



PRISM[®] MEMBRANE SEPARATORS

For a Safer, Cleaner,
More Productive World



Membrane
Solutions



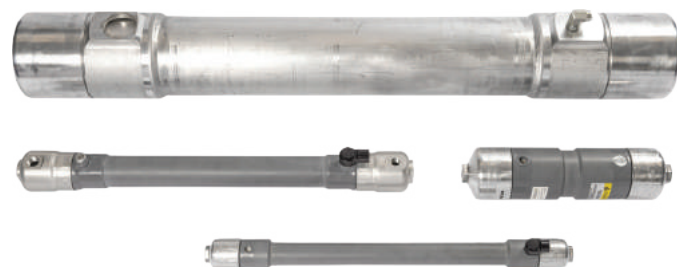
PRISM® MEMBRANE SEPARATORS

A pioneer in membrane separation technology since 1979, Air Products Membrane Solutions specializes in the development of high-efficiency, high-productivity hollow fiber membrane separators for on site gas generation systems. Our full portfolio of PRISM® Membrane Separators is designed to be packaged into systems that help protect lives and goods on land and in the air, create more sustainable energy sources, and raise productivity across a variety of industries and applications.

- Manufactured in the U.S. to ISO standards
- Proven track record of quality and reliability
- Supply chain flexibility
- Designed for high-criticality applications
- Over 500,000 membranes in use in over 70 countries



Our large catalog of products includes a multitude of configuration options such as a variety of lengths, widths, fiber types, and connection ports to offer you system design flexibility and low cost of ownership. Whether you're separating air for a nitrogen supply or upgrading biomethane, PRISM Membrane Separators can deliver a pure, dry gas stream that is ready to use.



Your Clear Choice

Offering distinct advantages compared to other nitrogen, oxygen enriched air (OEA), and dehydration technologies, PRISM Membrane Separators are your clear choice when you need a reliable, mobile, low-maintenance membrane separator for your gas system product line.



NITROGEN	PRISM	Pressure Swing Adsorption (PSA)	Liquid N ₂
On Site Generation	●	●	○
Portable	●	○	○
In Transit Generation	●	◐	○
Quiet	●	○	●
Low Maintenance	●	○	●
Equipment Ownership	●	◐	○
High Pressure (>7 barg)	●	○	○
Inerting Purity (97%)	●	●	●
On/Off Cycling	●	○	◐

OEA	PRISM (O ₂ Purity: 25-50%)	Vacuum Swing Adsorption (VSA) (O ₂ Purity: 90-93%)	Liquid (O ₂ Purity: 99.9+%)
On Site Generation	●	●	○
Portable	●	○	○
In Transit Generation	●	◐	○
Quiet	●	○	●
Low Maintenance	●	○	●
SOE	●	●	○
On/Off Cycling	●	◐	●
Dual Product Option (N ₂)	●	○	○

DEHYDRATION	PRISM (Dew Point: 4.4°C to -56.6°C)	Desiccant (Dew Point: -20°C to -73.3°C)	Deliquescent (Dew Point: 11.1°C below inlet)
Lightweight	●	○	○
Expandable	●	○	○
No Monitoring Required	●	◐	◐
Quiet	●	○	●
Low Maintenance	●	○	○
Low/No Power Needed	●	○	○
No Consumables	●	○	○
Dust-Free Generation	●	○	○
On-Demand Operation	●	○	○
No-Fail Operation	●	○	○



