



Atlas Copco

**Nitrogen generators
PSA technology**

NGP+ 450-2800

Guaranteed nitrogen purity at the lowest energy cost

When your production requires high-quality, high-flow nitrogen, there is no better solution than the Atlas Copco NGP+ 450-2800. To ensure the integrity and continuity of your production, the NGP+ monitors the quality of your feed air and your gas output 24/7. Choose the NGP+'s superior efficiency to give you an industry-leading combination of peace of mind and the lowest cost of ownership.



Energy savings

On-site PSA gas generation with the lowest total cost of ownership and minimal energy consumption per unit of N₂.



Hands-off performance

Easy nitrogen purity selection via the controller for maximum operational savings and continuous gas purity measurement to protect your N₂ applications and products.



Reliability

Continuous supply of N₂ at a guaranteed purity. Self-protective design and operation ensuring a long lifetime. Heavy-duty valves with a long service life for maximum uptime.



High flow capacity

The wide range and gas flows exceeding 3,000Nm³/h make these generators ideal for a variety of demanding applications.



Ready to use

The only require for the generators is a supply of dry compressed air. It's a plug-and-play solution allowing quick installation and commissioning.



Desired purity

Nitrogen concentrations from 95% to 99.999%.



Segments and applications



Food and beverage

Packaging: Nitrogen gas can be used to displace oxygen in food packaging, which helps to preserve the quality and freshness of the product. This is particularly important for products such as coffee, nuts, and snack foods, which are sensitive to oxidation.

Modified Atmosphere Packaging (MAP): Modified atmosphere is the practice of modifying the composition of the internal atmosphere of a package to improve the shelf life. This is commonly used in food or drug packaging. The modification process often tries to lower the amount of oxygen (O₂), moving it from 20.9% to 0%, to slow down the growth of aerobic organisms and the speed of oxidation reactions that might take place in food and beverage products.

Dispensing: Nitrogen gas can be used to dispense beer and other carbonated beverages, which helps to create a foamy head and a smooth, creamy texture. This is because nitrogen gas is less soluble than carbon dioxide, which creates smaller bubbles and a smoother mouthfeel.

Processing: Nitrogen gas can be used in food processing applications to help prevent oxidation and microbial growth. For example, it can be used to create an oxygen-free environment during the processing of oils and fats, which helps to prevent rancidity.



Oil & gas and chemicals

Inerting tanks for explosion prevention: Inerting is the process of replacing the air inside a tank or vessel with nitrogen to prevent explosions or fires.

Fire prevention: Nitrogen is the gas of choice to displace oxygen and prevent explosions. It is mainly used to flush piping systems and blanket stored explosive or flammable products. The result is safety, reliability, and protection from corrosion through oxidation.

Pressure testing: Nitrogen is an inert gas, meaning it will not react with the materials used in the equipment or pipeline. Nitrogen can also be used to purge equipment of other gases that may be present, such as oxygen or flammable gases.

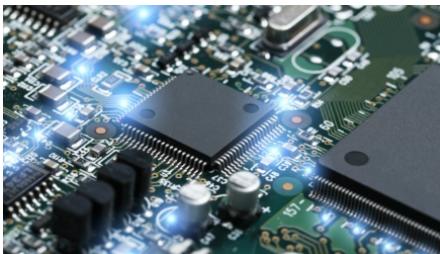
Gas lifting: This process is known as gas lifting, and it involves injecting nitrogen into the wellbore to create pressure that helps move the oil to the surface.

Well stimulation: Nitrogen is pumped into the wellbore and creates pressure that fractures the rock, allowing oil and gas to flow more easily.

Corrosion prevention: By displacing oxygen and other corrosive gases, nitrogen can help protect the metal surfaces from degradation.

Sealing of gas compressors: Nitrogen is often used as a sealing gas in compressors to prevent leakage and ensure the efficient operation of the equipment.

Overall, nitrogen is a versatile gas that plays an important role in the oil and gas industry. Its inert properties and ability to create pressure make it a valuable tool for various applications in the industry.



