

APPLICATION

Nitrogen generators of our GNA series are high-performance generators that convince with high purities and air factors that can hardly be matched. With the on-site generation of nitrogen, expensive costs due to the purchase of nitrogen are a thing of the past. They are used in numerous industries such as pharmaceuticals, laser cutting or the food industry - perfectly adapted to your individual needs.



FEATURES

The GNA nitrogen generators consist of two welded steel vessels. In addition, there is complete stainless steel piping. The control unit is also surrounded by a control cabinet made of steel. The two vessels are filled with activated carbon molecular sieve (CMS).

Our GNA nitrogen generators, like cold-regenerated adsorption dryers, use the pressure swing adsorption (PSA) principle. Adsorption and regeneration in the vessels take place in parallel alternately.

During adsorption, the pre-treated compressed air is fed through the vessel filled with CMS. The oxygen molecules accumulate on the surface of the CMS and are consequently removed from the compressed air stream. What remains is nitrogen, having the desired purity. It can now be passed on for further use via the outlet.

At the same time, regeneration takes place in the other vessel. First, the pressure in the container is relieved. This causes the oxygen molecules to detach from the CMS. Part of the nitrogen produced is diverted from the outlet and fed into the vessel as a flushing medium. This flushes the oxygen out of the vessel. Finally, the gas mixture escapes into the ambient air via a silencer. The CMS is now ready for adsorption once again.

Nitrogen purity is achieved by the respective contact duration with the CMS.

Our GNA are equipped with a Siemens S7 touch-screen control including a data logger and modbus TCP communication. The freely accessible valves facilitate an easy maintenance of the generator and an oxygen sensor that measures the purity is part of the standard scope of supply. The extraordinary efficiency is achieved by air factors that are very low and thus noticeably reduce the energy requirement.

Standard volume flows of up to 989 m³/h at 95% purity and 7 bar (g) are achieved.

In addition, our nitrogen generators can be upgraded with numerous options such as a molecular sieve protection or flow meter and a continuous purity control. We are happy to provide individual specifications and advice.

