

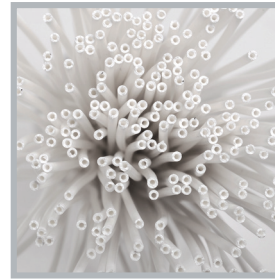
nano N₂ plus nitrogen generators

Nitrogen is a dry, inert gas which is used in a wide range of applications where oxygen may be harmful to the product or processes. Nitrogen generators use regular compressed air to deliver a continuous supply of high purity nitrogen - offering a cost effective and reliable alternative to the use of cylinder or liquid nitrogen across a wide range of applications.

The advanced nano N₂ plus range of nitrogen generators use integrated Adsorbent Media Tube (AMT) dryer cartridges to provide dehydration of the compressed air prior to separation. This innovative feature (patent pending) eliminates the need for a separate desiccant dryer saving up to 20% purge loss, significantly reducing capital and installation costs and reducing overall pressure drop by 10 psig or more over traditional nitrogen generation systems.

A few of the many industries making the switch to nano N₂ plus nitrogen generators include:

- food (MAP)
- beverage (bottling)
- plastics (PET)
- pharmaceutical (product transfer)
- chemicals (blanketing)
- laser metal cutting (burring reduction)
- fire prevention (eliminating combustion)
- electronics (wave soldering)



Adsorbent Media Tubes (AMT)



reliability is built in... and backed by a 2 year warranty



scan this tag for a technical paper explaining the many advanced features of the nano N₂ plus range of nitrogen generators and its Adsorbent Media Tube (AMT) cartridges

benefits - get more for your money

guaranteed performance

- reliable performance based on decades of experience with pressure swing adsorption technology
- 100% function and performance tested at the factory
- 2 year warranty

rapid return on investment

- significant cost savings over cylinder or liquid supply provides a typical return on investment of less than 24 months

environmentally friendly

- lower air consumption and refined controls provide greater energy efficiency
- reduces carbon footprint by eliminating gas delivery to your facility

safe & reliable

- eliminates the safety hazards of transporting and storing pressurized gas cylinders or liquid nitrogen

easy to install

- the compact design allows installation in spaces too small for twin tower generator systems

easy to maintain

- integrated Adsorbent Media Tube (AMT) dryer cartridges eliminate the need for an external dryer of any type
- integrated exhaust silencers require no maintenance or replacement and ensure proper performance
- advanced controls simplify operation and require minimal training
- innovative valves significantly reduce maintenance schedules and minimize downtime

fits any application

- available in a wide range of flow rates and purities (oxygen contents from 5% to less than 10 ppm)
- can handle any power supply from 120 to 240 VAC in 50 or 60 Hz, or 24VDC - with just the flick of a switch

sizing & specifications

generator model	rated outlet flow (l)	nitrogen purity at the outlet (maximum oxygen content)											dimensions (inches)			approx. weight lbs	
		99.999% (10 ppm)	99.995% (50 ppm)	99.99% (100 ppm)	99.75% (250 ppm)	99.95% (500 ppm)	99.9% (0.10%)	99.5% (0.50%)	99% (1%)	98% (2%)	97% (3%)	96% (4%)	95% (5%)	A	B		C
NNG 1110	scfh	21	35	56	67	74	88	134	159	194	230	265	282	49	16	12	176
	m ³ /hr	0.6	1.0	1.6	1.9	2.1	2.5	3.8	4.5	5.5	6.5	7.5	8.0				
NNG 2110	scfh	42	71	113	134	148	177	268	318	388	459	530	565	47	16	26	242
	m ³ /hr	1.2	2.0	3.2	3.8	4.2	5.0	7.6	9.0	11.0	13.0	15.0	16.0				
NNG 3110	scfh	64	106	169	201	222	265	403	477	583	689	794	847	47	16	32	374
	m ³ /hr	1.8	3.0	4.8	5.7	6.3	7.5	11.4	13.5	16.5	19.5	22.5	24.0				
NNG 2130	scfh	71	134	191	254	304	318	501	636	777	918	1024	1130	71	16	26	365
	m ³ /hr	2.0	3.8	5.4	7.2	8.6	9.0	14.2	18.0	22.0	26.0	29.0	32.0				
NNG 3130	scfh	106	201	286	381	455	477	752	953	1165	1377	1536	1695	71	16	32	490
	m ³ /hr	3.0	5.7	8.1	10.8	12.9	13.5	21.3	27.0	33.0	39.0	43.5	48.0				
NNG 4130	scfh	141	268	381	508	607	636	1003	1271	1554	1836	2048	2260	71	16	39	610
	m ³ /hr	4.0	7.6	10.8	14.4	17.2	18.0	28.4	36.0	44.0	52.0	58.0	64.0				
NNG 6130	scfh	212	403	572	763	911	953	1504	1907	2330	2754	3072	3390	71	16	52	852
	m ³ /hr	6.0	11.4	16.2	21.6	25.8	27.0	42.6	54.0	66.0	78.0	87.0	96.0				
NNG 8130	scfh	268	510	725	966	1154	1208	1905	2415	2952	3489	3891	4294	71	16	65	1100
	m ³ /hr	7.6	14.4	20.5	27.4	32.7	34.2	54.0	68.4	83.6	98.8	110	122				
NNG 10130	scfh	328	624	887	1182	1412	1478	2332	2955	3612	4269	4762	5254	71	16	79	1350
	m ³ /hr	9.3	17.7	25.1	33.5	40.0	41.9	66.0	83.7	102	120.9	135	149				
NNG 12130	scfh	381	725	1030	1373	1640	1716	2708	3432	4195	4958	5530	6102	71	16	92	1600
	m ³ /hr	10.8	20.5	29.2	38.9	46.4	48.6	76.7	97.2	119	141	157	173				

