

# PRISM<sup>®</sup> membrane nitrogen systems

- Market leader since 1982
- Lifetime support - Guaranteed!
- Global service network





# Air Products Prism® Membranes



Air Products is one of the few manufacturers of hollow fiber membranes in the world. The heart of the Nitrogen Membrane System lies within the membrane separators. Our skilled process engineers know how to fully utilize the potential of each individual membrane separator, achieving the best performance and lifetime of the system, or to address challenging applications while meeting specific limitations (e.g limited power or space) - all well-known advantages of Air Products Systems.

## Applications

For continuous and trouble free supply of Nitrogen onboard: Chemical Carriers, LNG/LPG carriers, Platform Supply Vessels, Reefer Vessels – and more . . .

- Inerting of cargo tanks during cargo discharge (as full inert gas system).
- General purging/cargoes tank stripping purpose.
- Padding of highly oxygen sensible cargo.
- Bleeding of insulation space on-board LNG vessels.
- Isolation of cryogenic compressors.
- Inerting of Methanol tanks.
- Controlled Atmosphere (CA) for fruit and vegetables.
- Dual Fuel vessels, purging of fuel pipes etc.
- Top side application on FPSO, FLNG etc.
- For Ballast Water Management Systems.
- Dual Fuel.

## Marine N<sub>2</sub> Systems

Air Products is the world's most experienced and largest supplier of marine nitrogen generators, installed on over 1400 ships worldwide, with the first system engineered and commissioned in 1984. The system designs have been standardized, minimizing both production time and price level, while maintaining the quality expected from a market leader. We manufacture a wide range of nitrogen system capacities, nitrogen purities and system physical dimensions to meet the need of any application.

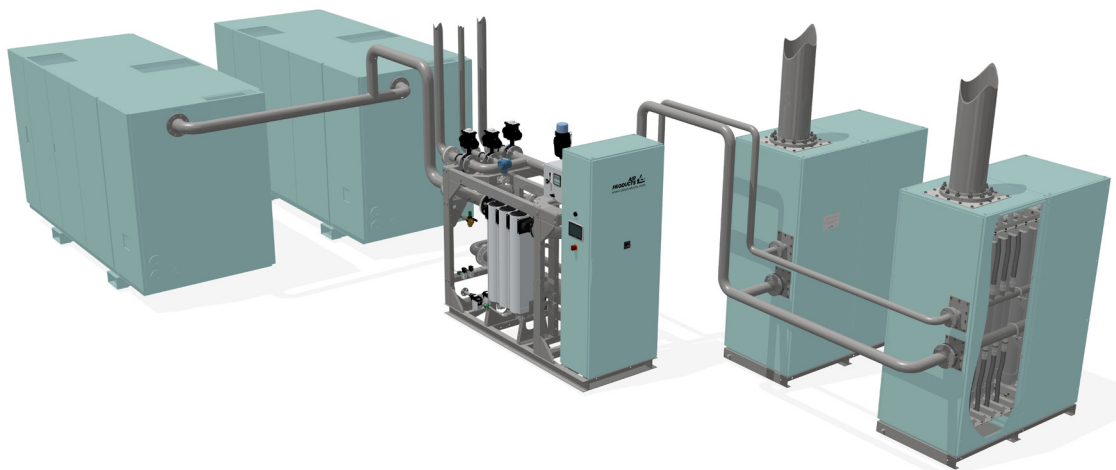
All systems are manufactured and tested at our works;  
Made in Norway.

- **NC1.3:** Fully enclosed Nitrogen Generator, for low and medium capacity requirements.
- **NC2.1:** High capacity systems, skid mounted with open frame design. 1 or more membrane cabinets of various sizes will complement the system.

## Air Products benefits

- Unparalleled total lifetime.
- Particle, liquid water and oil vapour tolerant membrane.
- Marine proven membranes for more than 35 years.
- Guaranteed After Sales Services throughout lifetime.



