

**Gardner**  
**Denver**

# Modular Nitrogen Generators

Nitrogen purity 95% to 99.999%  
GDNP Series



Ultra-high purity

## Continuous source of high purity on-site nitrogen gas

Nitrogen is a dry, inert gas which is used in many commercial and industrial applications to improve quality or where oxygen may be harmful to the product or processes.


With traditional methods of gas supply such as liquid or bottled nitrogen, users are often responsible for hidden costs such as rental fees, refill and delivery surcharges, order processing charges as well as environmental fees.

Nitrogen generators begin with clean, dry compressed air to create a continuous supply of high purity nitrogen. Generating nitrogen in-house is a cost-effective and reliable alternative to the use of cylinder or liquid nitrogen across a wide range of applications.

### Multi-bank design

The unique multi-bank design (GDN2009P to GDN2168P) enables additional generators to be added in the future as demand increases and provides redundancy for ease of maintenance. Your GDNP Series nitrogen generator can grow with your company.





"Taking control of a nitrogen supply in this way, rather than relying on a third party, can reduce costs considerably"

### When you purchase a GDNP Series nitrogen gas generator you can expect:

- New sleek design
- Larger HMI screen with multilingual electronic control system
- Upgraded zirconia oxygen analyser
- Upgraded internal stainless steel pipework with increased diameter and reduced complexity
- Reversible inlet and outlet blocks
- Durable laser cut symbols providing multilingual clarity
- Increased standard pressure rating to 12 barg
- Nitrogen quality certified to food grade E941 standard
- Payback typically between 6 to 24 months
- Easy installation with minimum cost and disruption
- Easier service capability
- User has complete control fulfilling nitrogen gas demand
- Generate as little or as much nitrogen gas as needed at a fraction of delivered gas cost





## Features are your **benefits**



### Guaranteed performance

- 100% function and performance factory tested
- PROTECT 10 warranty

### Rapid return on investment

- Significant cost savings over cylinder or liquid supply provides a typical return on investment of less than 24 months
- Ecomode energy savings control reduces energy consumption during periods of low demand



### Fits any application

- Maximum design operating pressure of 16 barg available design quality
- **Mass flow controller** - ensures correct application pressure and flow
- **Integral oxygen analyser** - continuously measures and guarantees gas quality
- **Purity guarantee valve** - automatically ensures gas meets desired specifications
- **Remote monitoring** - enables connection to proprietary remote management and generator control systems



### Easy to install

- The compact design allows installation in spaces too small for twin tower generator systems safe and reliable
- Eliminates the safety hazards of transporting and storing pressurised gas cylinders or liquid nitrogen easy to maintain
- Innovative piston valves significantly reduce maintenance schedules and minimise downtime
- Environmentally friendly
- Reduces carbon footprint by eliminating gas delivery to your facility

"Significant cost savings over cylinder or liquid supply provides a typical return on investment of less than 24 months."

## How it works

The technologically advanced Gardner Denver nitrogen generator operates on the Pressure Swing Adsorption (PSA) principle to produce a continuous uninterrupted stream of nitrogen gas from clean dry compressed air. Dual chamber extruded aluminium columns are filled with Carbon Molecular Sieve (CMS). Joined via an upper and lower manifold, the high density filled columns produce a dual bed system. After a pre-set time the control system automatically switches the beds. One bed is always online generating nitrogen while the other is being regenerated.

During regeneration, the oxygen that has been collected in the CMS stage and the moisture that has been collected in the optional integrated dryer stage are exhausted to atmosphere. A small portion of the outlet nitrogen gas is expanded into the bed to accelerate the regeneration process.