specifications

design operating pressure range	87 - 145 psig ⁽²⁾
design operating temperature range	50 - 104°F
maximum inlet particulate	0.1 micron
maximum inlet dew point	80°F PDP
maximum inlet oil content	0.01 ppm ⁽³⁾
maximum outlet dew point	-40°F PDP ⁽⁴⁾
supply voltage	120 - 240 VAC (50 or 60Hz) or 24VDC

pressure correction factors ⁽⁵⁾

operating pressure (psig)	90	100	115	130	145
correction factor	0.90	1.00	1.10	1.20	1.25

temperature correction factors ⁽⁵⁾

inlet temperature (°F)	50 - 75	85	95	105
correction factor at 10 ppm O ₂	1.00	0.90	0.81	0.66
correction factor at 50 - 500 ppm O ₂	1.00	0.98	0.86	0.75
correction factor at 0.1 to 5.0% O ₂	1.00	0.98	0.95	0.90

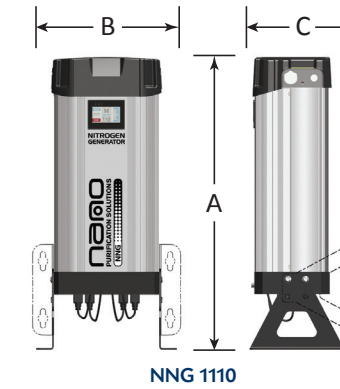
⁽¹⁾ at 100 psig inlet pressure and 68 - 77°F inlet temperature. For outlet flow at all other conditions refer to the correction factors above or contact support@n-psi.com

⁽²⁾ for pressures above 145 psig contact support@n-psi.com

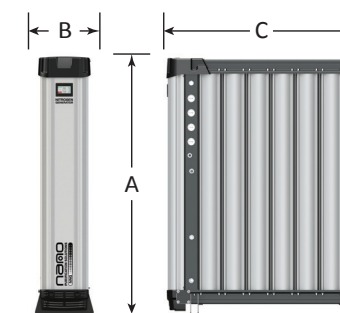
⁽³⁾ including oil vapor

⁽⁴⁾ outlet gas dew point is < -76°F (-60°C) in high purity applications

⁽⁵⁾ to be used as a rough guide only. All applications should be confirmed by n-psi. Contact us for sizing assistance



NNG 1110



NNG 2110 to 12130

nano-purification solutions
11330 vanstory drive
huntersville, nc 28078
usa

tel: (704) 897-2182
fax: (704) 897-2183
email: support@n-psi.com
web: www.n-psi.com



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nano



ultra-high purity
nitrogen generators

nitrogen purity: 95% to 99.999%

N₂ plus

ultra-high purity nitrogen generators

nitrogen purity: 95% to 99.999%

N₂^{plus}

Leading edge technology and more than 100 years of experience...nano-purification solutions, your world-class provider of state-of-the-art compressed air and gas solutions to industry.

Our commitment at n-psi is to work alongside our customers and provide unique solutions with the highest quality products to solve your specific challenges.

A wealth of experience and leading edge products are only part of the equation. n-psi realize that world-class customer service is the most important component to any successful business.

