

PRISM[®] UHP Nitrogen Platform Generators

“The **PRISM[®]** UHP Platform Generator is designed to meet the primary needs of the Electronics marketplace by delivering the Air Products' difference - high reliability in a cost effective package”

*Larry McAllister,
Manager,
Electronics
Packaged Plants*



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' Nitrogen "Platform" Plant with optional UHP Liquid Oxygen, provides state-of-the-art technology in UHP N₂/O₂ production. This system offers a highly reliable supply of nitrogen and oxygen, and can provide significant cost savings over hauled-in UHP liquid.

The Platform Plant can satisfy electronics customers' needs, for even the most stringent of purity requirements, over a broad range of pressures and volumes. Optional features are available to meet specific customer requirements.

The Platform Plant uses a patented high-efficiency distillation column to selectively recover nitrogen and oxygen from air. This high-performance plant significantly reduces the energy necessary to generate both nitrogen and oxygen, making Air Products' Platform Plant a cost-effective solution.

Features & Benefits

Designed to meet the specific needs of the electronics industry

- Provides high purity product essential to the electronics industry
- Provides reliability and flexibility essential to the electronics industry

Fully automated controls

- Minimal site attendance required
- Assures continued supply

Modular in design

- Minimum plot space
- Quick simple installation

Optional UHP Liquid Oxygen (LOX) available

- Benefit of low cost co-product where required

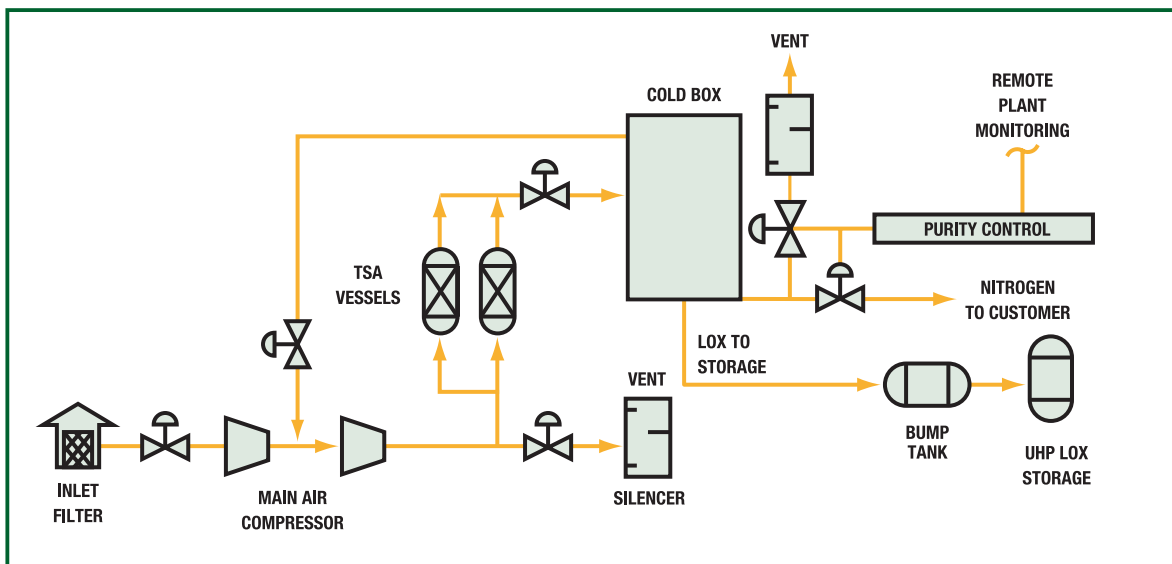
Turndown capacity to approximately 80%

- Power efficient gas supply
- Lower operating costs

Process Description

The Platform Plant has been developed using the proprietary cycle technology. Air is taken into the Main Air Compressor (MAC) inlet filters to remove dust and particles, and is then compressed to the required pressure. It is passed through an aftercooler and separator to cool the air and remove excess moisture. The air then enters the adsorption system, which consists of two vessels filled with a proprietary adsorbent, to remove water and carbon dioxide from the stream. The air thus leaves the Pre-treatment system as Clean Dry Air (CDA).

The CDA enters the cold box for cooling and distillation. Nitrogen and oxygen are separated from the air through cryogenic distillation. The nitrogen is delivered from the cold box as a gas at the desired purity and pressure, and as a liquid for storage tank replenishment. The UHP oxygen is delivered as a liquid and transferred to a high-pressure storage tank. An Air Products-designed turbo expander supplies refrigeration.



PRISM® UHP Performance

Platform Plants can turn down to 80% of full flow capacity. Nominal unit performance is based on the design conditions stated below. Specific unit performance may vary depending on local design ambient conditions.

