Biogas & Biomethane

Gases for quality analysis of biogas and biomethane

Air Liquide

Biogas and biomethane as energy gas

The deployment of these renewable energy gases requires purity analysis before they are used in the value chain. Analytical instruments need to be calibrated to obtain traceable and accurate measurement results.

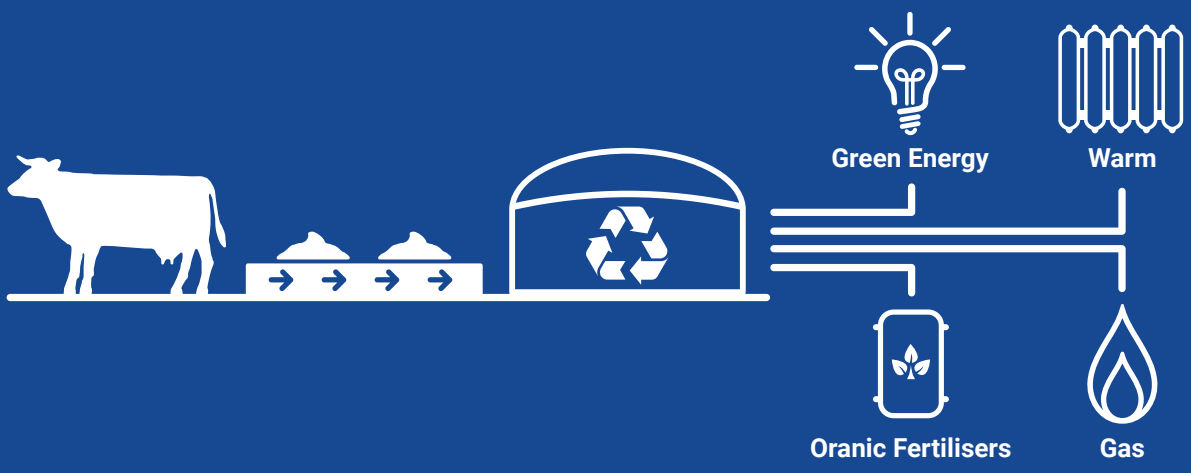
Air Liquide, dedicated stakeholder and pioneer in the biogas value chain, has developed a portfolio of analytical gases to support these analytical measurements.

Biogas as energy vector

Biogas is sustainable fuel, it is composed of varying levels of CH_4 and CO_2 as well as water vapour, and small amounts of hydrogen sulphide (H_2S), nitrous oxide (N_2O) and ammonia (NH_3).

It is generally produced through anaerobic digestion using agricultural waste, manure and energy crops, but can also be produced from landfill gas recovery, wastewater treatment and from the gasification of biomass.

Biogas is primarily used to generate electricity and heat, which typically is distributed into district networks or off-grid installations.



Biomethane for use in natural gas grids and transport

Biomethane, also known as “renewable natural gas” or “Green Gas” is obtained by upgrading biogas (> 96 % methane) through the removal of carbon dioxide (CO_2), hydrogen sulphide (H_2S), moisture and other trace contaminants. Biomethane is growing as a direct replacement to natural gas for use in the natural gas grids and transport.

