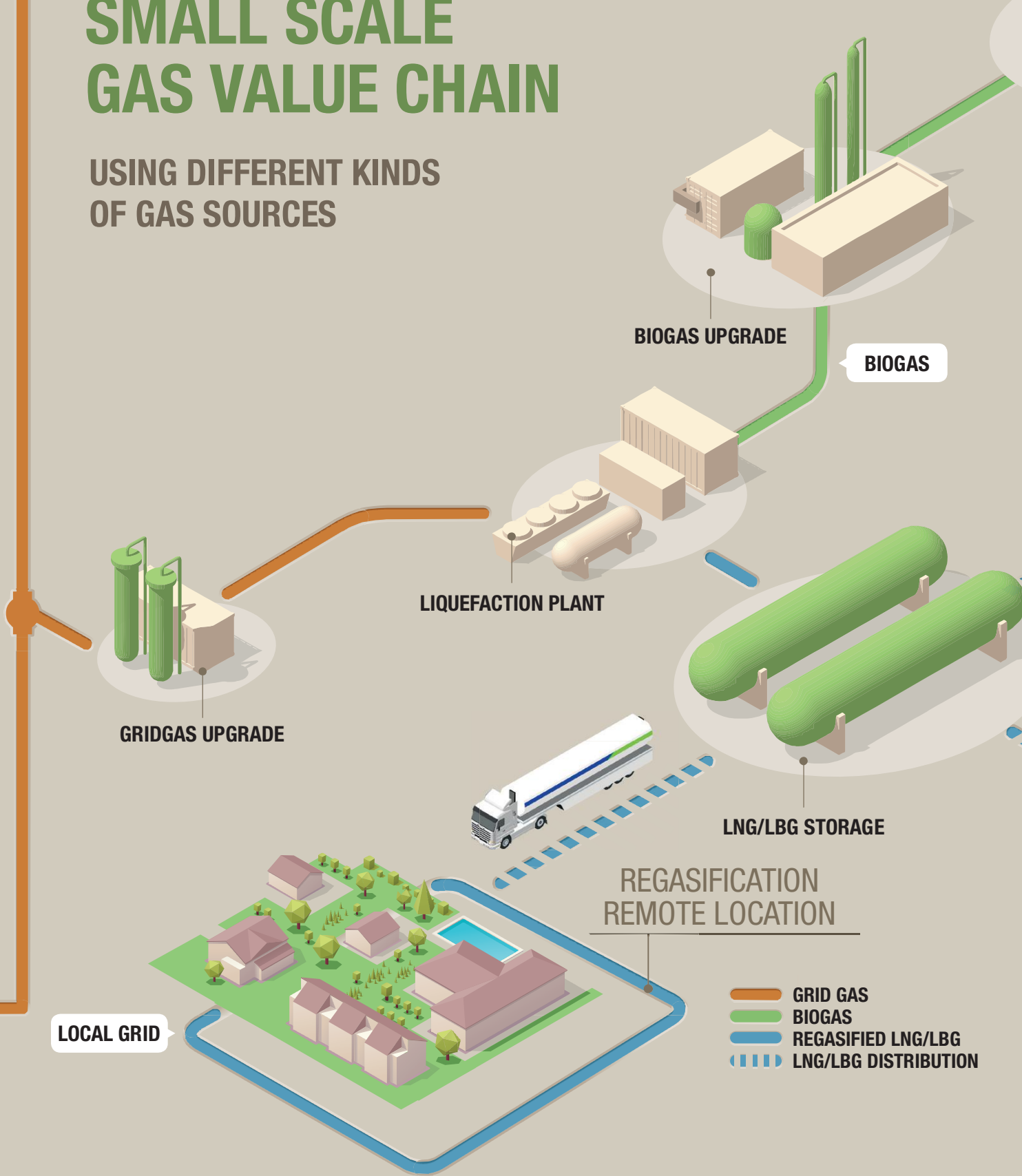
GRIDGAS UPGRADE

LNG/LBG STORAGE

REGASIFICATION
REMOTE LOCATION

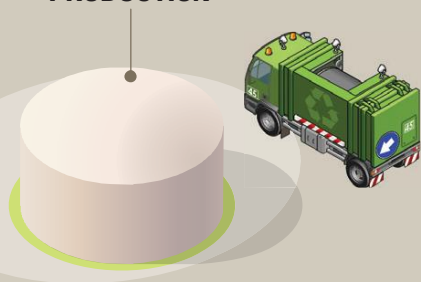
LOCAL GRID

- GRID GAS
- BIOGAS
- REGASIFIED LNG/LBG
- LNG/LBG DISTRIBUTION



BIOGAS AS FUEL CASE: OSLO

BIOGAS PRODUCTION



50,000 TONS OF FOOD WASTE A YEAR RESULTS IN A LBG PRODUCTION OF 4000 TONS / YEAR.



