Modularized Solutions: Liquefaction Equipment and Technology

The world leader in LNG equipment and technology brings vast modularized capability and expertise to the LNG market.

Ningxia Hanas Natural Gas Co. Ltd., China plant utilizes Air Products’ single mixed refrigerant (AP-SMR™) LNG process

Execution strategies incorporating modularized equipment provides developers alternative means of managing project risks, costs and schedule.

Depending upon the particular project criteria, developers and engineering contractors of both greenfield and brownfield projects are implementing multiple execution strategies that may provide a competitive advantage to the overall project. That’s why choosing the most experienced provider with the best performing LNG process technology and equipment is paramount to your project’s success. Air Products is the world’s leader, having more than 50 years of experience in supplying customers with the most proven LNG technology, equipment and services for all size LNG plants.
Collaborating with engineering contractors

Air Products’ engineering and manufacturing teams bring the technical expertise to collaborate with engineering contractors on a variety of execution strategies to design and fabricate the liquefier heat exchanger systems to meet specific construction and modularization requirements. Such strategies have ranged from liquefier coil wound heat exchanger (CWHE) units being partially pre-dressed, modularized in the manufacturing yard or at the project site while N2 recycle cold boxes are being fabricated in the manufacturing shop.

Baseload LNG facilities—Yamal LNG CWHE equipment installed into modules at the project site utilizing Air Products’ propane pre-cooled mixed refrigerant (AP-C3MR™) LNG process.

Mid-Scale LNG facilities—Ningxia Hanas LNG and Yangling LNG—CWHE equipment installed into modules at the project site utilizing Air Products’ single mixed refrigerant (AP-SMR™) LNG process.

Floating LNG facilities—ENI Coral South—CWHE equipment installed into modules at the shipyard utilizing Air Products’ dual mixed refrigerant (AP-DMR™) LNG process.

Small Scale LNG facilities—KeySpan LNG peakshaving facility—A liquefier cold box utilizing Air Products’ nitrogen recycle (AP-N™) LNG process.
Air Products’ broad capabilities and experience ranging from plate fin heat exchanger cold box design to modularization of CWHE units has delivered engineered equipment packages.

AP-200T™ and AP-400T™ for small LNG plant capacities at nominal 200-400 TPD.

AP-1M LNG Module for mid-scale LNG capacities up to 1.5 MTPA

**Benefits & Features:**
- Faster deployment thru preengineered system
- Reduced schedule risk
- Minimized field work
- Safe and reliable CWHEs
- Fully installed platforms, piping, valves, and instrumentation
- Insulation installation at shop or field
- E&I installation at module shop
- Efficiently laid out for optimal CWHE, piping and structural design
- Optimized design to mitigate or reduce site scaffolding

**Manufacturing**

Manufacturing experience designing over 2000 cryogenic plants enables us to efficiently design the world’s most complex frame, piping, and exchanger systems.

Caojing Manufacturing, Shanghai China

State of the art manufacturing facility located in Port Manatee, Florida, USA
Choosing the best equipment and technology in the LNG industry

Air Products has contributed to the success of more LNG operations than any other company. Our LNG engineering and manufacturing team has been involved in the majority of LNG projects deployed around the world. As a result, our technology and equipment is successfully integrated into most of the LNG traded globally today. Air Products’ proprietary cryogenic heat exchanger technology and equipment has industry recognition for being the most proven and reliable units built with the utmost quality.

Unmatched LNG experience

No other company has over 50 years of experience in LNG engineering and process design. Only Air Products has a proven track record of having successfully commissioned over 120 LNG trains, with many in operation for more than 50 years, all of which successfully passed their performance test the first time. Air Products’ in-house team of highly-skilled LNG specialists developed our proprietary liquefaction processes. We have the unique ability to efficiently integrate the liquefaction process design and critical liquefaction equipment that leads to an optimization of performance, costs, operability and reliability that has become the benchmark of the LNG industry. Air Products is committed to helping our customers achieve their bottom-line objectives, every step of the way.

Safety

Safety is our #1 priority. Air Products’ performance is consistently among the leaders in our industry, thanks to our teams’ efforts around the world to prevent injuries and send people home as safely as they arrived at work.

Air Products is also committed to reducing the environmental impact by consuming fewer resources and lowering emissions. We’ve set aggressive reduction goals in energy, greenhouse gases, water, waste, emissions, and fleet emissions.

About Air Products

Air Products is a world leading industrial gases company celebrating over 80 years of operation. The company’s core industrial gases business provides atmospheric and process gases and related equipment to manufacturing markets, including refining and petrochemical, metals, electronics, and food and beverage. Air Products is also the world’s leading supplier of liquefied natural gas process technology and equipment.

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