●	ALWAYS
◐	SOMETIMES
○	RARELY



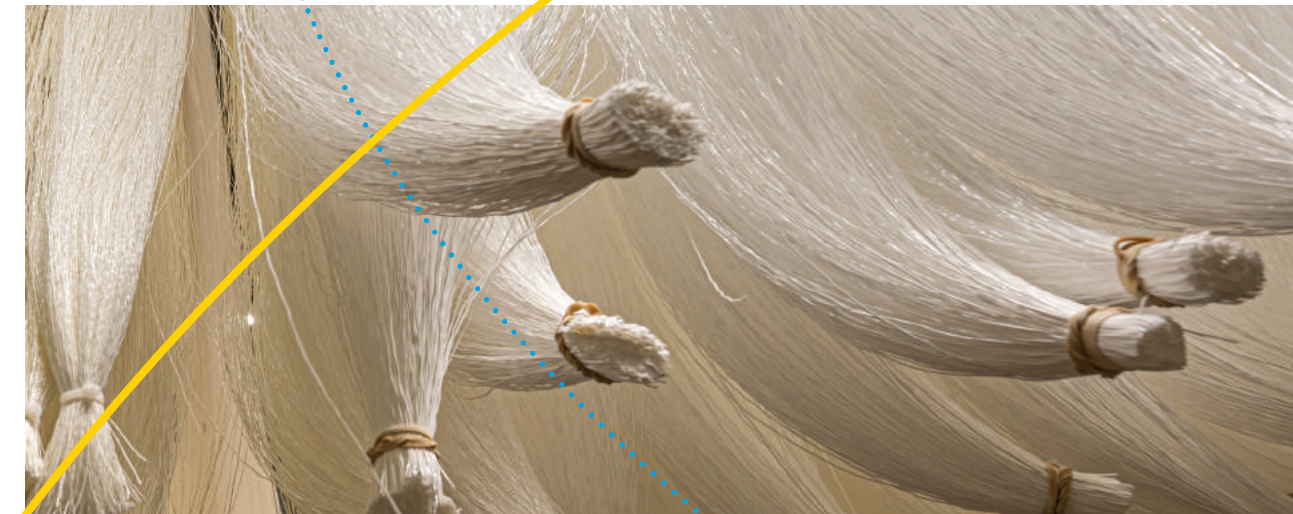
Providing OEM System Builders with Optimal Solutions

Value added packagers incorporate PRISM® Membrane Separators inside their specialized systems in a variety of industries including biogas, aerospace, offshore energy, food and beverage, transportation, defense, and more.

Air Products Membrane Solutions serves as the membrane vendor and works closely with system builders to provide sizing, design recommendations, and technical support to ensure reliable field operation. We look to our OEM customers to execute the following: marketing, project/bid management, system fabrication, system support and service after the sale, system warranty, and system design and liability.



Aftermarket service and membrane separator and/or part replacement are the responsibility of the OEM customer. If we receive inquiries from the end user regarding system replacements or service, we will refer them to the OEM builder, who in turn can contact us. We are happy to work directly with the system builder to provide engineering support.



How PRISM® Membrane Separators Work

Each PRISM Membrane Separator contains thousands of asymmetric hollow fibers that act as a molecular filter. When high-pressure gas mixtures enter the separator, the gas components divide as a result of selective permeation. Fast gases (such as oxygen) permeate easily through the membrane wall and exit the side port. Slow gases (such as nitrogen) do not permeate the membrane wall and travel the bore of the fiber exiting through the port at the end of the shell.



PRISM® GreenSep

Incorporate PRISM GreenSep separators into your system to separate CO₂ from biogas to generate a stream of upgraded biomethane.



Advantages of Selecting PRISM GreenSep for Your Next System

High Efficiencies

PRISM GreenSep membrane separators remove carbon dioxide, hydrogen sulfide, and water vapor from the production gas with efficiencies greater than 90%.

Size & Selectivity Options

PRISM GreenSep membrane separators are available in a variety of sizes and selectivities, allowing for fine-tune engineering at every design stage.

Robust Construction

Engineered to operate in harsh environments, PRISM GreenSep membrane separators are designed to be an extremely durable component in your systems.

Modular Designs

Capacity can be increased or decreased by adding or removing membrane modules from the biogas flow.

Easy Production Cycling

PRISM GreenSep membrane separators are ready for processing instantly and do not require lengthy start-up or shutdown preparations.

Water Vapor Removal

Water vapor is vented off with the CO₂ stream.

Simple Operation

PRISM GreenSep membrane separators are passive technology and have no moving parts. Complex system monitoring equipment is not necessary.