Electronics

Soldering and wave soldering: Nitrogen gas is used to create an inert atmosphere around the soldering process, preventing oxidation of the metal components and ensuring high-quality solder joints.

Reflow soldering: In this process, Nitrogen gas is used to reduce the presence of oxygen, which can cause oxidation of the solder and reduce the quality of the connection.

Cleaning: Nitrogen gas is used to remove contaminants from electronic components during the manufacturing process. It is also used to blow away dust and debris from sensitive electronic equipment.

Testing: Nitrogen gas is used in the testing of electronic components and devices, particularly those that are sensitive to oxygen or moisture. It can be used to create a controlled atmosphere for testing or to purge the device of oxygen or other contaminants.

Storage: Nitrogen gas is also used to store electronic components and devices. By replacing the air with nitrogen, oxidation and other forms of degradation can be prevented, ensuring the longevity and reliability of the components.

A secure supply of nitrogen

Whether your company is specialized in chemical manufacturing, electronics, laser cutting or food and beverage, a dependable supply of industrial gas is crucial.

Compared to the on-demand delivery of gas bottles or tanks, on-site production of gas offers a wealth of advantages ranging from cost savings to continuous availability.

Atlas Copco's advanced nitrogen generators offer you the ultimate solution: flexible on-site production of nitrogen at the lowest possible cost.

Liquid/bottled gas	On-site generation
Lease tank	Capital
N ₂	Energy
Transport	Maintenance
0.1-0.8 EUR/m ³ (*)	0.02-0.15 EUR/m ³ (**)
N ₂ 99.999%	N ₂ 95-99.999%

(*) Industry average, other price settings might apply.
(**) Depending on purity and electricity cost.

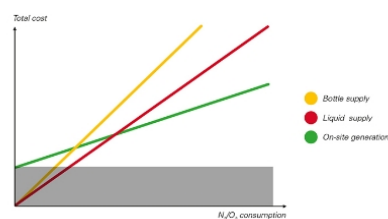
On-site vs. liquid or bottled gas

Your own independent supply of nitrogen.

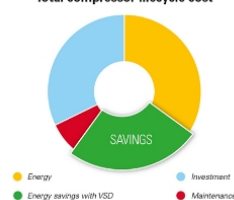
- Non-stop availability: 24 hours a day, 7 days a week.
- Significant economies of scale and lower operation costs: no rental charges, transport expenses and bulk user evaporation losses.
- No safety hazards when handling high-pressure cylinders.
- Easy integration within existing compressed air installations.

High reliability

- Proven technology: simple, reliable and durable.
- The exact purity your application demands.
- Low operating costs for extra cost-efficiency.
- World-class expertise in a unique market offer from compressed air to gas.



Total compressor lifecycle cost

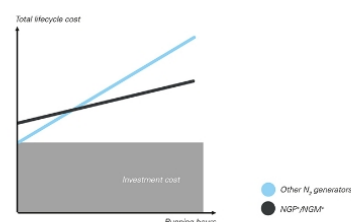


New generation PSA generators will change the market

Atlas Copco's latest PSA generators extend the advantages of the current range. Total lifecycle cost consists of the initial investment cost of the on-site installation, the service cost, and the energy cost. The NGP range has the lowest investment cost. However, with increasing running time, you are better advised to switch to the NGP+ range to reduce energy costs.

