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 and serves more than 3 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.

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 efficient, sustainable, customized technology and process solutions.

Our core expertise in industrial gas, energy conversion and gas purification, enables customers to optimize natural resources.

We cover the entire project life-cycle: license engineering services / proprietary equipment, high-end engineering & design capabilities, project management & execution services.

In addition we also offer efficient customer services through our worldwide set-up.

As a technology partner, customers benefit from our research and development to achieve energy transition goals.

Our full suite of technologies

- Liquefied Natural Gas
- Cryogenics
- Hydrogen
- Syngas
- Petrochemicals
- Natural Gas Treatment
- Sulfur
- Standard Plants
- Oleochemicals

3 Manufacturing centers

1,600 Patents

15 Engineering centers and front end offices

60 Proprietary technologies
Natural Gas Liquids recovery

Air Liquide Engineering & Construction offers a full portfolio in natural gas treatment technologies, leveraging Lurgi gas processing expertise and Air Liquide know-how in cryogenic separation. We have been designing and offering NGL plants for the last 30 years, using simple processes as well as the most advanced solutions. Customers benefit from our proprietary technology solutions, that are enhancing efficiency of the units, while reducing costs.

VALUE WE BRING:

**Distillation:**
Height of distillation columns divided by 2 over the last 20 years.

**Heat exchangers:**
Brazed Aluminium Heat Exchangers (BAHX) in-house manufacturing and design.

**Membranes:**
MEDAL leading expertise in hollow-fiber Membrane with quantum leap in Natural Gas Treatment since acquisition of PoroGen (2015).

**Turbo-expander:**
More than 1,000 plants designed by Air Liquide Engineering & Construction using this technology.

**Operational excellence:**
Design validated by constant feedback from own operations.

**In-house manufacturing:**
Natural Gas Liquids technologies

Air Liquide Engineering & Construction offers a comprehensive and unique suite of technologies for Natural Gas Liquids (NGL) recovery or natural gas dew pointing. These technologies include cryogenic and non-cryogenic processes. NGL technologies have a wide range of applications to address associated or non-associated natural gas, refining off-gases or methane rich stream from petrochemical unit.

Turbo-expander technologies

**Most efficient NGL recovery units**
- Multiple & optimized reflux for high performance
- Up to 99.5% C3 recovery possible
- Up to 98% C2 recovery possible
- Flexible operations for C2 optimization
- Very low re-compression costs
- Typical sizes: standard (modular 100 MMSCFD) to tailor-made up to 1,000 MMSCFD

Membrane technologies (**MEDAL™ / PoroGen™**)  
**Proprietary solutions for monetization or dew pointing of gases based on Air Liquide permeation technology**
- Technology exhibits “best-in-class” thermo-mechanical properties and chemical resistance
- **P-Guard™**: hydrocarbon dew pointing
- **V-Guard™**: recovery of liquids from rich gas

Open-art NGL technologies

Depending on project requirements, Air Liquide will consider offering simple and cost effective approach, such as Joule-Thomson or refrigeration.
Extended Natural Gas Liquids offer

- Conceptual study (stand-alone or combined NGL Technologies)
- Basic engineering and Front-End Engineering Design (FEED)
- Proprietary equipment (membranes, cryogenic equipments)
- Modularized engineering and procurement solution
- Site services including: commissioning, start-up assistance, retrofit and operators training for optimized operations.

Our solutions for NGL recovery and gas dew pointing

Our solutions for integrated cryogenics technologies

- Additional value through integration with other processes (cryogenic processes expertise).
- **NGL & NRU** (Nitrogen Rejection Unit): When Higher Heating Value (HHV) of gas needs to be increased or maintained while recovering liquids.
- **NGL & LNG** (Liquefied Natural Gas): Produce LNG from existing NGL plant or design new LNG plant with optimized NGL configuration for specific needs.
- **NGL & Helium**: Small amounts of helium can bring significant value to a project. Often combined also with NRU.