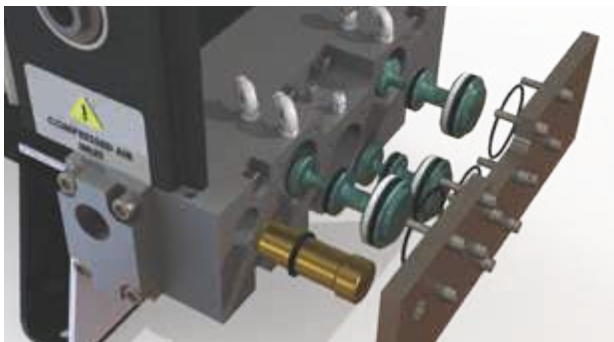
- A** Clean compressed air enters the inlet into GDNP Series unit where the inlet valves direct the flow to either the left or right column sets
- B** After passing through the inlet valve, the compressed air enters one side of the manifold under the extruded columns
- C** The compressed air then flows up through the Carbon Molecular Sieve (CMS) beds where oxygen and other trace gases are preferentially adsorbed and allows the nitrogen to pass through
- D** The nitrogen gas then passes through the supporting bed layer with integrated filter into the outlet manifold before exiting through the outlet valves
- E** The N<sub>2</sub> gas continues to the buffer vessel and nano F1 buffer vessel filter before returning to the GDNP Series unit for purity monitoring, flow and purity regulation



# On-site nitrogen generation **made easy**

## Reliable high performance valves

Inlet, outlet and exhaust are managed through unique integrated piston valves, which are designed for reliability, long service life and ease of maintenance. The generator also incorporates adjustable equalisation valves which smooth the column switch over, improve air/ N2 ratios and extend CMS life.



## PLC/HMI controlled operation

Each nitrogen generator is operated by a reliable PLC control system with digital and optional analog outputs for remote monitoring and alarm capabilities. The GDNP Series provides the operator with continuous indication of column A, column B, Inlet air & N2 outlet pressures and features an easy to-operate touch screen graphical human-machine interface (HMI) which offers valuable information including:

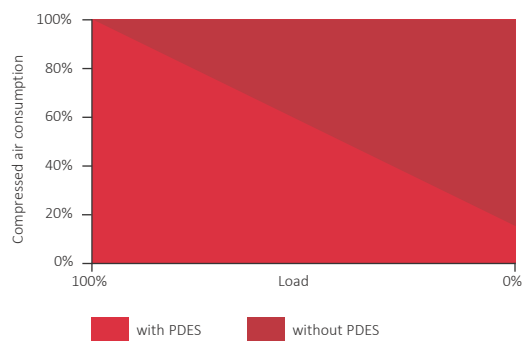
- Power on/off
- Inlet & outlet pressure
- Service required
- O2 purity
- Run hours



## Communication

With a small software change, full communication protocols including modbus, profibus and other building management system connections can be achieved. This is via an RS485 or ethernet RJ45 port. There is an upgraded SD card recording the performance of the generator and that data can be downloaded to any PC for analysis. Purity dependent energy saving (PDES).

With the optional employment of 2 oxygen analysers, the PDES option allows additional energy saving to be attained by keeping the purity within a narrow band of the required value. This is achieved by elongating the adsorption cycle and consequently saving valuable compressed air and nitrogen consumed by the generator during column changeover.





## Technical data

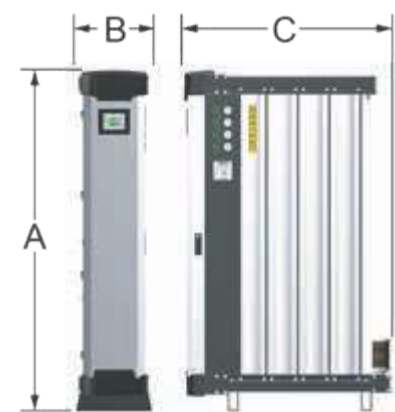
### Nitrogen purity at the outlet (maximum oxygen content)\*