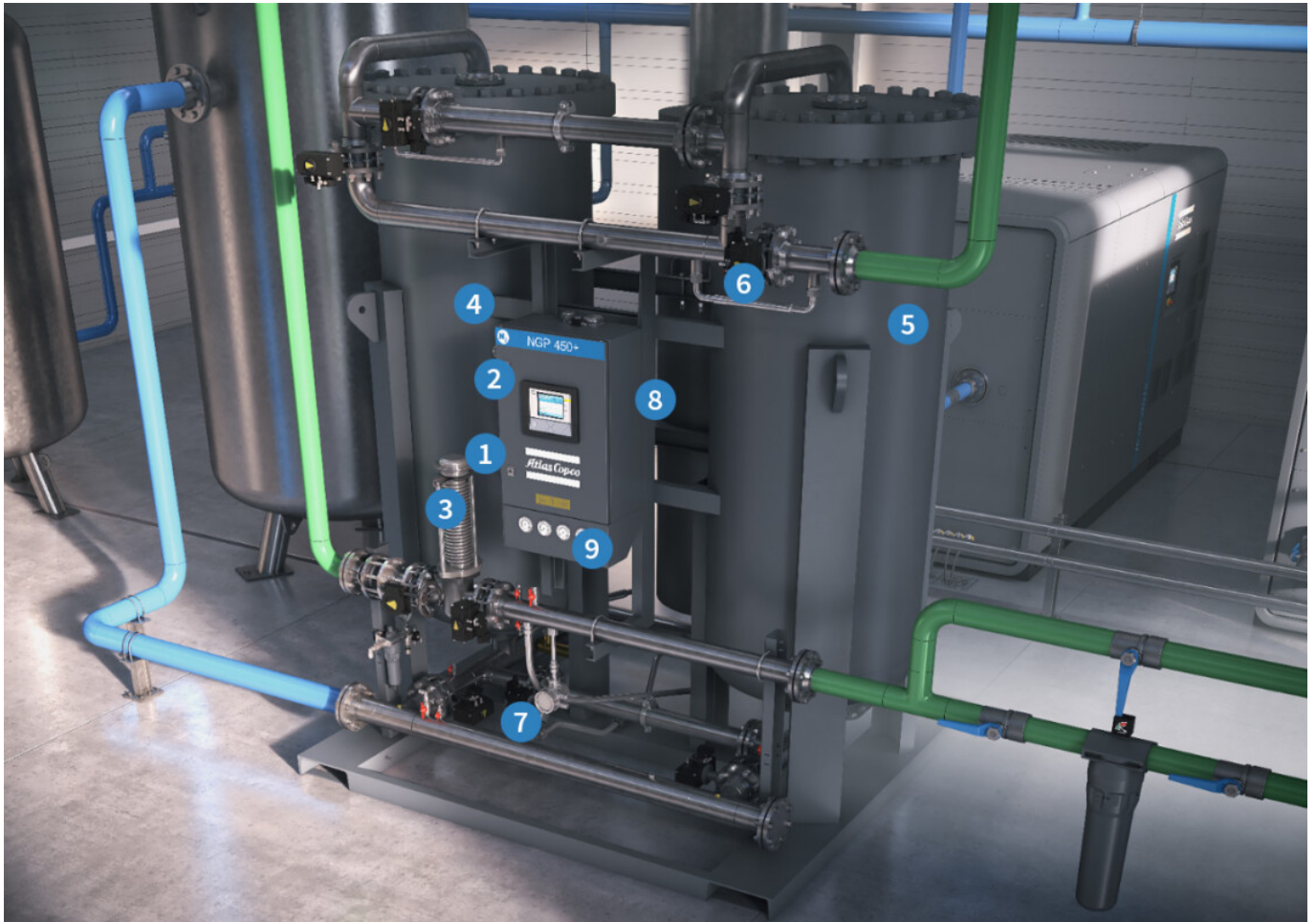
Total lifecycle cost

With an air factor* of 1.8 (at 95%) to 5.5 (at 99.999%) and a special cycle time modulation algorithm, the running cost of the new NGP+ can be reduced by 50%, compared to previous generations of nitrogen generators. The air factor is calculated by dividing the inlet air your system needs by the amount of N₂ it produces. The lower the air factor, the more efficient your nitrogen generation.



The complete high-flow nitrogen generator

In this chapter discover features of the NGP and their benefits.



