Air Liquide
ENGINEERING & CONSTRUCTION

Cryogenics & Lurgi technologies

GAS CONDITIONING BY MEMBRANES

NATURAL GAS TREATMENT TECHNOLOGIES

Air Liquide Group

The world leader in gases, technologies and services for Industry and Health

Air Liquide is present in 80 countries with approximately 65,000 employees, serving more than 3.5 million customers and patients.

Oxygen, nitrogen and hydrogen are essential small molecules for life, matter and energy.
They embody Air Liquide's scientific territory and have been at the core of the company's activities since its creation in 1902.

Air Liquide's ambition is to lead its industry, deliver long term performance and contribute to sustainability.
The company's customer-centric transformation strategy aims at profitable growth over the long term.
It relies on operational excellence, selective investments, open innovation and a network organization implemented by the Group worldwide.
Through the commitment and inventiveness of its people, Air Liquide leverages energy and environment transition, changes in healthcare and digitization, and delivers greater value to all its stakeholders.

Air Liquide Engineering & Construction

A technology partner of choice

Air Liquide Engineering & Construction builds the Group's production units - mainly air gas separation and hydrogen production units - and provides external customers with its portfolio of technologies.

We cover the entire project life-cycle: from license engineering services / proprietary equipment, high-end engineering & design capabilities, as well as project management, commissioning and execution.
Its exclusive and innovative technologies are contributing to the transition of the energy sector.

With more than 1,600 patents we are at work, connecting people and ideas everywhere to create advanced technologies to solve customer issues.

Our full suite of technologies

- Air Gases
- Rare Gases
- CO_2 Capture
- Hydrogen & Syngas Generation
- Hydrogen & Syngas Separation
- Chemicals
- Natural Gas Treatment
- Sulfur
- LNG
- Oleochemicals

3 Manufacturing centers

15 Engineering centers and front end offices

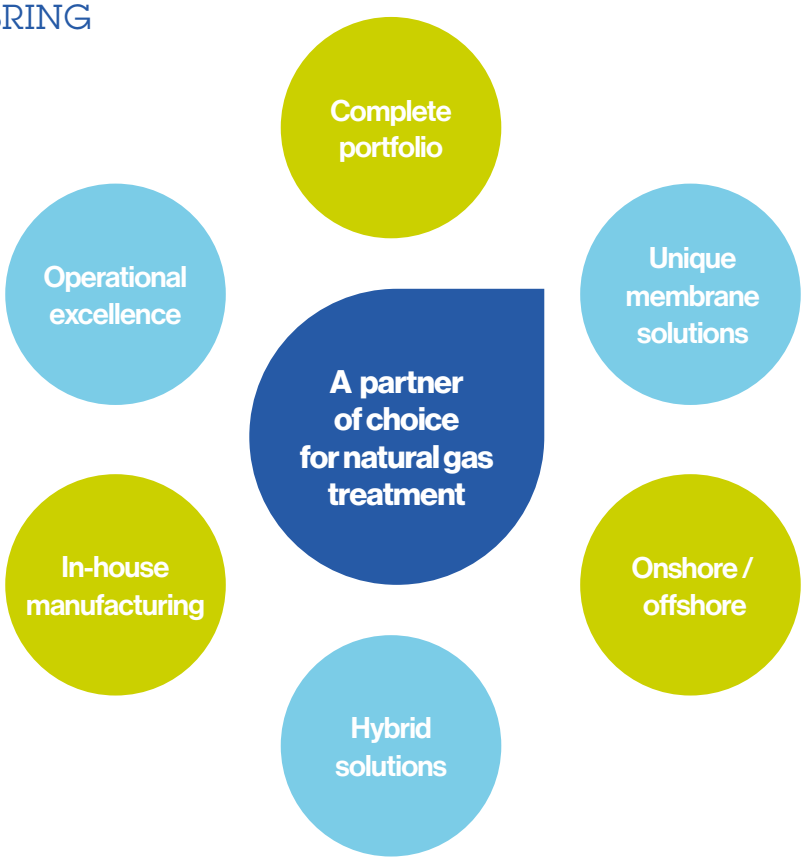
300 New patents filed in 2017

1,600 Patents

Gas conditioning

Air Liquide Engineering & Construction offers a unique suite of technologies for natural gas conditioning.