GNA Nitrogen Generator

Product data sheet

Product data sheet

GNA NITROGEN GENERATOR

BASIC DATA

| Type | volume | 95 % | 98,0 % | 99,0 % | 99,5 % | 99,9 % | 99,99 % | 99,999 % | 99,9995 % |
|--------|---------------------|--------|--------|--------|--------|--------|---------|----------|-----------|
| GNA2 | kg/h | 15,3 | 10,8 | 8,5 | 7,5 | 5,6 | 3,7 | 2,0 | 1,5 |
| | m ³ /h*1 | 13,2 | 9,3 | 7,3 | 6,5 | 4,8 | 3,2 | 1,7 | 1,3 |
| GNA4 | kg/h | 30,6 | 21,6 | 17,1 | 15,1 | 11,1 | 7,4 | 3,8 | 2,9 |
| | m ³ /h*1 | 26,4 | 18,6 | 14,7 | 13,0 | 9,6 | 6,4 | 3,3 | 2,5 |
| GNA6 | kg/h | 45,9 | 32,4 | 25,5 | 22,5 | 16,7 | 11,0 | 5,8 | 4,4 |
| | m ³ /h*1 | 39,6 | 27,9 | 22,0 | 19,4 | 14,4 | 9,5 | 5,0 | 3,8 |
| GNA9 | kg/h | 68,9 | 48,6 | 38,3 | 33,9 | 25,1 | 16,6 | 8,7 | 6,5 |
| | m ³ /h*1 | 59,4 | 41,9 | 33,0 | 29,2 | 21,6 | 14,3 | 7,5 | 5,6 |
| GNA12 | kg/h | 91,8 | 64,8 | 51,0 | 45,1 | 33,5 | 22,2 | 11,6 | 8,7 |
| | m ³ /h*1 | 79,1 | 55,9 | 44,0 | 38,9 | 28,9 | 19,1 | 10,0 | 7,5 |
| GNA15 | kg/h | 114,7 | 81,0 | 63,8 | 56,4 | 41,9 | 27,7 | 14,5 | 10,9 |
| | m ³ /h*1 | 98,9 | 69,8 | 55,0 | 48,6 | 36,1 | 23,9 | 12,5 | 9,4 |
| GNA20 | kg/h | 153,0 | 108,0 | 85,0 | 75,2 | 55,8 | 36,9 | 19,4 | 14,5 |
| | m ³ /h*1 | 131,9 | 93,1 | 73,3 | 64,8 | 48,1 | 31,8 | 16,7 | 12,5 |
| GNA27 | kg/h | 206,6 | 145,8 | 114,8 | 101,5 | 75,3 | 49,8 | 26,1 | 19,6 |
| | m ³ /h*1 | 178,1 | 125,7 | 99,0 | 87,5 | 64,9 | 42,9 | 22,5 | 16,9 |
| GNA35 | kg/h | 267,1 | 189,0 | 148,8 | 131,5 | 97,7 | 64,6 | 33,9 | 25,4 |
| | m ³ /h*1 | 230,8 | 162,9 | 128,3 | 113,4 | 84,2 | 55,7 | 29,2 | 21,9 |
| GNA50 | kg/h | 382,5 | 270,0 | 212,6 | 187,9 | 139,5 | 92,2 | 48,4 | 36,3 |
| | m ³ /h*1 | 329,7 | 232,8 | 183,3 | 162,0 | 120,3 | 79,5 | 41,7 | 31,3 |
| GNA65 | kg/h | 495,0 | 349,0 | 275,0 | 243,0 | 180,0 | 119,0 | 63,0 | 47,0 |
| | m ³ /h*1 | 429,0 | 302,0 | 238,0 | 210,0 | 156,0 | 103,0 | 54,0 | 40,0 |
| GNA80 | kg/h | 609,0 | 430,0 | 339,0 | 299,0 | 222,0 | 146,0 | 77,0 | 58,0 |
| | m ³ /h*1 | 528,0 | 372,0 | 294,0 | 259,0 | 192,0 | 126,0 | 66,0 | 50,0 |
| GNA100 | kg/h | 761,0 | 537,0 | 423,0 | 374,0 | 277,0 | 183,0 | 96,0 | 72,0 |
| | m ³ /h*1 | 660,0 | 465,0 | 366,0 | 324,0 | 240,0 | 158,0 | 83,0 | 62,0 |
| GNA125 | kg/h | 951,0 | 672,0 | 529,0 | 467,0 | 346,0 | 229,0 | 120,0 | 90,0 |
| | m ³ /h*1 | 824,0 | 582,0 | 458,0 | 405,0 | 300,0 | 198,0 | 104,0 | 78,0 |
| GNA150 | kg/h | 1141,0 | 806,0 | 635,0 | 560,0 | 416,0 | 275,0 | 144,0 | 108,0 |
| | m ³ /h*1 | 989,0 | 699,0 | 550,0 | 485,0 | 360,0 | 241,0 | 124,0 | 93,0 |

*1 – related to 1,013 bar (a) and 20 °C at 7 bar operating pressure, conversion factor 0,8 m³/kg
Higher N₂ flows on demand.

REQUIRED PURITY CLASSES ACC. TO ISO 8573.1 FOR THE COMPRESSED AIR SUPPLY

| Type | for the entire GNA series |
|----------------|---------------------------|
| Particles *2 | class 3 |
| Humidity *2 *3 | class 2 - 4 |
| Oil content *2 | class 1 |

*2 typical result under the assumption of suitable inlet concentrations as well as operating and general conditions

*3 up from purity 99,9 % class 2 is recommended

CHARACTERISTICS OF COMPRESSED AIR QUALITY

Compressed air should always be treated with refrigeration dryers, appropriate filtration and oil vapour adsorbers. For highly sensitive applications and nitrogen purities above 99,9 %, we recommend the optional use of adsorption dryers with a pressure dew point of -20°C or -40°C.