Design production

Platform 2: up to 5,800 Nm³/h
Platform 3: up to 8,700 Nm³/h

Product Purity:

Nitrogen: <1ppbv O₂ <1ppbv H₂O
Oxygen: <10ppbv N₂ <1ppbv H₂O

Delivery Pressure: <9 bar g ex coldbox

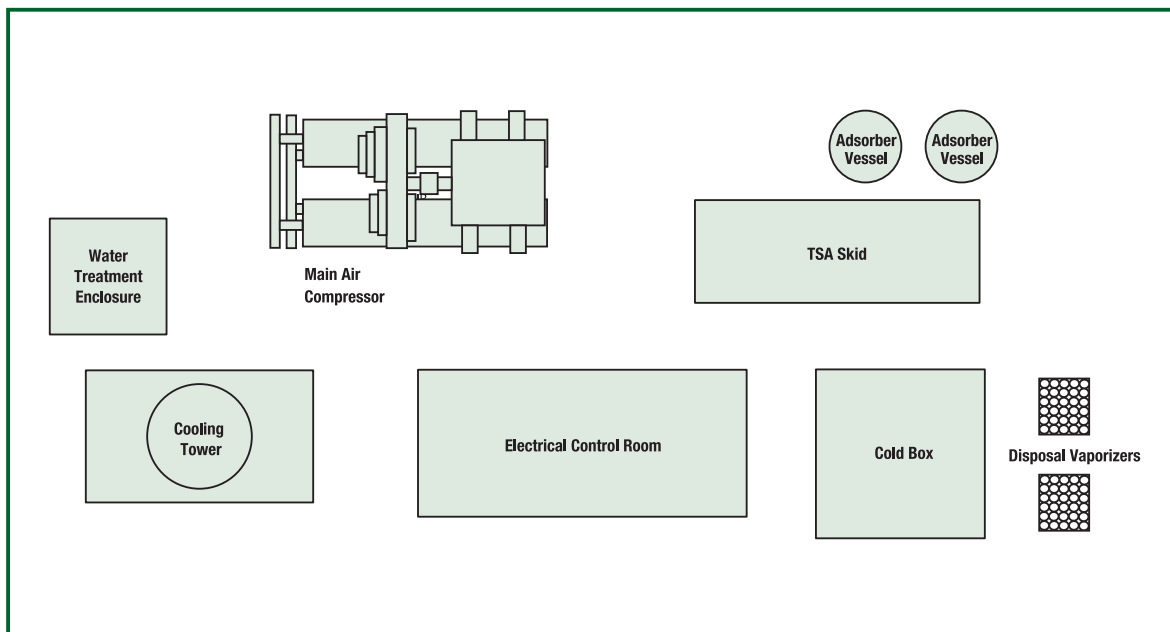
Design conditions:

Temperature: 35°C
Ambient air pressure: 1.013 bar a
Relative humidity: 40%
Wind conditions: 44.7 m/s
Seismic conditions: UBC Z4

Standard Noise Level:

85 dB(A)
Noise level is estimated at a range 50 feet from the noise source

Typical Plant Layout



Approximate Plot Area

Plot area represents only the base plant, and does not include any optional purifiers, filters, back-up system, etc.

Platform 2: 15m L x 27m W

Platform 3: 18m L x 27m W (excl. allowance for liquid storage system)

Electrical Power

Standard system is designed for 10% allowable voltage drop and full voltage motor starting.

Low voltage - 480 V, 3 phase, 60 Hz

High voltage - 4160 V, 3 phase, 60 Hz

Typical Major Equipment Shipping Dimensions (LxWxHxWt)

Main Air Compression	7.3m x 3.7m x 3.7m x 18,144kg	Cooling Tower	7.0m x 4.6m x 3.3m x 7,711kg
TSA Skid	6.4m x 2.4m x 3.0m x 6,804kg	Electrical Control Room	3.7m x 6.1m x 3.7m x 9,071kg
Adsorber Vessels (2)	1.8m x 1.8m x 5.5m x 18,144kg	Water Treatment Enclosure	3.0m x 3.0m x 3.0m x 1,814kg
Cold Box	3.7m x 3.7m x 26.5m x 72,575kg		

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, certified under ISO9001 since 1983.

Pressure vessels

These are normally manufactured to ASME VIII (with U-stamp) or to European PED, but other codes can be accommodated where necessary.

Piping

ASME B31.3 as standard, DIN where required

Electrics

IEC, CE plated as standard, NEMA where required.

Typical Project Schedule

A typical milestone schedule for a Platform Plant. All times are in months from the date of formal commitment. Project schedule is dependent on equipment lead times and is subject to change.

Project Kick Off & Equipment Fabrication	[Gantt bar from month 1 to 10]											
Delivery to Site	[Gantt bar from month 9 to 10]											
Customer Site Scope	[Gantt bar from month 8 to 10]											
Equipment Installation	[Gantt bar from month 10 to 11]											
Commissioning & Start-up	[Gantt bar from month 11 to 12]											
Months	1	2	3	4	5	6	7	8	9	10	11	12

Scope of Supply

Descriptions:

Air Products **PRISM**® System products have been designed to meet a wide range of applications in order to satisfy the requirements of each Customer. The scope of supply of each plant can also be tailored to best address the interests of the Customer. As well as supplying the generation system, Air Products offers a broad complement of service options. These service options build on the base equipment package to provide a full product supply system, complete with ongoing operation, maintenance, and ownership of the equipment. An Air Products Commercial Manager would work directly with the Customer to identify the optimum level of service options.

Available service options:

- Licence and Permit Assistance
- Foundation Design and Construction
- Product Compression
- Equipment Delivery and Full Installation
- Utilities Design and Supply
- Startup and Commissioning of System
- Plant Overview and Safety Training
- Ongoing Operation and Maintenance
- Liquid Supply System for Backup & Peakshaving
- Product Pipe Line to Point of Use
- Application Testing & Optimisation
- Product Validation

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