

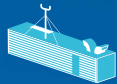
Biogas Upgrading Solutions

Delivering World-Class Membrane Technology and Operational Expertise

Air Liquide is a global leader in the production and application of hollow fiber membranes for gas separation. As a flexible partner for biogas producers in India, we provide the technology and engineering excellence needed to convert raw biogas into high-purity Compressed Biogas (CBG).



35+ Years
of membrane
innovation and
manufacturing



10,000+ units
equipped with our gas
separation membranes
worldwide



**200+ global
references**
for complete skidded
biogas solutions



2 TWh capacity
(as of 2025) managed
in our own global biogas
production assets



8-16 weeks
typical lead time for
membrane delivery
in India



The Air Liquide Advantage

The Only Vertically Integrated Provider

We are the only company that manages the entire value chain, from the proprietary hollow fiber membrane chemistry to the final skid design. This "Manufacturer-Operator" feedback loop allows us to optimize equipment based on real-world data from our own plants in the US and Europe.



Leading Membrane Technology

Our technology is designed to efficiently remove CO₂ and VOCs from biogas sourced from landfills, wastewater treatment, agriculture, and the food industry.

Core Performance Metrics:

>99% Methane Recovery: High-efficiency custom designs minimize gas loss.

>95% System Uptime: Proven reliability from our extensive US fleet operations.

High Purity: Easily achieve CH₄ concentrations from 96.5% to 99% for grid or vehicle use.

Zero Chemicals or Process Water: A purely physical separation process with low OPEX and no utility requirements other than electricity (0.3 kWh/Nm³).

Long lifetime: Air Liquide membranes can last for 10/15 years or more.

Easy operation with low supervision requirements.






Our Offer

Air Liquide has tailored its approach to support India's growing Compressed Biogas (CBG) ecosystem by providing customers with innovative technologies and equipment to empower local producers.

- **Local Inventory:** Moving toward "near-zero" delivery times by maintaining stock in-country.
- **Market Focus:** Dedicated solutions for **80 to 10,000 Nm³/h** raw gas capacities.
- **Aftersales:** Specialized local support teams to ensure plant longevity and rapid response.



Flexible Business Models

Model	Scope of Delivery	Key Benefit
 Complete Skids	Full design, fabrication & integration	Plug-and-play with 100% guarantee by Air Liquide
 Membranes + Engineering	Basic engineering for your local fabrication	Optimized cost with Air Liquide's high performance technology
 Membranes Only	Direct supply of membrane modules	Fastest route for experienced integrators

Technical Solutions & Scalability

Standard Skid Series:

- **BE500 & BE1000:** Compact units for small-scale projects (<1,000 Nm³/h) with integrated feed compressor.
- **1,400 Nm³/hr Series:** The "workhorse" for medium-scale agricultural digesters.
- **Landfill Series:** Heavy-duty configurations for complex gas profiles.

Secondary Revenue Streams:

- **BioCO₂ Liquefaction:** Turn your waste CO₂ into a marketable product.
- **Liquid Biomethane (LBG):** Scale from 10 to 100 tons per day for long-distance transport.

Operational Excellence

By choosing Air Liquide, you gain access to a team of operations engineers who assist with optimization, plant startups, and expansions. Our membranes are manufactured in our state-of-the-art facilities in Delaware, USA, ensuring the highest quality control.



Contact us

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