1 KG FOOD WASTE
= 0,13 L FUEL



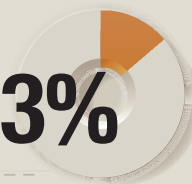
GARBAGE
50,000 TONS

= FUEL FOR 135 BUSES



RUTER AS HAS
REDUCED ITS FOSSIL
CO₂ EMISSIONS BY

13%



REDUCED EMISSIONS:
NO_x, CO₂, NOISE AND
PARTICLES

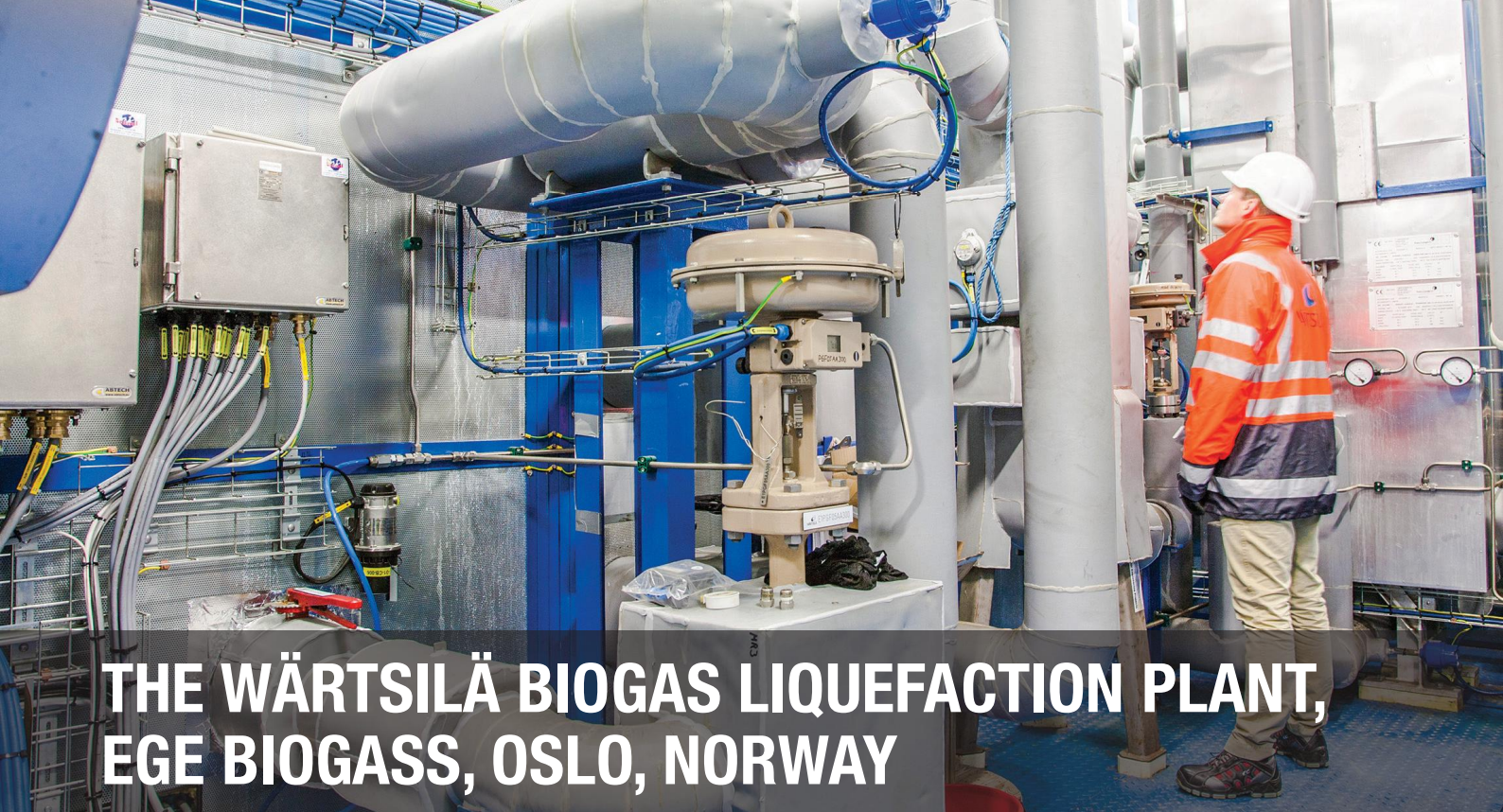


INDUSTRIAL
CUSTOMERS



TRANSPORT SECTOR
LNG/LBG





THE WÄRTSILÄ BIOGAS LIQUEFACTION PLANT, EGE BIOGASS, OSLO, NORWAY

The biogas liquefaction plant delivered by Wärtsilä Oil & Gas Systems to Norwegian Cambi AS, a specialist in biowaste treatment, will produce biomethane from household food waste to be used as biofuel for buses in Oslo, thereby putting the region at the forefront of environmental innovation.

The plant is located in Nes, Romerike, an agricultural region northeast of Oslo, and will treat 50,000 tons of food waste a year to produce around 14,000 Nm³ per day of biomethane. The liquefied biogas (LBG) can be efficiently transported for use as fuel.

“This plant will mean that 135 Oslo region buses will be able to run on biogas. As a result, CO₂ emissions will be reduced by some 10,000 tons a year and particle emissions will also be significantly lowered. The air will be cleaner and noise levels will be reduced, and these are benefits that everyone in the region will enjoy,” noted Jannicke Gerner Bjerkås, Director of Communications, Energigjenvinningsetaten, Oslo kommune.

Wärtsilä’s responsibilities at the plant include feed gas compression, biogas cleaning and liquefaction and liquid biogas storage and export.

MIXED REFRIGERANT (MR) PROCESS - THE PERFECT SOLUTION FOR BIOGAS LIQUEFACTION

The Wärtsilä liquefaction technology is based on more than 50 years of experience in the marine and oil & gas markets. The new facility’s liquefaction plant design use conventional components in a mixed refrigerant process.

The choice of energy efficient Mixed Refrigerant (MR) liquefaction technology, designed for lower liquefaction capacities and in combination with our fast track engineering model, results in low investment costs, short manufacturing time, low power consumption and simple unmanned operation.

The liquefier system uses a mixed refrigerant technology, where one single MR compressor and one aluminium plate-fin heat exchanger (PFX) are the main components in the system. A standard glycol chiller (pre-cooling unit) is incorporated to improve energy efficiency and to ensure stable operation of the MR process. The technology is scalable upwards to a capacity of at least 60 tons per day which can be delivered as modularized units for fast installation and hook-up.

For more information, contact:
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