Discover NGP⁺ features

1 Self-protective monitoring of the feed air quality

- Temperature
- Pressure
- Pressure dewpoint
- Automatic feed air blow-off in case of contamination



2 Electronics

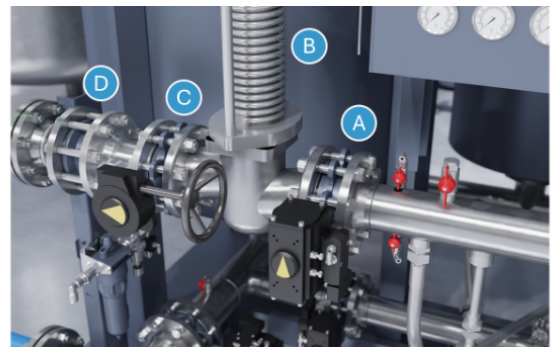
- Advanced Elektronikon® Touch controller with large HD color touchscreen offers easy gas purity selection, purity alarm, feed air monitoring and interception, and connectivity options.
- Automatic start-up and stand-by mode allow for easy operation and avoid energy waste.
- Application protection system ensures only gas that meets the minimum purity requirement will reach your application.
- The generator and its software are designed to utilize the premium Carbon Molecular Sieve adsorbent with maximum efficiency.



3 Valves

The valves of a PSA generator switch every minute on average. Because of their intensive use, these valves play an important role in the reliable operation of the generator and the continuity of your production. That is why the NGP⁺ features in-house qualified, heavy-duty valves with a long service life.

- **A: delivery valve** – 1. automated valve which will only open when the generator is operative and 2. The nitrogen purity is ok 3. The nitrogen mixing vessel threshold is above it's minimum threshold.
- **B: Pressure reducing valve** – 1. Matches the exact nitrogen pressure with the required demand 2. Stabilizes the nitrogen outlet pressure.
- **C: Manual flow control value** – Allows to adjust the nitrogen flow rate, based on the input from the flow transmitter, in order to keep the purity at level. Without this valve the purity would drop and the unit would go into flushing mode all the time.
- **D: Outlet check valve** – Prevents backflow from the process.



4 Oxygen analyzer

Oxygen analyzer with high accuracy and long service life for reliable purity measurement



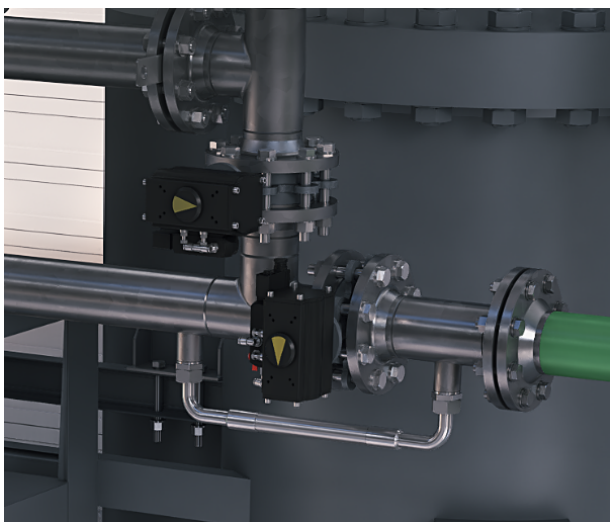
5 Highest quality adsorbent/CMS

- High density due to packed bed technology
- Top/bottom equalization
- Protected by dedicated pressure sensor
- Low air consumption



6 Automatic start-up

- Minimum pressure valve with bypass nozzle for fast start-up.
- Eliminates risk of overflow and carbon molecular sieves (CMS) damage.



7 Nitrogen flow meter

The nitrogen flow transmitter is used

- to visualize the N2 flow coming out of the generator
- as a mandatory input for the energy saving cycle extension at reduced N2 demand
- to stop the generator when there is no demand

High accuracy: Allows for precise tuning of the manual flow control valve

Rugged, solid metal housing IP66/67 and NEMA4X: Provides excellent protection of the internal electronics against humid environments.



8 Silencer

Significantly suppresses the noise generated during the following steps:

- The blow off and regeneration phase of one of the vessels
- The exhaust of feed air with too high moisture content
- The exhaust of produced nitrogen with incorrect purity

Absorptive type silencer: Provides excellent noise attenuation.

Due to low noise level the NGP can be used as a workplace unit (in permitted according to the safety measures).