- Used for biogas upgrading to generate biomethane for grid injection, local vehicle refueling, or forming LNG
- Engineering support in the form of an Application Engineering Team, membrane separator operating manuals, sizing support, and tools
- Manufactured in the U.S. to ISO standards, with a demonstrated track record of quality and reliability
- Hand-assembled and tested in our AS9100 certified facility

- H₂S Tolerance up to 5000ppm
- Global commercial support model allows for responsiveness and customer focus
- Three sizes and two fiber configurations offer flexibility to meet your system design
- Recovery range up to 99.95%
- High-purity methane up to 99.5%
- Our membranes are trusted by a global network of OEMs, with an installed base of over 125 systems

CONFIGURATIONS

PRISM® GreenSep Flow

Used in stages where high flows of upgraded methane are required from the system

PRISM® GreenSep Select

Used in stages where selectivity (methane recovery) or low-power configurations are desired



PRISM GreenSep Installations Worldwide



PRISM® GreenDry

Remove water vapor from biogas with this low-maintenance membrane separator solution.



- Engineered for the dehydration of biogas
- The industry's first dehydration membrane separator designed for biogas processing
- Delivers convenient system design flexibility
- Hand-assembled and tested in our AS9100 certified facility

APPLICATIONS

Dehydration of non-upgraded biogas in CHP applications

Dehydration of biogas streams



Advantages of Selecting PRISM GreenDry for Your Next System

Durable

PRISM GreenDry membrane dryers are manufactured with durable aluminum shells to withstand grueling field environments.

Proven Technology

Air Products pioneered membrane dehydration technology, and applied the concept to biogas streams. Selective permeation technology is passive, with no moving parts, resulting in reliable and easy-to-maintain system configurations.

Quality Assured

Every PRISM GreenDry membrane dryer passes rigorous testing requirements before it is released into service.



PRISM[®] N₂Sep

Package your nitrogen generators with robust N₂Sep membrane technology that molecularly separates nitrogen from compressed air.



Advantages of Selecting PRISM N₂Sep for Your Next System

Quality Assured

Every PRISM N₂Sep membrane separator passes our rigorous testing requirements before it is released into service.

Industrial Grade

PRISM N₂Sep membrane separators are designed to handle industrial production loads. Pressures up to 24 barg (350 psig) ensure that your nitrogen production requirements will be met.

Passive Technology

Selective permeation technology uses a passive system with no moving parts. This allows you to engineer more reliable products that can be deployed in a wide range of environments, including mobile systems.

Simple Start-Up

PRISM N₂Sep membrane separators are easily commissioned. Simply apply clean compressed air, and production begins. No break-in period, expensive media, or complex equipment needed to manage and maintain.

Lightweight

PRISM N₂Sep membrane separators are constructed from high-performance ABS or aluminum, which makes them very lightweight. Separators are easily handled by one person, making installation and field service simple.

- Used to generate nitrogen for use as an inerting gas to eliminate flammable atmospheres or to preserve items that oxidize in air
- Every separator is hand-assembled and tested in our AS9100 certified facility
- Performance range for single membrane up to 73 normal cubic meters per hour
- Applications for nitrogen include:
 - Tire filling
 - Inerting/blanketing
 - Food packaging, storage, and transportation
 - Metals processing
 - Controlled combustion
 - Plasma cutting
 - Autoclave inerting
 - Pipeline purge
 - Fuel tank inerting
 - Beverage dispensing
 - Chemical sparging
 - Corrosion prevention
 - Laser cutting

CONFIGURATIONS

PRISM[®] N₂Sep Flow

Our standard nitrogen membrane

PRISM[®] N₂Sep Plus

Used for higher product flows or when there is increased cycling

PRISM[®] N₂Sep Select

Used in low-power configurations when selectivity is favored



PRISM® OBIGGS

Use On Board Inert Gas Generating Systems (OBIGGS) to minimize flammability risks by generating nitrogen to blanket aircraft fuel tanks.

- PRISM OBIGGS development started in 1996, offering new build and aftermarket solutions
- More than 30,000 PRISM OBIGGS separators shipped, with millions of flight hours logged
- Trusted by military planes and helicopters, business jets, and commercial airframes (10+ commercial programs)
- Variety of sizes and flexible manufacturing/ collaborative development
- Proprietary manufacturing processes dedicated to aerospace requirements



Advantages of Selecting PRISM OBIGGS for Your Next System

Long Lasting

PRISM OBIGGS separators deliver a guaranteed minimum of 27,000 operating hours for commercial programs.

Quality Assured

Every PRISM OBIGGS separator is hand tested in our AS9100 certified manufacturing facility.

