

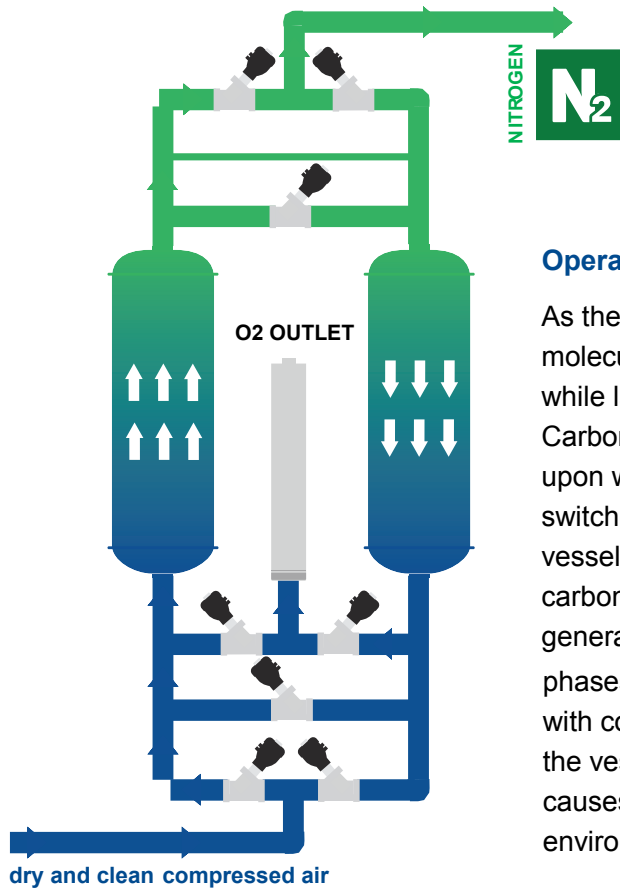
ADSORPTION NITROGEN GENERATORS

NGS-A generators produce nitrogen using adsorption in a carbon bed contained in the generator vessels. Generators are designed to separate nitrogen from other air components which consists of approximately 78% nitrogen, 21% oxygen and trace gases with 0.9% argon.

NGS nitrogen generators are manufactured to meet individual customer requirements in terms of nitrogen purity, target location (container design is available). This allows optimisation of costs while effectively substituting traditional nitrogen supply methods in gas cylinders or as a liquid.



Adsorption Nitrogen Generators	NGS-A
Medium	compressed air
Working pressure	7 - 10 bar
Compressed air temperature	max. 40°C
Particulate matter in compressed air	< 0,01 µm
Oil content in compressed air	< 0,01 mg/m ³
Recommended compressed air dew point	+3°C
Ambient temperature	+5°C to +40°C
Nitrogen output	up to 1000 m ³ /h
Particulate matter in nitrogen	< 0,01 µm
Nitrogen purity	up to 99,999%