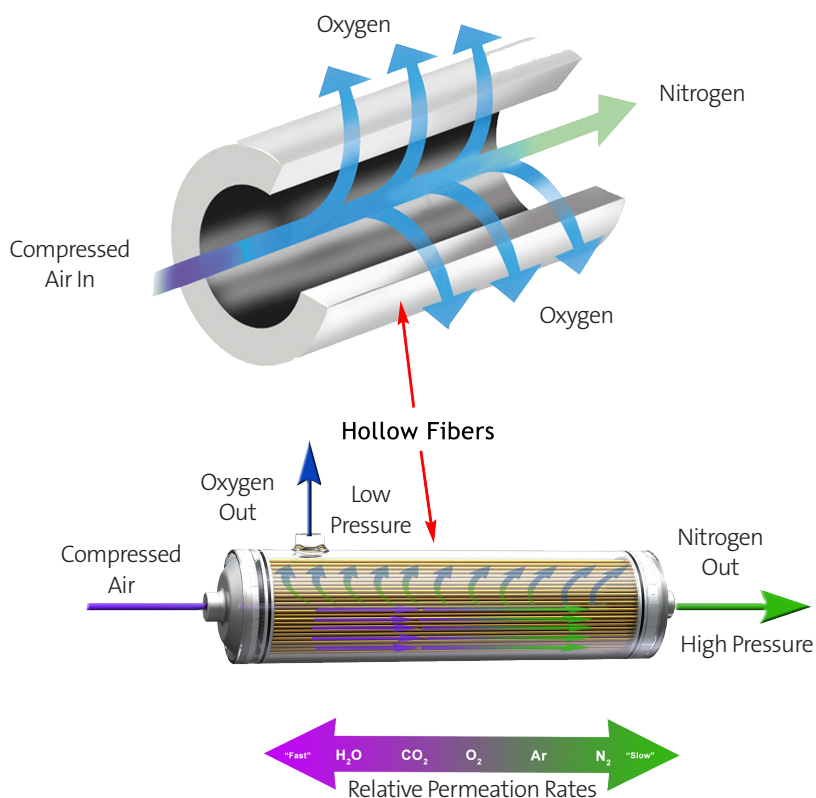


## Working principle

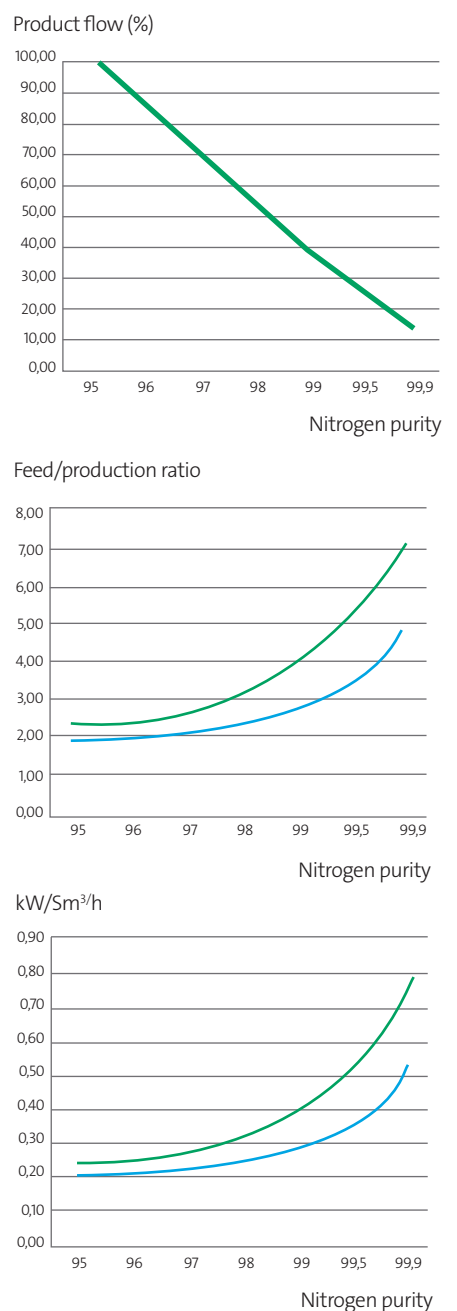
Hollow fibers are spun from various polymers, which form an outer skin or membrane, that provides the permeation barrier. Using hollow fibers provides maximum membrane surface per unit of volume. Thousands of fibers are bundled into a casing that protects the fibers, routes the gas properly from feed to product end – and creates convenient and standardized packages.

Atmospheric air is compressed, filtered, heated and fed to the bore side of the membrane separators. As the air flows inside the individual hollow fibers, oxygen, carbon dioxide, and water vapor molecules in the air, permeate faster than nitrogen molecules through the membrane walls to the low-pressure side of the fibers. The bore-side air is gradually depleted of the fast gases – consequently increasing the nitrogen percentage. The final product can be used directly or be stored in a receiver tank for later usage.

**Figure 1: Molecular Separation of Air**



**Figure 2: Performance**



■ Air Products Standard membrane  
■ Air Products High recovery membrane

# Air Products Inc.

Multinational Corporation serving customers in industrial, energy, technology and healthcare markets worldwide with a unique portfolio of atmospheric gases, process and specialty gases, performance materials, and equipment and services.

- World's 3rd largest Industrial Gas company.
- Best safety record of any Industrial Gas company.
- More than 18.000 employees in over 50 countries.

## Air Products Norway

Is an engineering and manufacturing company, specialized in gas production and processing systems for the Marine, Offshore and Petrochemical industries.

- Founded in 1970, and the first manufacturer installing Membrane Nitrogen Generator for shipboard applications.
- We are Air Products' "Competence Centre" for Marine & Offshore systems and an integrated part of Air Products' global operations.

## Our Products

- Membrane Nitrogen Systems for Ship, Offshore and Petrochemical applications.
- Membrane Hydrogen Systems and Natural Gas Membrane Dehydration Systems.

## Life Cycle Solutions

Spare parts and support are handled directly from Norway, having a wide range of spares on stock for immediately shipment!

Commissioning, startup and service work world-wide are done either with our team of Service Engineers in Norway – or with our world-wide Service network.

## Our Agent Network



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