

Midsize Capacity Air Products AP-M™ LNG Process: Transforming the Future

Air Products meets the need for smaller scale LNG plants designed for simplicity while delivering lower unit costs



Big LNG expertise. Also available in Small LNG Plants.

Midsized LNG plants producing from 0.5–2.0 MTA are being promoted as the way to monetize stranded gas reserves at reduced cost. While the LNG industry trend in recent years has been toward larger plants, it is often forgotten that approximately half of the operating baseload LNG plants are in the capacity range of 0.5–2.0 MTA, or the midsize LNG market. Coil wound heat exchangers in these midsized operating plants have demonstrated high reliability, operability, and productivity for more than 35 years.

Reliable and Robust Design.

No matter how small your capacity requirements, maintaining production is key to a profitable project. Air Products' efficient process designs, which incorporate Air Products' coil wound heat exchanger, have proven to be robust and reliable in natural gas liquefaction service. Heat exchangers in the capacity range of 0.5–2.0 MTA that were manufactured by Air Products over 30 years ago are still in service today, with many producing well over their original design capacity.

Efficient Process Design. Lower Cost.

For the midsize LNG facility, Air Products' AP-M™ single mixed refrigerant (SMR) LNG process (see figure 1) which incorporates our unique coil wound heat exchangers, offers an attractive and straightforward solution that minimizes process equipment and provides enhanced performance and reliability. Depending upon the customer's requirements, Air Products' precooled mixed refrigerant processes can also be evaluated as an option to reduce overall size of critical equipment. The coil wound heat exchanger can be fully modularized to minimize field work. The AP-M™ mixed refrigerant process cycles with coil wound heat exchangers benefit from years of experience and know-how gained in the LNG industry.

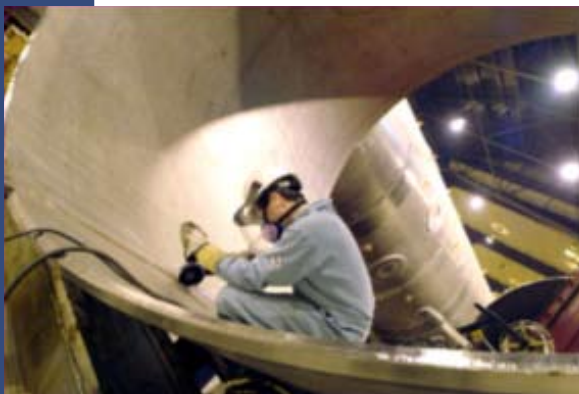
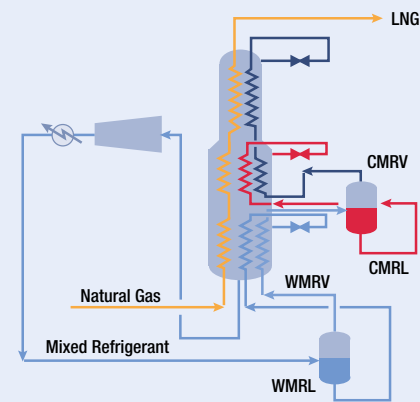


Figure 1

Air Products' single mixed refrigerant process



**One System. Flexibility.
Reliable Operations.**

Available for new trains or as a liquefier replacement for existing trains, the AP-M Process compliments the other proprietary MR processes in meeting market demands. The system is designed to handle a wide range of conditions at high efficiency (see figure 2) with flexible and efficient turndown capability. When making a technology decision, project developers must continue to investigate all of the options available and ask whether their choice carries with it undue operational risks. The coil wound heat exchanger's robustness and operability help to enable the LNG liquefier to produce LNG as designed and achieve the project economics projected. Reliability is the key to economic success of a project, and experience and know-how of the process licensor and contractor can help to achieve reliability.

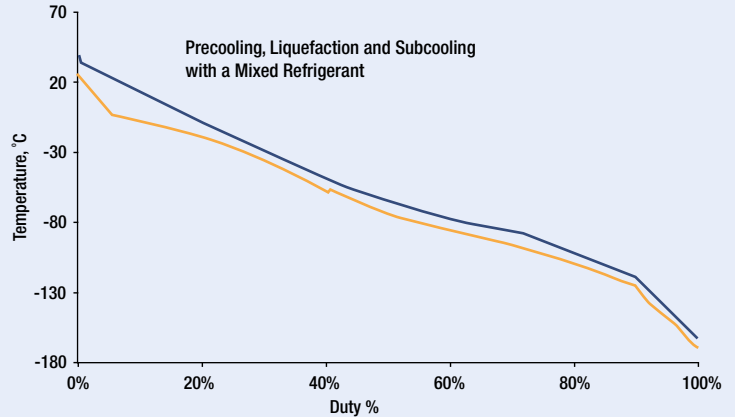


Big LNG Expertise. Innovation . . .

Air Products is the leader in supplying process technology and MCR® coil wound heat exchangers to the LNG industry. Air Products has contributed to the success of more LNG operations than any other company and brings its full capabilities to LNG projects of any scale. From peak-shaving plants producing less than 0.1 MTA to the largest

Figure 2

AP-M™ Efficient Cooling Curve



baseload facilities, on land or offshore, our LNG team can help you get a plant up and running at the highest efficiency—on time, on budget, and in any climate.

**Always Available for Small
Midsize LNG plants.**

If you need LNG production capacity—today or in the future—and you want to obtain it efficiently and cost-effectively, contact us at one of the numbers below and ask us about our AP-M Process. We'd love to tell you more.

For More Information

Corporate Headquarters
Air Products and Chemicals, Inc.
7201 Hamilton Boulevard
Allentown, PA 18195-1501 USA
Tel 610-481-4861
Fax 610-481-6329
E-mail info@airproducts.com

tell me more
www.airproducts.com/LNG