Experience. Customer. Service...n-psi

dry and pure

Nitrogen is used in many commercial and industrial applications to improve the quality of a product or process, or as a safety measure to prevent combustion. Liquid or bottled nitrogen delivery and storage can be expensive, unreliable and a safety concern. Nitrogen generators allow users to produce nitrogen in-house simply and inexpensively using an existing compressed air system.

n-psi recognizes the importance of having a safe, reliable and cost effective supply of high-purity nitrogen. We have developed the N₂^{plus} nitrogen generator to meet the increasing demand for high quality complete packaged solutions which save energy and time while fulfilling the needs of their intended application.



design

Our experienced team of design engineers are always looking for new and unique technologies and products to bring you the highest level of performance and lowest overall operating cost.



research & development

Our R&D team endeavor to provide solutions that go beyond developing an existing product. They are continually researching new technologies which can provide unique advantages over competitive offerings.



manufacture

The reliable and energy saving nano N₂^{plus} nitrogen generators are manufactured in a state of the art facility to the highest standards of build quality to ensure reliability and high levels of performance.

nano N₂^{plus} nitrogen generators

integrated AMT dryer cartridge

Traditional nitrogen generators often require installing and operating an external desiccant dryer. The innovative nano N₂^{plus} nitrogen generators feature an integrated Adsorbent Media Tube (AMT) dryer cartridge which eliminates the need for a pre-treatment dryer of any type. The integrated drying system reduces purge loss by approximately 20% and reduces pressure drop by 10 psi or more, providing significant energy savings over a traditional generator system.

ecomode energy saving control

This unique control feature utilizes an outlet pressure monitor to reduce energy consumption during periods of low demand to ensure a continuous uninterrupted nitrogen supply while minimizing power consumption.

PLC controlled operation

Each N₂^{plus} nitrogen generator is operated by a reliable PLC control system with digital and analog outputs for remote monitoring and alarm capabilities. Includes an easy-to-operate touch screen graphical interface which offers valuable features including 'power on', 'hours run', 'oxygen purity', 'pressure', 'online column' and 'service required' indicators. In addition, four pressure gauges provide the operator with continuous indication of column A, column B, air inlet and nitrogen outlet pressures.

multi-bank design

The unique multi-bank design (NNG 2110 to NNG 12130) enables additional generators to be added in the future as demand increases. Your N₂^{plus} nitrogen generator can grow with your company.

reliable high performance valves

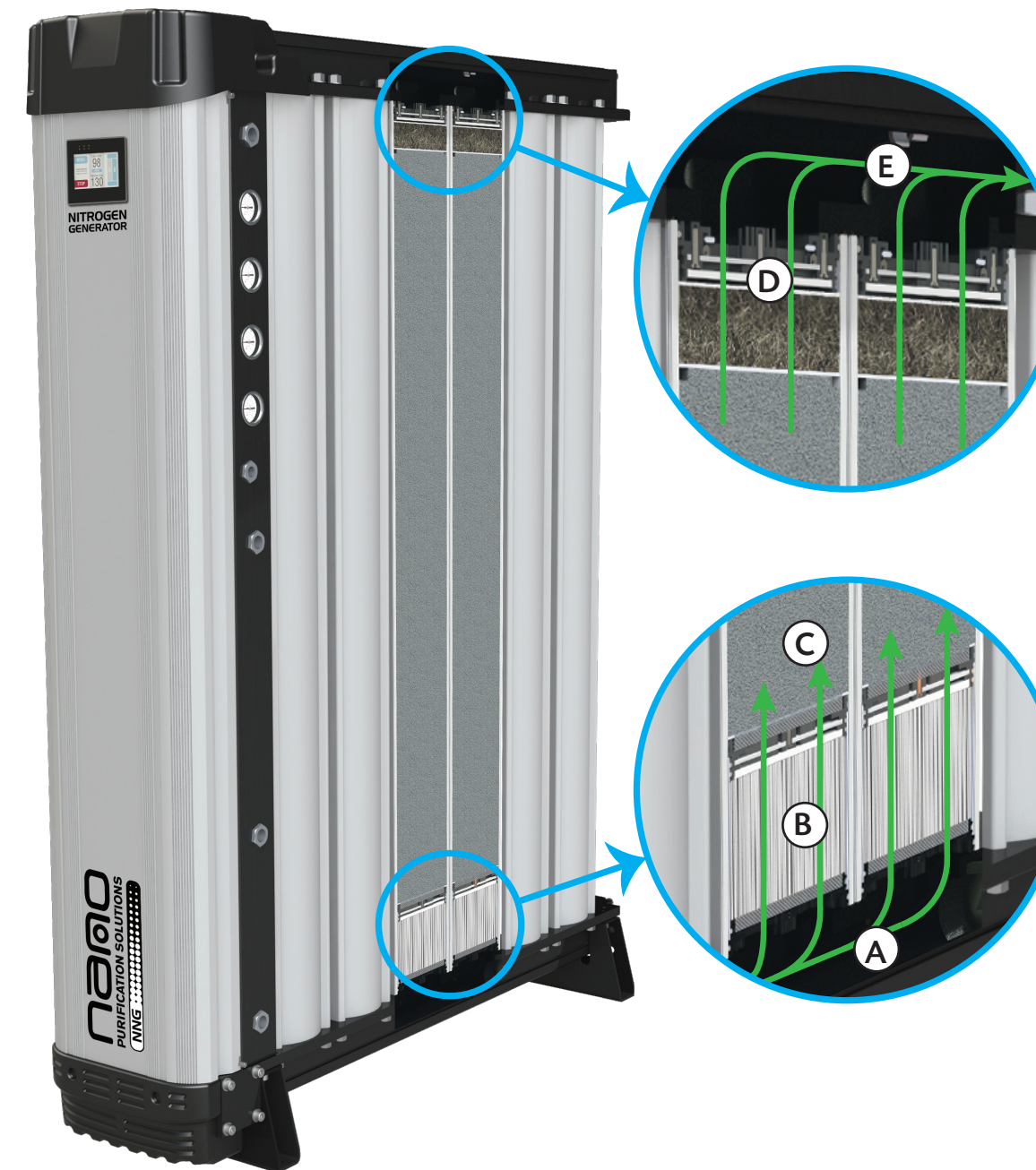
Inlet, outlet and exhaust are managed through coaxial flow valves integrated into the upper and lower manifolds. These low maintenance valves provide unrestricted flow capacity. They are designed for durability, ease of maintenance and long service life and are backed by a comprehensive two year warranty.

