

PRISM® Nitrogen Modular Membrane Generators

“As a direct response to customer feedback, we developed the Modular series of On Site Nitrogen Membrane Generators to provide an instantly available, low cost nitrogen source, from an energy efficient package. Our customers told us they wanted a system that could sit outdoors in any weather, a fully automatic system that would respond to their flow demands and they didn't want to dispose of the waste that some other systems produce. Perhaps most of all they wanted it now”

*Garry Jones,
Projects Group
Air Products*



Air Products has designed, engineered, manufactured and operated on-site gas generation systems for over 40 years, which has created an outstanding global product line.

Air Products' **PRISM®** Nitrogen Modular Membrane systems provide gaseous Nitrogen at flow rates from 14 to 47 Nm³/hr and nitrogen purities from 95% to 99.9% at 10 bar g product pressure.

These systems can meet a wide range of market needs and are already utilised in the petrochemicals, chemicals, pharmaceuticals, metallurgical, heat treatment and food packaging and processing industries, to name but a few.

The systems are fully automatic and can run continuously, or on/off as necessary to suit customer demand where batch processes are using the product.

All this is backed up by a remote monitoring telemetry system which reports any warnings of faults to Air Products the moment they occur.

Features and Benefits

- | | |
|---------------------------|--|
| Low operating cost | <ul style="list-style-type: none"> • Utilises one of the most efficient air compressors available • Machine will automatically stop and start as necessary to meet product gas off-take demand • No condensate/oil waste |
| High Reliability | <ul style="list-style-type: none"> • Stainless steel outer shell for corrosion and severe weather protection • Integral air compressor in temperature controlled environment • Continuous automatic local and remote monitoring |
| Flexibility | <ul style="list-style-type: none"> • Can be used in conjunction with a liquid Nitrogen back-up tank and/or product gas receiver to meet high product requirement demand peaks |

Options Available

Product N₂ receiver

A product receiver vessel can be specified to enable the system to meet small peaks and troughs in demand, and help maintain a constant product supply pressure.

Nitrogen back-up

A liquid or gaseous back-up system can also be supplied for systems with very large peaks in product demand, or for processes which can not tolerate any interruption in nitrogen supply.

Low pressure

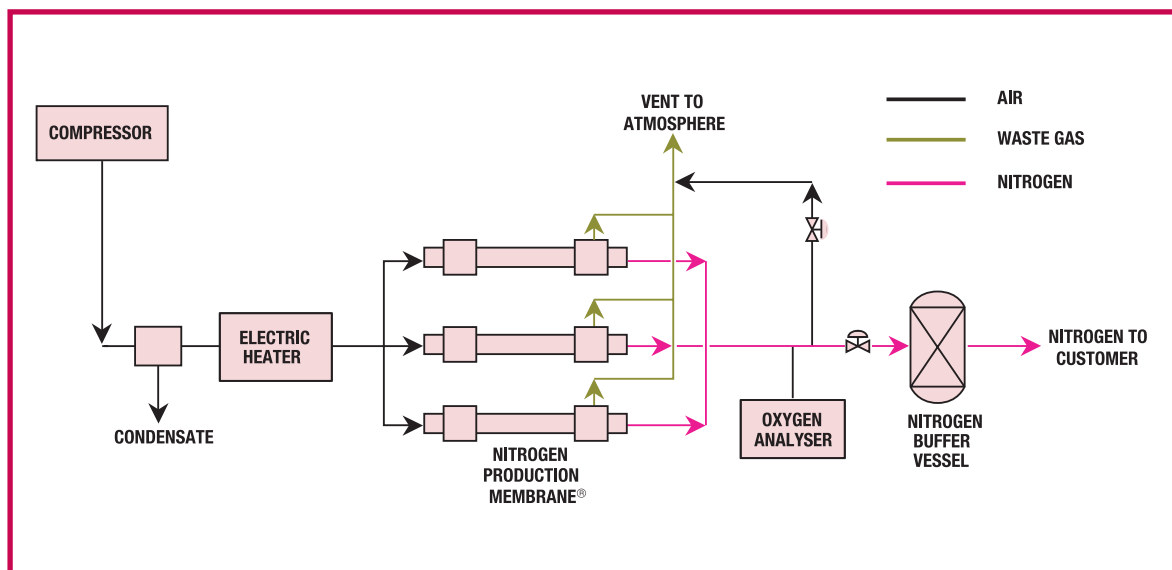
Where the normal product pressure is too high for the customer process or pipework, a pressure reducing and control system can be installed.

