

LARGE N₂ PRODUCTION SYSTEMS

PERFORMANCE

- Air Liquide large N₂ membrane is a fully integrated system with large capacity that provides a continuous supply of nitrogen (N₂) as demand changes
- It is a reliable, low-cost N₂ supply solution when cryogenic purity is not required
- Large integrated N₂ standard system offers plug and play installation with full purity assurance
- Most generally recommended for offshore operations and maritime installations

TECHNICAL FEATURES

- Purity range 95% to 99.9%
- Flow rates 40 Nm³ / hr to 13,000 Nm³ / hr
- Pressure range from 3 Barg to 22 Barg outlet
- Maximum operating temperature 55°C
- Moisture Content < 10 ppm (< 1 ppm optional)
- Oil Content < 0.003 ppm (not measurable)
- Particulates < 0.01 micron
- Power:
 - 60 HZ: 440 / 460v, 3 phase
 - 50 HZ: 440 / 415v, 3 phase



STANDARDS

- Pressure: ASME BPVC VIII Div1
- Electrical IEC or NEC
- ISO 9002 certified process
- Hazardous (ATEX 2 / Class I Div 2) upon request
- Systems available with / without air compressor – Air / N₂ receiver upon customer request
- More than 80 standardized systems designed to fit your needs



TYPICAL SCOPE OF SUPPLY

MEMBRANE MODULES

Due to high selectivity, Air Liquide membranes provide more flow rate than our nearest competitor. Air Liquide membranes can separate nitrogen efficiently for purities up to 99.9%.

AIR PRE-TREATMENT SYSTEM

All Air Liquide NPU's use a system of water separator, pre-coalescing and coalescing filters to remove virtually all water / oil aerosols, a carbon tower to remove oil vapor and any remaining aerosol, followed by a final 0.01 μm dust filter.

PROCESS AIR HEATERS

Air Liquide systems utilize electric process heaters. Precise temperature control is ensured by the use of a process thermocouple at the inlet of the membrane modules. The temperature controller uses this thermocouple signal to control the process heater via all solid-state power controls.

MOISTURE MANAGEMENT

Air exiting the coalescing filters will normally be fully saturated with water vapor. To ensure no subsequent moisture condensation occurs in the carbon tower, piping, or membrane bundles, a small electric pre-heater is installed at the carbon tower inlet. This electric pre-heater adds a "dew point margin" to the process air. The dew point margin is then maintained through the process all the way to the membrane modules. The carbon tower is also heat traced and continuously powered (even in standby) so that it is warmer than inlet air, even at startup. A liquid detector is installed in the final filter, with alarm, for ultimate membrane protection.

FLOW CONTROLLER

The advanced active purity control is standard on NPU which is controlled through a PLC. In this method, the self-operating part of the control valve automatically adjusts its position to account for changes in downstream pressure. The electro-pneumatic part of the valve adjusts its position according to the current oxygen level versus set point.

O₂ ANALYZER

The NPU utilizes an oxygen analyzer with relay alarm contacts and a 4-20 mA analog output.

PRODUCT / VENT VALVES

These on / off valves provide ultimate protection against off-spec product. Operated by the PLC, they are controlled by the O₂ analyzer alarm contacts.

INSULATED ENCLOSURE AND SPACE HEATERS

Unless requested, all NPU's are supplied with insulated enclosures suitable for outdoor installation, with space heating to prevent freezing condensate in winter.

AMBIENT O₂ MONITOR

An ambient O₂ monitor with warning beacon is installed inside each NPU for maximum personnel protection in the case of a N₂ leak during maintenance, especially if the door would be closed in bad weather.