Generator model	Rated outlet flow <sup>1)</sup>	99.999%	99.995%	99.99%	99.975%	99.95%	99.9%	99.5%	99%	98%	97%	96%	95%	Dimensions L x W x H mm	Approx. weight kg
		10 ppm	50 ppm	100 ppm	250 ppm	500 ppm	0.10%	0.50%	1%	2%	3%	4%	5%		
GDN2009P	Nm <sup>3</sup> /h	0.9	1.7	2.0	2.5	3.0	3.6	5.2	5.8	7.3	8.3	9.5	10.3	1223 x 400 x 605	161
GDN2017P	Nm <sup>3</sup> /h	1.8	3.4	4.0	5.0	6.0	7.2	10.4	11.6	14.5	16.7	19.0	20.6	1223 x 400 x 773	188
GDN2026P	Nm <sup>3</sup> /h	2.7	5.1	6.0	7.5	9.0	10.8	15.6	17.3	21.8	25.0	28.5	30.9	1223 x 400 x 941	241
GDN2032P	Nm <sup>3</sup> /h	5.1	7.2	8.9	10.0	11.4	13.2	18.9	21.0	26.4	30.3	34.5	37.5	1823 x 400 x 773	253
GDN2047P	Nm <sup>3</sup> /h	7.7	10.8	12.6	15.0	17.1	19.8	28.4	31.5	39.6	45.5	51.8	56.3	1823 x 400 x 941	336
GDN2063P	Nm <sup>3</sup> /h	10.2	14.4	16.8	20.0	22.8	26.4	37.8	42.0	52.8	60.6	69.0	75.0	1823 x 400 x 1109	418
GDN2095P	Nm <sup>3</sup> /h	15.3	21.6	25.2	30.0	34.2	39.6	56.7	63.0	79.2	90.9	103.5	112.5	1823 x 400 x 1445	640
GDN2126P	Nm <sup>3</sup> /h	20.4	28.8	33.6	40.0	45.6	52.8	75.6	84.0	105.6	121.2	138.0	150.0	1823 x 400 x 1781	748
GDN2145P	Nm <sup>3</sup> /h	23.5	33.1	38.6	46.0	52.4	60.7	86.9	96.6	121.4	139.4	158.7	172.5	1823 x 400 x 2117	913
GDN2168P	Nm <sup>3</sup> /h	27.2	38.4	44.9	53.3	60.9	70.5	100.9	112.1	141.0	161.8	184.2	200.3	1823 x 400 x 2453	1079
Air Factor		6.8	5.1	4.6	3.6	3.5	3.4	2.8	2.7	2.4	2.2	2.1	2.0		

Specifications	
Design operating pressure range	6 - 12 barg <sup>2)</sup>
Design operating temperature range	5 - 50°C
Recommended operating temperature	5 - 25°C
Maximum inlet particulate	0.1 micron
Maximum inlet oil content	0.01ppm <sup>4)</sup>
Recommended inlet dew point	-40°C PDP <sup>3)</sup>
Supply voltage	100 - 240 VAC (50 or 60Hz)
Power rating	72W

Pressure correction factors <sup>5)</sup>							
Inlet air pressure (barg)	6	7	8	9	10	11	12
Correction factor	0.88	1.00	1.10	1.20	1.30	1.40	1.50

Temperature correction factors <sup>5)</sup>										
Inlet temperature (°F)	41	50	59	68	77	86	95	104	113	122
Inlet temperature (°C)	5	10	15	20	25	30	35	40	45	50
Correction factor	0.8	0.9	0.94	1.00	1.00	0.98	0.95	0.90	0.85	0.72



GDN2009P to GDN2168P

<sup>1)</sup> At 7 barg inlet pressure and 20- 25°C inlet temperature. For outlet flow at all other conditions refer to the correction factors above or contact Gardner Denver

<sup>2)</sup> 16 barg is available upon request. Consult factory

<sup>3)</sup> For low purity applications only

<sup>4)</sup> Including oil vapor

<sup>5)</sup> To be used as a rough guide only. All applications should be confirmed by Gardner Denver. Contact Gardner Denver for sizing assistance

<sup>6)</sup> Technical specifications subject to change without notice.

## Global Expertise

The GD rotary screw compressor range from 2.2 – 500 kW, available in both variable and fixed speed compression technologies, are designed to meet the highest requirements which the modern work environment and machine operators place on them.



The oil-free EnviroAire range from 15 – 315 kW provides high quality and energy efficient compressed air for use in a wide range of applications. The totally oil-free design eliminates the issue of contaminated air, reducing the risk and associated cost of product spoilage and rework.



A modern production system and process demands increasing levels of air quality. Our complete **Air Treatment Range** ensures the highest product quality and efficient operation.



Compressor systems are typically comprised of multiple compressors delivering air to a common header. The combined capacity of these machines is generally greater than the maximum site demand. To ensure the system is operated to the highest levels of efficiency, the **GD Connect** air management system is essential.



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[www.gardnerdenver.com/gdproducts](http://www.gardnerdenver.com/gdproducts)

For additional information please contact Gardner Denver or your local representative.  
Specifications subject to change without notice.