Process Description

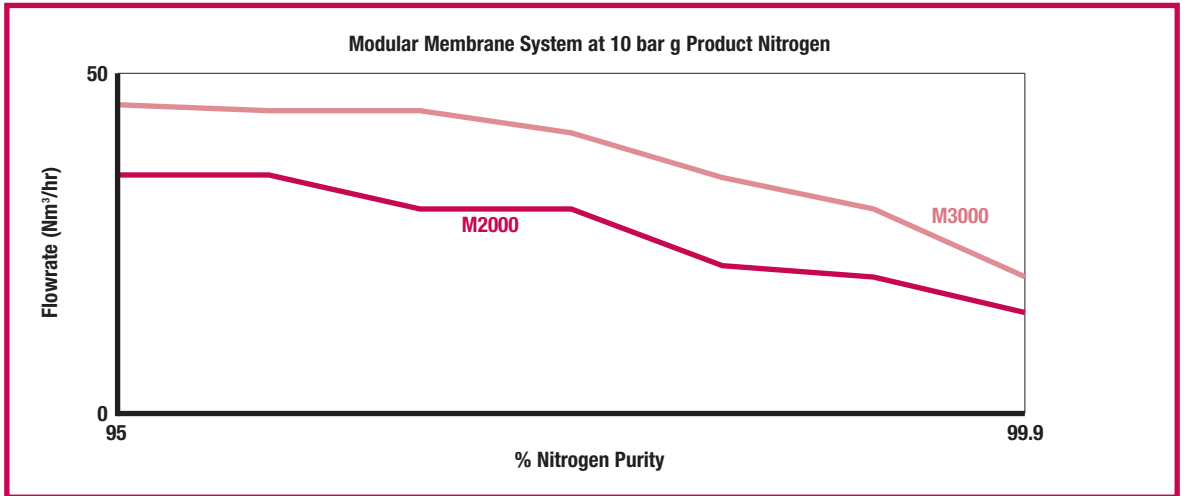
Atmospheric air is compressed in the main air compressor and passed through a series of filters to remove moisture and water/oil vapours. The compressed air is superheated by an electrically powered heater and then enters the membrane modules, where the air separation process takes place.

The compressed air travels through a bundle of hollow fibres through which the unwanted oxygen, CO₂, trace moisture, hydrocarbons and CO present in air permeate in preference to nitrogen. The waste gas (permeate) is vented safely back to atmosphere at low pressure, whilst the product nitrogen gas passes through a flow control and a non-return valve into the product receiver, or directly into the customer process line.