9 Gauge panel

Visual indication of pressure of the inlet, adsorber vessels and outlet for process and service purposes

- A: Air inlet
- B: Vessel A
- C: Vessel B
- D: N2 receiver



Reliable and efficient technology

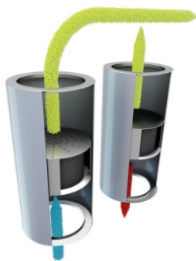
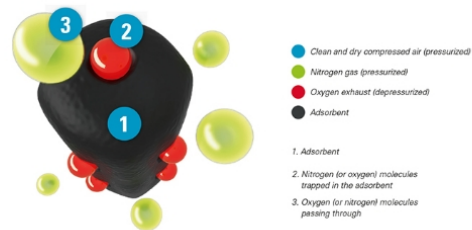
PSA reliable and proven

Based on Pressure Swing Adsorption (PSA) technology, Atlas Copco's NGP/NGP+ nitrogen generators provide a continuous flow of nitrogen at desired purity.

High purity nitrogen supply up to 99.999%

Atlas Copco's NGP/NGP+ nitrogen generators use Pressure Swing Adsorption technology to isolate nitrogen molecules from other molecules in compressed air. Oxygen, CO₂, water vapor and other gases are adsorbed. The result is virtually pure nitrogen at the outlet of the generator. The NGP/NGP+

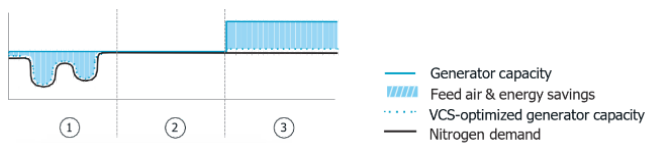
Series is a very cost-efficient source of nitrogen used in various industries like food and beverage, metal processing, electronics, and many others.



Variable cycle saver

Most users don't utilize the maximum capacity of their nitrogen generator all the time.

Our in-house developed Variable Cycle Saver (VCS) eliminates energy waste during lower demand and in colder temperatures, giving you up to 40% additional energy savings.



1. Low load: When there is less demand for nitrogen, VCS optimizes the PSA cycle to reduce the generator capacity and thus the feed air consumption to what is needed to generate the lower volume.

2. Full load: The generator is sized for reliable production at full load in hot temperatures (if applicable). In these conditions, VCS is not needed.

3. Seasonal efficiency: At full load in cold conditions, a nitrogen generator works more efficiently, increasing its capacity. Here, the VCS of the NGP+ will also kick in to reduce feed air and energy costs.

Monitoring and control

Elektronikon® MK5 Touch

The Elektronikon® unit controller is specially designed to maximize the performance of your compressors and air treatment equipment under a variety of conditions. Our solutions provide you with key benefits such as increased energy efficiency, lower energy consumption, reduced maintenance times and less stress... less stress for both you and your entire air system.



Intelligence is part of the package

High resolution color display gives you an easy-to-understand readout of the equipment's running conditions.

- Clear icons and intuitive navigation provide you fast access to all of the important settings and data.
- Monitoring of the equipment running conditions and maintenance status; bringing this information to your attention when needed.
- Operation of the equipment to deliver specifically and reliably to your compressed air needs.
- Built in remote control and notifications functions provided as standard, including simple to use ethernet based communication.
- Support for 31 different languages, including character-based languages.

Smartlink

● Monitor your compressed air installation with SMARTLINK:

Knowing the status of your compressed air equipment at all times is the surest way to achieve optimal efficiency and maximum availability.

- **Go for energy efficiency:** Customized reports on the energy efficiency of your compressor room.
- **Increase uptime:** All components are replaced on time, ensuring maximum uptime.
- **Save money:** Early warnings avoid breakdowns and production loss.



Service

To ensure you can meet your demands at all times while keeping operational costs under control, your equipment needs to run reliably and efficiently throughout its lifecycle. Investing in high quality machinery is a first logical step. The second crucial step is having the right maintenance solution.

Longer lifetime with proper care

When you take good care of equipment, it lasts a lifetime and perform in the most efficient way possible. Compressed air and nitrogen are vital components of your production process. That is why regular and careful maintenance is important to ensure both the reliability of your system and the quality of your compressed air.

