

NGP 4-1100

ATLAS COPCO PSA NITROGEN GENERATOR

General Description

The NGP is a standard Atlas Copco nitrogen generator, based on pressure swing adsorption technology, for producing nitrogen at point of use with purity between 97 to 99.999%.

The NGP is built according to proven design standards and is suitable for indoor use in a normal industrial environment. The design, materials and workmanship ensure of the best available quality and performance.

The NGP is a self-contained unit including all necessary controls, piping and fittings needed for proper operation.



The wide product range and nitrogen flows up to 2.500 Nm³/h makes the NGP series ideal for applications such as food processing, pharmaceutical, metal industry, oil & gas, marine, packaging and many more.

Operating Principle

The Nitrogen Generator makes use of Pressure Swing Adsorption (PSA) technology to produce nitrogen by passing pre-treated compressed air through a vessel containing carbon molecular sieves (CMS). The PSA process is inherently a batch process, as the adsorbent bed requires periodic desorption. In order to secure steady flow, the Nitrogen Generator PSA systems contain two adsorbent vessels to provide operational continuity. One vessel is active while the other one is inactive. At the end of each cycle they switch roles.

The active vessel is pressurized and pre-treated compressed air enters the active vessel and follows up through the CMS. Oxygen molecules are being adsorbed while the nitrogen molecules pass through.

When the adsorbing vessel approaches saturation, the regenerated vessel is partly re-pressurized with the compressed air from the adsorbing vessel. This is called the equalization step, and is intended to save compressed air consumption.

When pressure from the saturated vessel is released, the regeneration process starts. At the same time the regenerated vessel is further pressurized up to working pressure with the compressed air from the inlet. The cycle starts over again.

Scope of Supply

Air Circuit

- An inlet pressure regulator to set the inlet pressure to a maximum of 10 bar
- 2 Pneumatic actuated inlet valves to guide the air to one of the adsorber vessels.
- 2 Pneumatic actuated exhaust valves, one for each adsorber vessel, to release the pressure in the vessel and start the regeneration sequence. The exhaust valves alternate every half cycle.
- An air silencer is connected to the exhaust valves, and reduces the noise level during exhaust / regeneration
- A Pneumatic actuated equalization valve to bring both adsorber vessels to the same pressure
- 2 Adsorber vessels, filled with Carbon Molecular Sieves (CMS), to adsorb the oxygen molecules from the inlet air, while nitrogen molecules can pass.
- A pressure relief valve on each adsorber vessel

Nitrogen Circuit

- A Pneumatic actuated equalization valve to bring both adsorber vessels to the same pressure
- A purge nozzle that allows a small portion of nitrogen flow into the depressurized vessel for regeneration purposes
- 2 Non-return valves at the outlet of each tower to avoid back flow from the outlet of the generator
- A nitrogen feedback line from the nitrogen storage vessel to the oxygen sensor of the generator
- An outlet nitrogen pressure regulator, to be installed downstream the nitrogen storage vessel, to reduce the nitrogen pressure to the requested customer pressure.



Gauges and instrumentation

- Pressure gauge on each adsorber vessel
- Nitrogen storage vessel pressure transmitter
- Nitrogen purity sensor in nitrogen storage vessel

ELEKTRONIKON®

By properly monitoring your nitrogen/oxygen system you cannot only decrease downtime but also save energy and reduce maintenance. The nitrogen and oxygen generators come with the following advanced control unit:

User-friendly interface

Available in 32 languages, this graphical 3.5-inch high definition color display with pictograms and LED indicators for key events is easy to use. The keyboard is durable to resist tough treatment in demanding environments.



Comprehensive maintenance display

Valuable items of information displayed include the Service Plan indicator and preventive maintenance warnings. Password protected operation parameters. Process illustration with valve cycle indication, graph showing pressure and current operation values.

Remote control and connectivity functions

The controller can be started and stopped locally, via a wired remote switch. Communication boxes are available to receive alarm messages through mobile phones or read-out generator data through Modbus, Profibus (options).

Two analogue parameters (Purity & Pressure), with the opportunity to expand with more analogue components.

Features & Benefits

Cost Savings

- Low installation and running cost – highly efficient technology.
- No additional costs such as order processing, refills and delivery charges.
- Virtually service free.
- Quick pay back – often less than a year compared to bulk N₂.

Exceptional convenience

- Continuous availability. (24 hours a day, 7 days a week)

- Risk of production stoppage due to gas running out is eliminated.
- Nitrogen purity levels according to your need: from 95% to 99.999%.

Ready to use

- Only requires a supply of dry compressed air.
- Plug-and-play.
- No specialist installation or commissioning.