Lightweight

As light as 16 pounds each, PRISM OBIGGS separators are designed specifically for the aerospace industry using durable, lightweight aluminum and a proprietary manufacturing technique that reduces product weight.

Critical Reliability

PRISM OBIGGS separators are engineered to perform in the highest criticality of applications, where safety is paramount.

Configuration Support

PRISM OBIGGS separators are backed by expert configuration support made possible by collaborative development and more than 30 years of experience in separator sizing and modeling.



PRISM[®] AirDry

Passively produce dry air with robust membrane dryers that remove water vapor from compressed air streams through the selective permeation of water molecules through polymers.



Advantages of Selecting PRISM AirDry for Your Next System

Durable

Each PRISM AirDry membrane dryer is manufactured from high-performance ABS with aluminum or stainless steel caps, which will withstand even the most grueling environments. Some models available in 316L stainless steel for corrosive environments.

Proven Technology

Selective permeation technology is a simple passive system with no moving parts, resulting in more reliable products that can be deployed in a wide range of environments, including mobile systems.

Flexible Application

PRISM AirDry membrane dryers can be mounted vertically or horizontally to meet your design requirements. The purge inlet port is designed with a swivel fitting to allow for various installation positioning. A user-installed orifice or adjustable valve optimizes purge rates and dew points for each application.

Simple Start-Up

Easy commission. No break-in period, expensive media, or complex equipment needed for management and maintenance.

- No moving parts or electrical components, consumable items, or desiccant dust carry-over
- Silent uninterrupted operation for a wide range of dew point specifications
- Dehydration to -40°C dew point depression
- Lower maintenance time and expense compared to desiccant or refrigerant dryers
- Assembled and 100% quality tested in our AS9100 certified facility
- Ideal for remote sites and point-of-use applications
- Used in critical applications including the oil and gas industry and onboard military aircraft carriers and naval fleets

CONFIGURATIONS

PRISM AirDry Classic

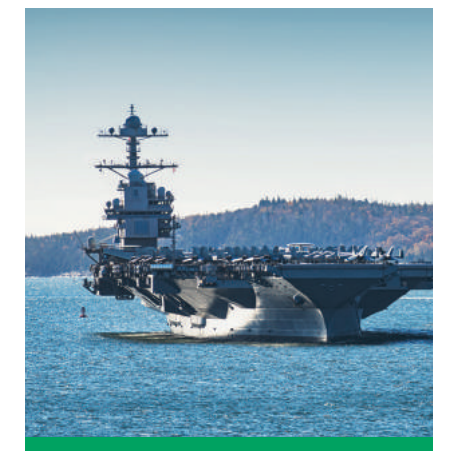
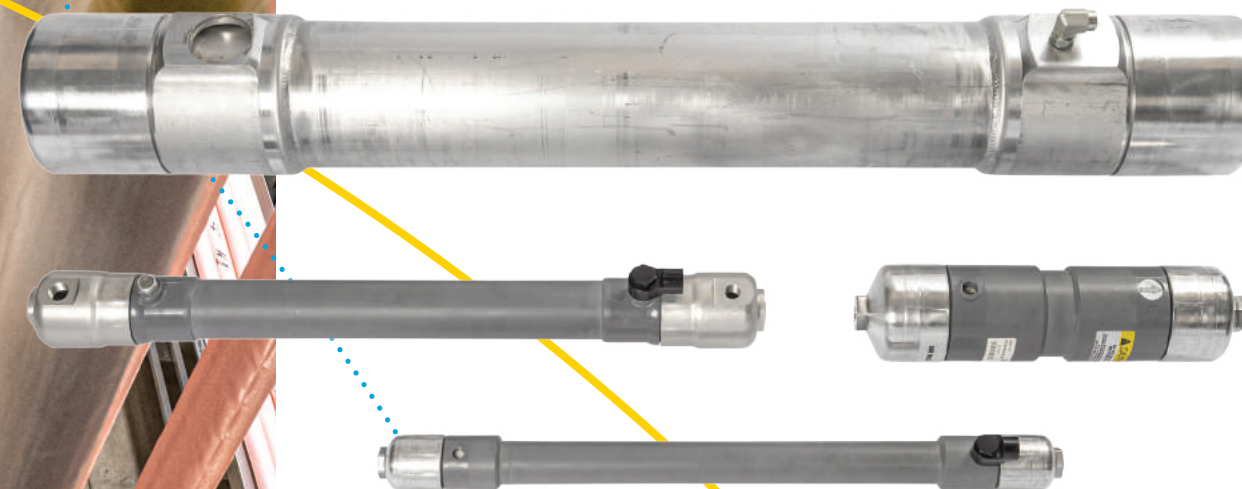
Standard dehydration membrane product