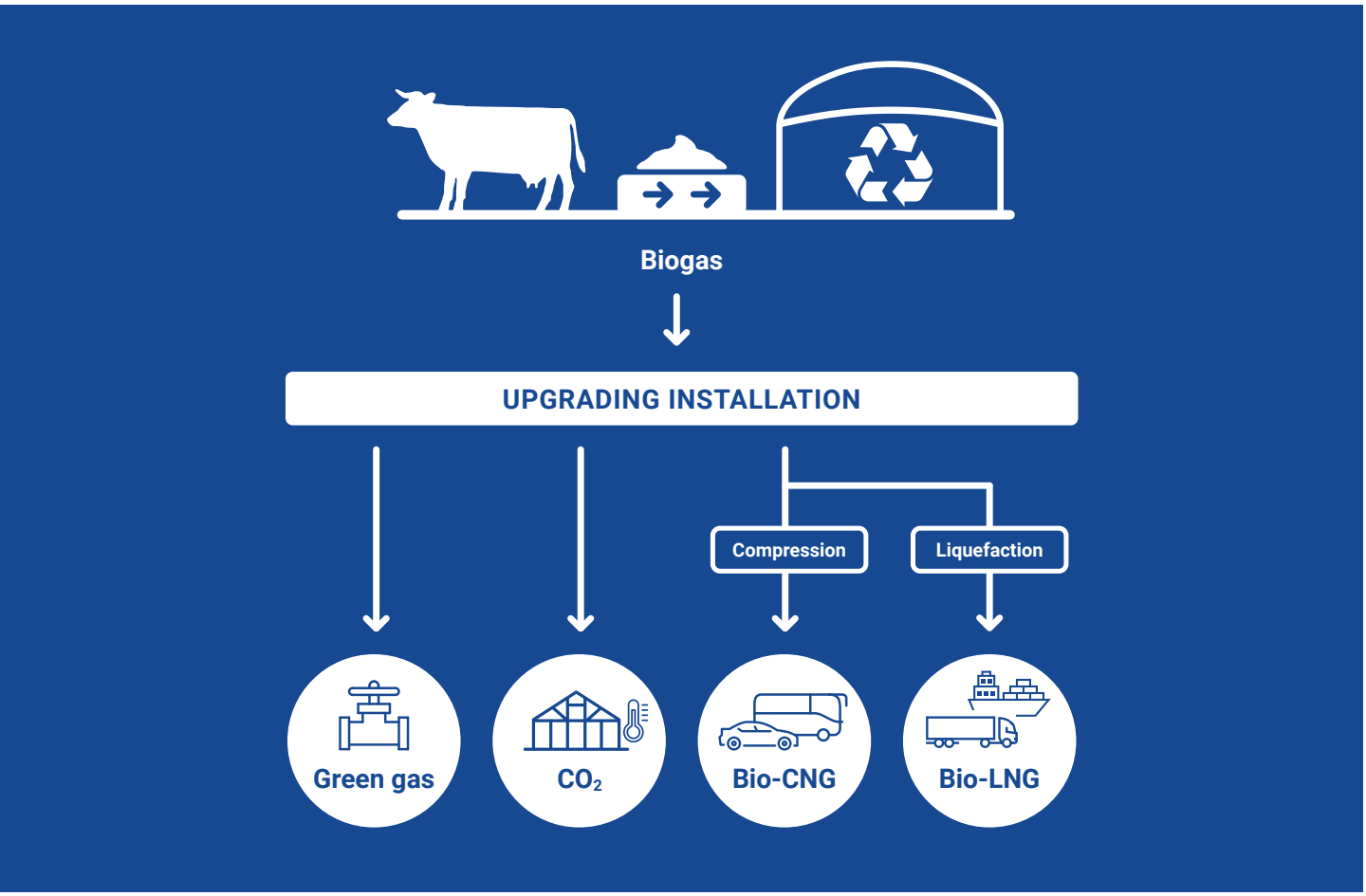
Biomethane can be compressed (Bio-CNG) or liquefied (Bio-LNG), which facilitates transportation, storage and consumption as fuel. Biomethane can also be reformed to produce ‘biohydrogen’, and if combined with Carbon Capture & Storage (CCS) would lead to negative carbon emissions.

Biogenic carbon dioxide used as a feedstock

Capturing carbon dioxide (CO_2) during the decomposition process and biogas upgrading further improves the sustainability of biogas. Unlike CO_2 from fossil fuels, biogenic CO_2 from biogas plants is not considered a greenhouse gas emission and can be used as a feedstock for the production of synthetic methane or methanol.

Analytical measurements

Gas chromatographs (GCs) and process analyzers provide a low-cost and highly accurate solution for measuring composition, heating value (calorific value) and process efficiency. However, these instruments must be calibrated to provide accurate, reliable and traceable results. With proper calibration you can trust and share all analytical values for raw materials, intermediate products and the final gas composition.



Gas monitoring applications:

- CH_4 and H_2S are measured during the methanation process to monitor the performance of the degradation process.
- Monitoring of H_2S levels at the inlet and outlet of the H_2S removal system (scrubber) for evaluating scrubber efficiency and for adhering to environmental regulations.
- Trace impurity measurements of biogas before its upgrade to biomethane.
- Biomethane gas analysis according to EN 16723, which defines the quality specifications for biomethane when injected into the natural gas grid and used as a fuel for vehicle engines.
- Energy metering of biomethane to support custody-transfer of the gas.
- Validation of online monitors and analysers for quality control of biomethane and biogas when distribution via the gas grids.
- Continuous stack emissions monitoring of CH_4, H_2S, CO, CO_2 and O_2 for environmental compliance.

ALPHAGAZ™

The ALPHAGAZ™ product portfolio offers a complete range of analytical pure gases, calibration mixtures and equipment to support your analytical applications.

- Complete and simple offer
- Accuracy and traceability
- Services and training tailored to your needs

ALPHAGAZ™ products and solutions:

- Instrument gases to support analytical instrumentation.
- Calibration mixtures for trace impurity measurements, quality control and validation of online monitors.
- ISO17025/ISO17034 accredited and non-accredited reference gases for metering of biomethane.
- Gas mixtures for calibration of stack emission measurement equipment.
- Calibration and test gases for gas detection applications.
- Convenient packaging, ranging from compact and portable to large cylinders.
- Gas handling equipment and systems, ranging from a simple regulator to a complete turnkey gas installation.

Contact us

We are happy to count you among our customers and to support all your gas activities.

If you have any questions, don't hesitate to contact our experts.

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