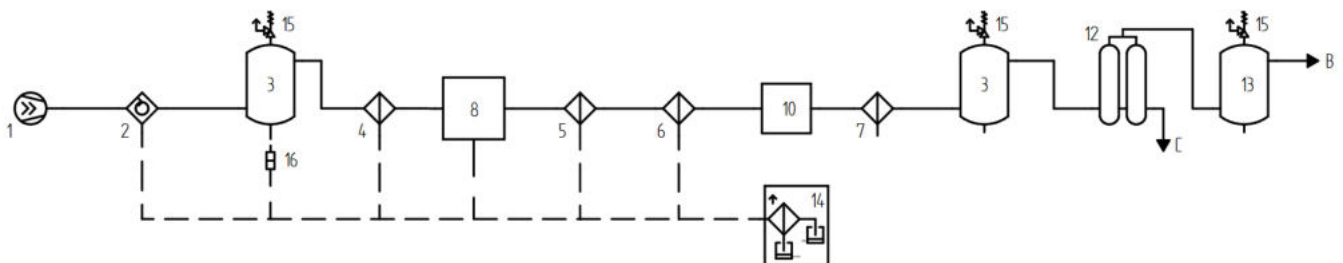
Operating principles

As the compressed air passes through the carbon molecular sieve, smaller oxygen molecules are trapped while larger nitrogen molecules flow to the exhaust. Carbon sieve adsorbs oxygen until it becomes saturated upon which it requires regeneration. The valves are switched and the compressed air is fed to the other vessel where oxygen is adsorbed. Two vessels with carbon bed allow continuous operation of the nitrogen generator by alternating adsorption and regeneration phases. The carbon bed is regenerated by purging it with compressed nitrogen. Additionally, pressure inside the vessel is lowered to atmospheric pressure which causes release of the adsorbed oxygen to the environment.

NGS-A generators are equipped with a set of compressed air filters ensuring removal of particulate matter and oil from compressed air. Additionally, units are also equipped with final dust filters cleaning nitrogen from any molecules which might have been released from the adsorption vessel.

To ensure maximum efficiency, operational safety and extended life of the generator it is recommended to maintain compressed air pressure dew point at +3°C.

Scheme of recommended nitrogen generation system:



- | | | |
|--------------------------|-----------------------------------|--------------------------------|
| 1. Screw compressor | 10. Carbon column | |
| 2. Cyclone separator | 12. Adsorption nitrogen generator | |
| 3. Compressed air vessel | 13. Compressed nitrogen vessel | |
| 4. Pre filter | 14. Oil-water separator | A - compressed air inlet |
| 5. Fine filter | 15. Safety valve | B - compressed nitrogen outlet |
| 6. Very fine filter | | C - oxygen-enriched air outlet |
| 7. Dust filter | | |
| 8. Refrigeration dryer | | |

Generator	Purity:	97%	98%	99%	99,5%	99,9%	99,99%	99,995%	99,999%
	Residual O ₂ (PPM):			10,000	5,000	1,000	100	50	10
NGS-A500	Capacity Nm ³ /h	13.3	11.9	8.9	7.6	4.8	2.4	1.8	1.3
	Comp. air factor	2,1	2.4	2.5	3.0	4.0	5.6	7.1	10.1
	Comp. air Nm ³ /h	28.4	27.9	22.7	22.6	18.9	13.3	12.7	13.1
	Comp. air m ³ /h	31.0	30.4	24.8	24.6	20.6	14.6	13.9	14.3
	Product vessel (l)	150	150	150	150	90	90	90	90