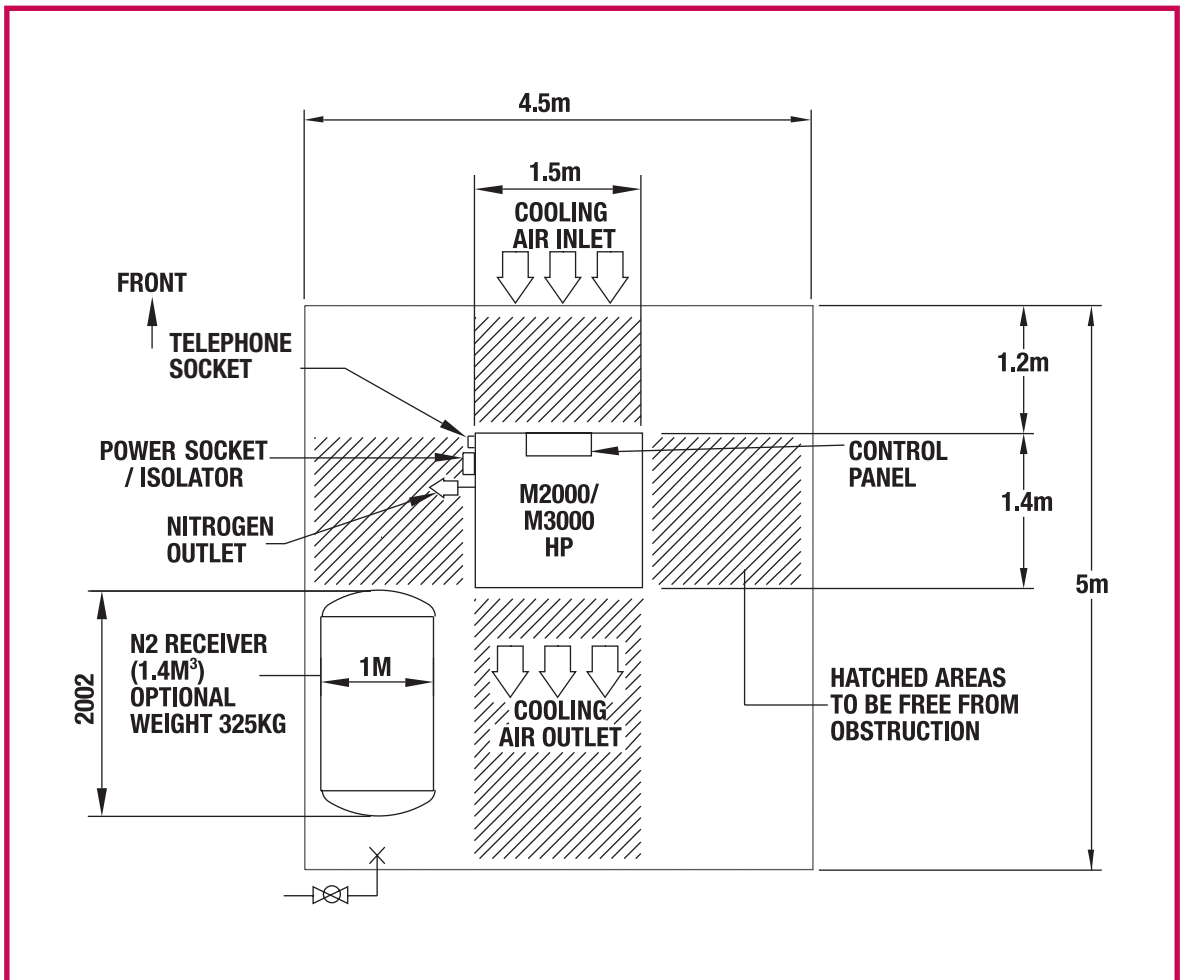
To enable the machine to operate at sub-zero temperatures, it contains internal electrical frost protection heaters for use in standby mode. When in production mode, with the compressor running, a controlled portion of the compressor cooling air is re-circulated within the machine, to maintain a constant operating temperature environment within.



PRISM® Modular Membrane Performance



Typical Plot Layout



Standards and Specifications

Safety, Health & Environment

Air Products believes that nothing is more important than safety.

We have extensive Safety Management systems, procedures (including HAZOP analysis) and detailed engineering standards, as well as 50 years of Air Separation plant operation experience. This expertise is applied to all plant and equipment that Air Products operates and sells, to ensure the safety of employees, customers and the general community. As a result Air Products is widely acknowledged to be the safety leader in the industrial gas industry and also has one of the leading performances in the chemical industry as a whole.

Quality

Air Products PLC engineering and manufacturing operates under QA procedures that have been certified to ISO9001 since 1983.

Pressure vessels

The following codes can be accommodated:

- PED

Electrics

CE marked to the Machinery Directive in compliance with EN-60204.

Noise

85 dB(A) at 1 metre as standard, in free field area with no other noise source. Lower can be achieved with the use of additional acoustic screens or devices.

Scope of Supply

Air Products:

Membrane System

Back-up N₂ supply (optional)

N₂ product receiver (optional)

Site Supply:

63 Amp – 3 phase/N/Earth

Ceeform type power socket supplied by 40 Amp motor rated fuses

Voltage – 3 phase, 400V/N Earth

Telephone – National PSTN Line

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