VALUE WE BRING



A complete portfolio

A comprehensive technology portfolio for the removal of contaminants and gas quality upgrade.

Unique membrane solutions

Innovative and differentiating hollow fiber membrane products, Porogen PEEK-Sep™ and MEDAL™ PIX maximize the removal efficiency while minimizing hydrocarbon losses.

Onshore / offshore

The most compact system based on a hollow fiber membrane and longer lifetime that enables to minimize maintenance works.

Hybrid solutions

The membrane technology can be combined with other processes to achieve the best cost of ownership (e.g. membrane + amine; dual membrane system, cryogenic + membrane, adsorption + membrane).

In-house manufacturing of membranes

World-class manufacturing centers providing the highest quality membranes for customers.

Operational excellence

As Air Liquide operates its own membrane units throughout the world, customers benefit from our experience and continuous operational feedback from our own plants.

Membrane technologies for gas conditioning

Air Liquide's membrane proprietary technologies (Medal™ and PEEK-Sep™) for gas conditioning cover a broad spectrum of applications ranging from contaminants removal (CO_2, H_2S, H_2O, N_2) to valuable components recovery (NGL, H_2, He).

Hollow fiber bundle 0.5 – 1.2 million fibers per 12-inch bundle
Laid end to end, contains 1,200 km of fiber

MEDAL™ membranes

- Hollow fiber type (most compact technology)
- High and constant selectivity
- Low hydrocarbon losses
- Greater resistance to heavy hydrocarbons than other technologies

Porogen PEEK-Sep™ membranes

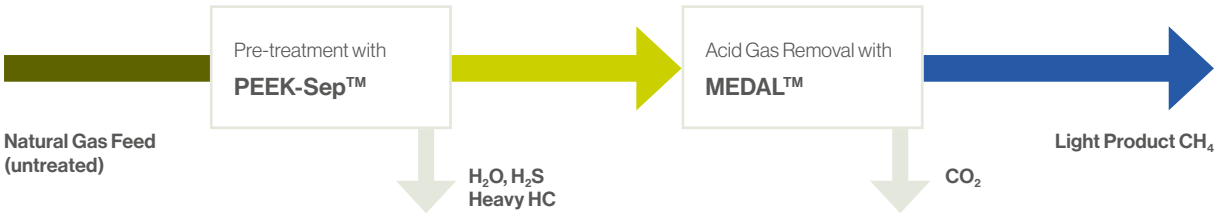
- Hollow fiber type (most compact technology)
- Minimal or no pre-treatment
- Best-in-class thermo-mechanical and chemical resistance
- Liquid-tolerant
- Applications include CO_2 and H_2S removal, hydrocarbon dew point control, dehydration, fuel gas conditioning...
- Onshore and offshore applications: highly reduced weight and footprint

Wide range of solutions for gas conditioning

Suitable for a variety of feedstocks (natural gas, associated gases, unconventional gases, refinery off-gases, flared gas), Air Liquide's membrane solutions are characterized by low investment and operating costs that translate into short payback periods. The valorization of stranded (or wasted) gas is now made possible with our suite of innovative membrane technologies.

Wellhead Natural Gas sweetening

Wellhead natural gas sweetening is achieved by a combination of the PEEK-Sep™ technology for pre-treatment (water, hydrocarbons and H_2S removal) with Medal™ technology for CO_2 removal (tolerant to the level of impurities delivered by the PEEK-Sep™ pre-treatment stage).
The key benefits include simplicity, reliability of operations, compactness and an overall lower investment cost compared to conventional solutions.



Offgas / flared gas monetization (H_2, Natural Gas Liquids)

Recovery of the heavier components of HC rich gases, like associated gas, is possible without the typically required pre-treatment (e.g. dehydration or hydrate inhibitors injection), using the PEEK-Sep™ suite of membranes. C3+ recovery rates of up to 90% can be achieved easily. The PEEK-Sep™ membranes can be used also to extract valuable components from refinery fuel gas (e.g. H_2, LPG) or valorize flared gas. This in turn, reduces CO_2 emissions.

Fuel gas conditioning

The PEEK-Sep™ technology allows reducing the levels of H_2S, water, and inert components, as well as lowering the hydrocarbon dew point and adjusting the methane number in order to meet typical fuel gas specifications of gas engines and turbines. The membrane inlet pressure needs to be only slightly higher than that required by the consumer.

Contact us

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