The Atlas Copco Service Organization is here to assist you. We take care of your compressed air needs, so that you can focus on your operations.



A complete service portfolio

Every component of your onsite nitrogen system is essential for performance. Atlas Copco provides a full range of service products, from Genuine Parts to Uptime Guarantee contracts, designed and tested to ensure reliability, long life, and energy efficiency. Remote monitoring and optimization services help maximize efficiency, while expert maintenance reduces breakdown risks and production losses.

Trained and dedicated service technicians

With over 5,000 certified Service Technicians worldwide, trained in our dedicated academies, we guarantee expert support for your equipment. We continually invest in their skills through ongoing training and updates on the latest product developments and maintenance methods.



Technical specifications

Type		Nitrogen capacity											Dimensions (W x D x H)		Weight	
		95%	96%	97%	98%	99%	99.50%	99.90%	99.95%	99.99%	99.995%	99.999%	mm	in	kg	lbs
NGP 450+	Nm³/h	970	876	787	680	557	471	337	258	197	176	127	2703 x2100 x3028	106x83x119	5687	12538
	Scfm	571		304	400	324	272	198	152	116	104	75				
NGP 550+	Nm³/h	1187	1073	963	833	682	577	412	315	242	216	155	2780 x2100 x3022	107x83x119	6403	14116
	Scfm	699	632	567	490	401	340	242	185	142	127	91				
NGP 650+	Nm³/h	1421	1284	1152	997	816	690	493	377	289	258	186	2880 x2100 x3025	113x83x119	7360	16226
	Scfm	836	756	678	587	480	406	290	222	170	152	109				
NGP 800+	Nm³/h	1780	1608	1444	1249	1023	865	618	473	362	323	232	3684 x3121 x3987	145x123x157	8755	19301
	Scfm	1048	946	850		735		509	278	213	190	137				
NGP 1000+	Nm³/h	2258	2040	1831	1584	1298	1097	784	600	459	410	295	3773 x3121 x4211	149x123x166	10619	23411
	Scfm	1329	1201	1078	932	764	646	461	353	270	241	174				
NGP 1300+	Nm³/h	2871	2594	2329	2014	1650	1395	996	762	584	521	375	3860 x3122 x4423	152x123x174	12368	27267
	Scfm	1690	1527	1371	1185	971	821	586	449	344	307	221				
NGP 1600+	Nm³/h	3352	3029	2719	2352	1927	1628	1164	890	681	608	437	4430 x3365 x4892	174x132x193	16750	36927
	Scfm	1944	1757	1577	1364	1117	944	675	515	394	352	253				
NGP 2000+	Nm³/h	3993	3608	3239	2801	2295	1940	1386	1060	811	724	521	4480 x3515 x5036	176x138x198	18750	41337
	Scfm	2316	2092	1878	1625	1331	1125	804	613	470	419	301				
NGP 2400+	Nm³/h	4787	4325	3882	3358	2751	2325	1661	1271	973	868	624	4600 x3520 x5200	181x139x205	2500	5512
	Scfm	2776	2508	2251	1948	1595	1348	963	735	563	502	361				
NGP 2800+	Nm³/h	5791	5233	4697	4063	3328	2813	2010	1537	1177	1050	756	4770 x3990 x5116	188x157x201	30750	67792
	Scfm	3358	3035	2724	2356	1930	1631	1166	890	681	608	437				

Performance reference conditions:

- Compressed air effective inlet pressure: 7 bar(g)/102 psi(g)
- Ambient/inlet air temperature: 20°C/68°F
- Inlet air quality according to ISO 8573-1:2010

Flow unit reference conditions:

- Nm³/h: 20°C – 1 bar(a) – 0% RH
- Scfm: 68°F – 14.5 psi(a) – 0% RH

General notes:

- Nitrogen purity expressed as 100% minus oxygen content
- Nitrogen capacity can vary up to +/- 5%
- Outlet nitrogen quality according to ISO 8573-1:2010

Options:

- Low ambient temperature settings (-10°C/14°F)
- Electrical cabinet according to IP65/NEMA 4X
- Room oxygen alarm (wall mount)

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