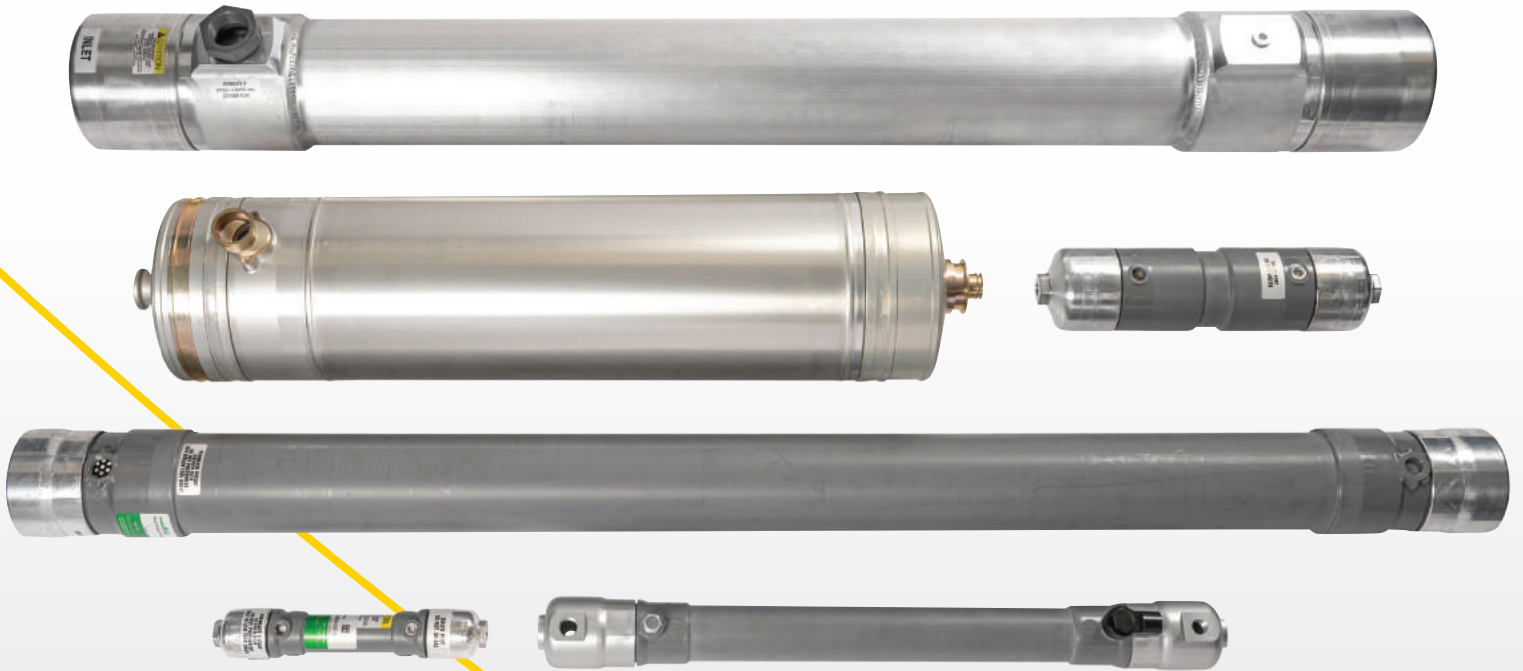
PRISM AirDry Flex

Includes external sweep purge for additional flexibility

PRISM AirDry Force

Designed for extremely high-pressure (1200 PSI) usage





Contact Us

Our global presence includes offices in the U.S., China, Norway, and India and worldwide service and support. To inquire about becoming a value added system packager, visit [MembraneSolutions.com](https://www.MembraneSolutions.com).



Membrane Solutions

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