

PRISM[®] PSA Nitrogen Generation System



Experience and Technology.

Air Products' PRISM Pressure Swing Adsorption (PSA) Nitrogen System can deliver reliable and cost-effective gas to meet your needs.

Dependable gas supply solutions

With a full range of nitrogen generation technologies, Air Products can deliver the low cost solution that is right for your application. Our PRISM PSAs are able to supply nitrogen flow rates up to 2,600 Nm₃/hr (100,000 scfh), while our advanced process can make nitrogen with a purity of 99.9995%. With over 400 plants sold and a global operations team, Air Products can support your business around the world.



Flexible supply options:

- Multiyear sale of gas supply contract or direct purchase of equipment
- Modular design
- Easy installation and fast startup
- Easy scale up of production systems
- Remote monitoring

Serving diverse applications in:

- Metals treatment and processing,
- Food processing and packaging,
- Electronics packaging and testing
- Chemicals and pharmaceuticals manufacturing

Air Products' global success is built on providing our customers with economical on-site gas supply based on our proprietary technology, expertise and a commitment to continuous improvement. Air Products can provide the nitrogen purity and flow rate with the best solutions to meet your needs.

Features and benefits

Cost-effective gas supply

Standard, pre-engineered product range.

Highly skidded, modular design for low-cost site installation.

Compact design requires minimal plot space.

Fully automated controls for unattended operation.

High reliability for dependable gas supply

Full local and remote operation with automatic callout for 24/7 support (available also on customer-owned plants); remote monitoring by Air Products provides optimal performance at virtually all times. Integrated instrument air system.

Design and equipment selection proven through more than 75 years' experience operating air separation plants.

Liquid backup under a sale of gas contract provides even higher onstream supply reliability and optimization of plant capital.

Low operating cost

Turndown for power savings at reduced consumption rates.

Air Products' proprietary adsorption process minimizes power consumption.

Preventive maintenance program reduces overall maintenance costs.

Flexibility

Customer and local code requirements can be supported within product design envelope.

Project execution strategies are optimized to local cost structure and infrastructure available at the jobsite.

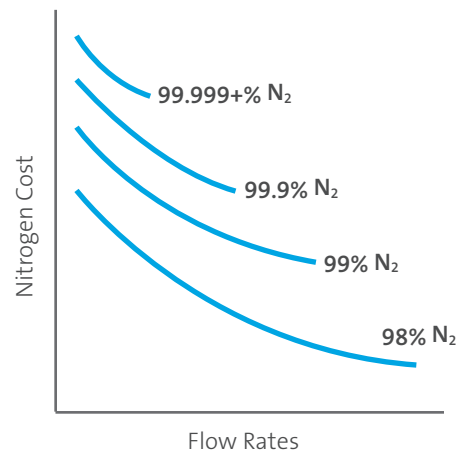
Air Products can provide a plant we own and operate, one owned by the customer, and hybrid options in between.



Air Products shows you how to save

To maximize savings, Air Products' experts analyze flow rates, operating costs and purity requirements for your application.

We will work with you to evaluate the PSA system alternatives and identify the one that is right for your specific requirement.



Process description

The PSA system comprises of four main operations:

- Air compression
- Air pretreatment
- Adsorption/desorption
- Product delivery

Air compressor

Atmospheric air is elevated to high pressure by a packaged air compressor.

Air pretreatment

The high-pressure feed air from the compressor passes through filters to remove excess water, oil and other contaminants.