maximum corrosion protection

High tensile aluminum columns are first alclad and then powder coated to provide maximum protection for corrosive environments.

oxygen analyzer

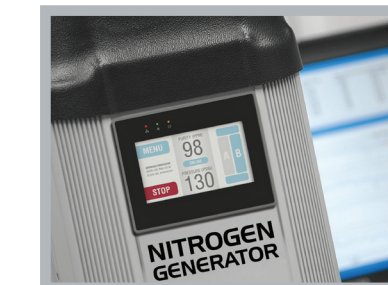
A built in oxygen analyzer continuously monitors the oxygen concentration in the nitrogen stream. The analyzer is incorporated into the PLC controls to guarantee downstream purity levels are consistently achieved and maintained.



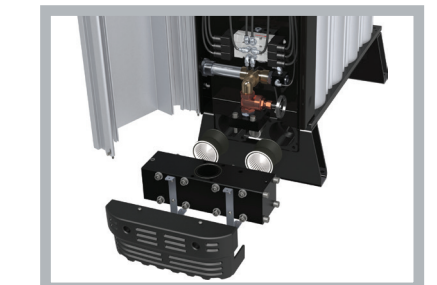
A	inlet manifold
B	Adsorbent Media Tube (AMT) dryer cartridges
C	Carbon Molecular Sieve (CMS)
D	integrated bed support layer
E	outlet manifold



Adsorbent Media Tubes (AMT)



PLC controls with touch screen interface



reliable & durable coaxial flow valves

system performance

The technologically advanced nano N₂^{plus} nitrogen generator operates on the Pressure Swing Adsorption (PSA) principle to produce a continuous uninterrupted stream of nitrogen gas from clean dry compressed air.

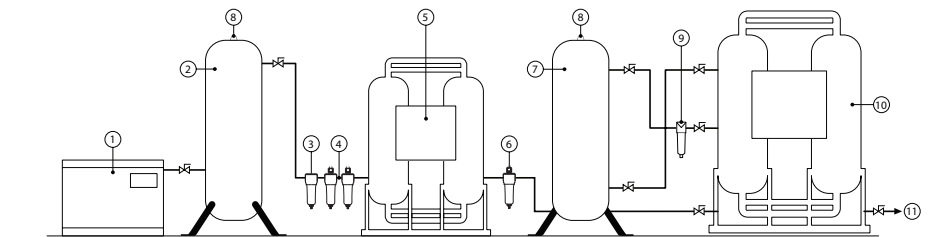
Pairs of dual chamber extruded aluminum columns are fitted with Adsorbent Media Tube (AMT) dryer cartridges and filled with Carbon Molecular Sieve (CMS). Joined via an upper and lower manifold, the high density filled columns produce a two bed system.

Compressed air enters through the inlet manifold (A) to the bottom of the 'online' bed and flows up through the AMT stage (B) drying the compressed air. The clean and dry air then flows up through the CMS stage (C) where oxygen and other trace gases are preferentially adsorbed allowing the nitrogen to pass through. The nitrogen then passes through the supporting bed layer (D) and outlet manifold (E) to the buffer vessel and a nano F¹ buffer vessel filter before re-entering the N₂^{plus} nitrogen generator for purity monitoring.

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 AMT stage are exhausted to atmosphere. A small portion of the outlet nitrogen gas is expanded into the bed to accelerate the regeneration process.

typical nitrogen generator installation



- 1 compressor
- 2 wet air receiver
- 3 water separator
- 4 pre filters
- 5 dryer *
- 6 dust filter *
- 7 buffer vessel
- 8 pressure relief valves
- 9 buffer vessel filter
- 10 nitrogen generator
- 11 nitrogen outlet

* not required with nano N₂^{plus}

nano N₂^{plus} installation