	Comp. air vessel (l)	150	150	150	150	150	150	150	150
NGS-A600	Capacity Nm ³ /h	16.9	15.6	12.5	9.4	6.2	3.2	2.5	1.8
	Comp. air factor	2,1	2.4	2.5	3.0	4.0	5.6	7.1	10.1
	Comp. air Nm ³ /h	36.3	36.7	31.8	27.8	24.8	17.8	17.7	18.2
	Comp. air m ³ /h	39.6	40.0	34.7	30.6	27.1	19.4	19.3	19.8
	Product vessel (l)	150	150	150	150	90	90	90	90
	Comp. air vessel (l)	270	270	270	270	270	270	270	270
NGS-A700	Capacity Nm ³ /h	25.3	23.5	18.7	14.1	9.4	4.8	3.6	2.4
	Comp. air factor	2,1	2.4	2.5	3.0	4.0	5.6	7.1	10.1
	Comp. air Nm ³ /h	54.3	55.1	47.7	41.6	37.4	26.7	25.5	24.2
	Comp. air m ³ /h	59.2	60.1	52.1	45.4	40.8	29.1	27.8	26.4
	Product vessel (l)	270	270	270	270	150	150	150	150
	Comp. air vessel (l)	270	270	270	270	270	270	270	270
NGS-A800	Capacity Nm ³ /h	39.7	35.2	28.1	21.9	12.5	6.2	4.8	3.2
	Comp. air factor	2,1	2.4	2.5	3.0	4.0	5.6	7.1	10.1
	Comp. air Nm ³ /h	85.1	82.7	71.7	64.7	49.6	35.0	33.9	32.32
	Comp. air m ³ /h	92.8	90.2	78.2	70.6	54.1	38.2	37.0	35.2
	Product vessel (l)	270	270	270	270	150	150	150	150
	Comp. air vessel (l)	500	500	500	500	500	500	500	500
NGS-A900	Capacity Nm ³ /h	59.3	53.3	46.1	37.4	23.0	11.6	8.8	5.8
	Comp. air factor	2,1	2.4	2.5	3.0	4.0	5.6	7.1	10.1
	Comp. air Nm ³ /h	127.0	125.0	117.7	110.7	91.4	65.0	62.2	58.6
	Comp. air m ³ /h	138.6	136.3	128.4	120.8	99.7	70.9	67.9	63.9
	Product vessel (l)	750	750	500	500	270	270	270	270
	Comp. air vessel (l)	750	750	750	750	500	500	500	500
NGS-A1000	Capacity Nm ³ /h	108.8	92.7	71.0	57.8	37.2	23.3	16.6	10.6
	Comp. air factor	2,1	2,2	2,6	2,9	3,3	4,7	5,2	6,7
	Comp. air Nm ³ /h	227.5	20.9	185.8	167.6	124.6	109.5	86.8	71.3
	Comp. air m ³ /h	248.3	227.0	20.4.7	182.7	136.1	119.9	94.6	77.7
	Product vessel (l)	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
	Comp. air vessel (l)	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
NGS-A1100	Capacity Nm ³ /h	126.3	107.1	86.6	72.3	47.7	27.6	20.8	14.1
	Comp. air factor	2,1	2,2	2,6	2,9	3,3	4,7	5,2	6,7
	Comp. air Nm ³ /h	264.2	240.2	228.9	209.4	159.7	129.9	108.4	94.5
	Comp. air m ³ /h	288.2	262.0	249.7	228.4	174.2	141.7	118.3	103.1
	Product vessel (l)	1,500	1,500	1,500	1,500	1,000	1,000	1,000	1,000
	Comp. air vessel (l)	1,500	1,500	1,500	1,500	1,000	1,000	1,000	1,000