Adsorption/desorption

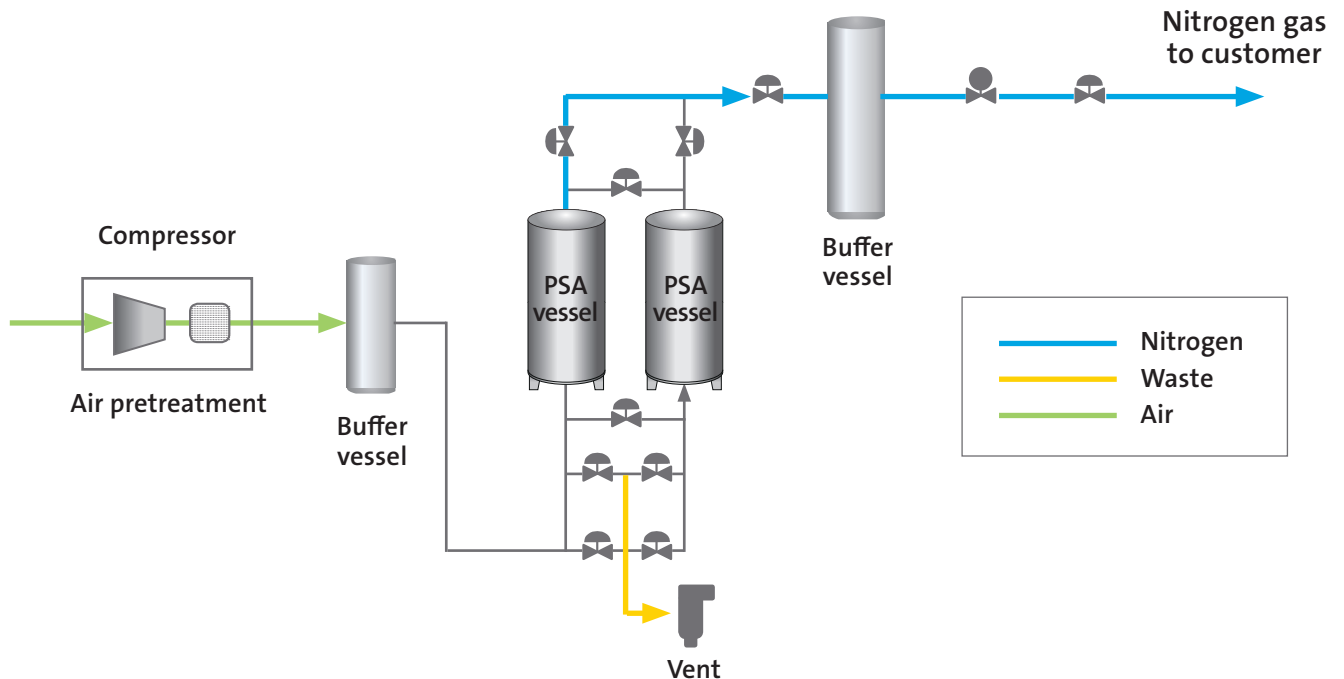
The “treated” air enters an adsorption tower where it is contacted with a carbon molecular sieve that binds the oxygen and allows nitrogen to pass through. Purified nitrogen passes to product delivery operation. Once the oxygen capturing capacity in a bed is diminished the feed switches to a new adsorption tower and the old bed is regenerated through rapid depressurization and is ready for the next cycle.

Product delivery

The “purified” nitrogen enters a nitrogen receiver tank that provides gas to the adsorber vessels during product repressurization and nitrogen buffer capacity. The nitrogen purity is continuously monitored by an oxygen analyzer prior to delivery to the customer house line. Should the oxygen level rise above the preset alarm point, the product delivery valves isolate any off-specification product from the customer house line. The system will automatically enter a “cleanup” mode, and product delivery will resume when the nitrogen purity is within specification. A flow control system prevents system overdraw.

Depending on your supply needs, we can also offer an integrated backup liquid nitrogen system to meet peak flow demands.

Nitrogen PSA process flow diagram



Remote monitoring for dependable supply

Air Products' PRISM Nitrogen PSAs use our remote monitoring system, which facilitates communication between the gas generator and our global network of 24/7 operating service centers. This enables Air Products' technicians to track the mechanical operation and the flow and purity performance of the PSA, identify maintenance intervals, and adjust system controls for changes in your requirements. Air Products' remote monitoring service is included under our sale of gas contracts and is now available to sale of equipment customers who own the PSA plant.

Global expertise delivered locally

With local expertise around the world, Air Products is focused on delivering reliable, cost-effective gas supply solutions based on understanding your needs. Visit your local country website or contact your local office below to see how we can help you.

Air Products' PRISM gas generators are available for the production of nitrogen, oxygen, and hydrogen. Check out our website at: airproducts.com/gasgeneration to review our range of offerings.



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