Generator	Purity:	97%	98%	99%	99,5%	99,9%	99,99%	99,995%	99,999%
	Residual O ₂ (PPM):			10,000	5,000	1,000	100	50	10
NGS-A1200	Capacity Nm ³ /h	189.8	159.5	128.5	108.4	71.2	41.4	31.2	21.1
	Comp. air factor	2,1	2,2	2,6	2,9	3,3	4,7	5,2	6,7
	Comp. air Nm ³ /h	396.9	358.0	339.6	314.1	238.2	194.6	162.6	141.8
	Comp. air m ³ /h	432.9	390.5	370.4	342.6	259.8	212.3	177.3	154.6
	Product vessel (l)	2,000	2,000	1,500	1,500	1,500	1,000	1,000	1,000
	Comp. air vessel (l)	2,000	2,000	1,500	1,500	1,500	1,000	1,000	1,000
NGS -A1300	Capacity Nm ³ /h	234.4	204.7	159.8	133.7	90.4	50.0	38.1	26.2
	Comp. air factor	2,1	2,2	2,6	2,9	3,3	4,7	5,2	6,7
	Comp. air Nm ³ /h	490.3	459.5	422.2	387.5	302.5	235.1	198.7	176.4
	Comp. air m ³ /h	534.8	501.2	460.5	422.7	329.9	256.5	216.7	192.4
	Product vessel (l)	2,000	2,000	2,000	2,000	2,000	1,500	1,500	1,500
	Comp. air vessel (l)	2,000	2,000	2,000	2,000	2,000	1,500	1,500	1,500
NGS-A1400	Capacity Nm ³ /h	336.1	293.8	230.0	191.6	126.7	73.4	55.4	37.6
	Comp. air factor	2,1	2,2	2,6	2,9	3,3	4,7	5,2	6,7
	Comp. air Nm ³ /h	702.9	659.5	607.7	555.0	424.0	345.0	289.0	252.9
	Comp. air m ³ /h	766.7	719.4	662.8	605.4	462.5	376.3	315.3	275.9
	Product vessel (l)	3,000	3,000	2,500	2,000	1,500	1,500	1,000	1,000
	Comp. air vessel (l)	4,000	4,000	3,000	2,000	2,000	2,000	2,000	2,000
NGS-A1500	Capacity Nm ³ /h	398.4	348.8	273.5	227.7	150.0	87.1	65.8	44.5
	Comp. air factor	2,1	2,2	2,6	2,9	3,3	4,7	5,2	6,7
	Comp. air Nm ³ /h	833.5	782.9	722.6	659.7	501.9	409.0	343.3	299.6
	Comp. air m ³ /h	909.3	853.9	788.1	719.7	547.4	446.9	374.4	326.7
	Product vessel (l)	4,000	4,000	3,000	3,000	2,000	2,000	2,000	2,000
	Comp. air vessel (l)	4,000	4,000	4,000	4,000	3,000	3,000	3,000	3,000
NGS-A1600	Capacity Nm ³ /h	522.9	498.5	389.6	325.2	214.6	124.4	93.9	63.4
	Comp. air factor	2,1	2,2	2,6	2,9	3,3	4,7	5,2	6,7
	Comp. air Nm ³ /h	1,093.4	1,118.8	1,029.4	924.3	718.2	585.3	489.3	426.0
	Comp. air m ³ /h	1,192.7	1,220.3	1,122.8	1,027.8	783.4	638.3	533.7	464.6
	Product vessel (l)	6,000	6,000	6,000	4,000	4,000	3,000	3,000	3,000
	Comp. air vessel (l)	10,000	10,000	8,000	6,000	6,000	6,000	5,000	5,000
NGS-A1700	Capacity Nm ³ /h	823.3	720.3	563.3	469.9	309.8	179.2	135.6	92.1
	Comp. air factor	2,1	2,2	2,6	2,9	3,3	4,7	5,2	6,7
	Comp. air Nm ³ /h	1,721.9	1,616.7	1,488.4	1,361.4	1,036.6	842.8	707.1	619.0
	Comp. air m ³ /h	1,878.1	1,763.5	1,623.6	1,484.9	1,130.7	919.3	771.3	675.2
	Product vessel (l)	10,000	10,000	8,000	5,000	5,000	3,000	3,000	3,000
	Comp. air vessel (l)	10,000	10,000	10,000	8,000	8,000	6,000	6,000	6,000
NGS-A1800	Capacity Nm ³ /h	1,029.1	900.9	704.1	602.2	387.7	224.4	169.6	114.8
	Comp. air factor	2,1	2,2	2,6	2,9	3,3	4,7	5,2	6,7
	Comp. air Nm ³ /h	2,152.3	2,022.0	1,860.4	1,744.9	1,297.3	1,055.5	884.1	772.1
	Comp. air m ³ /h	2,347.7	2,205.6	2,029.3	1,903.2	1,415.1	1,151.4	964.3	942.2
	Product vessel (l)	10,000	10,000	10,000	6,000	6,000	4,000	4,000	4,000
	Comp. air vessel (l)	12,000	12,000	12,000	8,000	8,000	6,000	6,000	6,000
NGS -A1900	Capacity Nm ³ /h	1,234.9	1,080.6	845.0	722.8	465.5	269.8	204.2	138.6
	Comp. air factor	2,1	2,2	2,6	2,9	3,3	4,7	5,2	6,7
	Comp. air Nm ³ /h	2,582.7	2,425.3	2,232.7	2,094.2	1,557.7	1,268.8	1,064.2	931.8
	Comp. air m ³ /h	2,817.2	2,425.3	2,435.3	2,284.3	1,699.1	1,384.0	1,160.8	1,016.4
	Product vessel (l)	14,000	14,000	12,000	12,000	8,000	6,000	4,000	4,000
	Comp. air vessel (l)	16,000	16,000	16,000	12,000	12,000	8,000	8,000	8,000

Przedsiębiorstwo Produkcji Sprężarek Airpol Sp. z o.o.

ul. Nieszawska 15c, 61-021 Poznań, Poland, T. +48 61 650 45 67, e-mail airpol@airpol.com.pl

www.airpol.com.pl