DIMENSIONS, CONNECTIONS AND WEIGHTS

| Type | inlet | outlet | height | width | depth | weight |
|--------|--------|--------|---------|---------|---------|---------|
| GNA2 | 1/2" | 1/2" | 1700 mm | 550 mm | 700 mm | 165 kg |
| GNA4 | 1/2" | 1/2" | 1930 mm | 780 mm | 820 mm | 320 kg |
| GNA6 | 1/2" | 1/2" | 1950 mm | 620 mm | 750 mm | 200 kg |
| GNA9 | 1/2" | 1/2" | 1950 mm | 650 mm | 800 mm | 250 kg |
| GNA12 | 3/4" | 1/2" | 2100 mm | 1050 mm | 950 mm | 750 kg |
| GNA15 | 3/4" | 1/2" | 2120 mm | 820 mm | 820 mm | 450 kg |
| GNA20 | 1" | 3/4" | 2130 mm | 870 mm | 830 mm | 550 kg |
| GNA27 | 1" | 3/4" | 2200 mm | 1250 mm | 950 mm | 1100 kg |
| GNA35 | 1 1/2" | 1" | 2250 mm | 1810 mm | 1130 mm | 2300 kg |
| GNA50 | 1 1/2" | 1" | 2250 mm | 1920 mm | 1250 mm | 2800 kg |
| GNA65 | 1 1/2" | 1" | 2260 mm | 1150 mm | 900 mm | 1000 kg |
| GNA80 | 1 1/2" | 1" | 2300 mm | 1550 mm | 1300 mm | 1850 kg |
| GNA100 | 2" | 1 1/2" | 2650 mm | 2050 mm | 1400 mm | 3000 kg |
| GNA125 | 2" | 1 1/2" | 3000 mm | 2050 mm | 1400 mm | 3300 kg |
| GNA150 | 2" | 1 1/2" | 3500 mm | 2050 mm | 1400 mm | 4000 kg |

REQUIRED VESSEL SIZE FOR BUFFER TANK

| Type | Volume | 95 % | 98,0 % | 99,0 % | 99,5 % | 99,9 % | 99,99 % | 99,999 % | 99,9995 % |
|--------|--------|------|--------|--------|--------|--------|---------|----------|-----------|
| GNA2 | Liter | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 |
| GNA4 | Liter | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 |
| GNA6 | Liter | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 |
| GNA9 | Liter | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 |
| GNA12 | Liter | 500 | 500 | 250 | 250 | 250 | 250 | 250 | 250 |
| GNA15 | Liter | 500 | 500 | 500 | 500 | 250 | 250 | 250 | 250 |
| GNA20 | Liter | 750 | 750 | 500 | 500 | 500 | 250 | 250 | 250 |
| GNA27 | Liter | 1000 | 1000 | 750 | 750 | 500 | 250 | 250 | 250 |
| GNA35 | Liter | 1500 | 1500 | 750 | 750 | 750 | 500 | 500 | 500 |
| GNA50 | Liter | 1500 | 1500 | 1000 | 1000 | 1000 | 500 | 500 | 500 |
| GNA65 | Liter | 2000 | 2000 | 1500 | 1500 | 1500 | 725 | 725 | 725 |
| GNA80 | Liter | 3000 | 3000 | 2000 | 2000 | 2000 | 900 | 900 | 900 |
| GNA100 | Liter | 3000 | 3000 | 2000 | 2000 | 2000 | 1000 | 1000 | 1000 |
| GNA125 | Liter | 4000 | 4000 | 3000 | 3000 | 3000 | 1500 | 1500 | 1500 |
| GNA150 | Liter | 5000 | 5000 | 3000 | 3000 | 3000 | 1500 | 1500 | 1500 |

AIR FACTOR

| Typ | 95 % | 98,0 % | 99,0 % | 99,5 % | 99,9 % | 99,99 % | 99,999 % | 99,9995 % |
|---------------|------|--------|--------|--------|--------|---------|----------|-----------|
| GNA2 – GNA150 | 1,8 | 2,1 | 2,3 | 2,5 | 3,2 | 4,3 | 5,2 | 6,2 |

PRODUCT SPECIFIC CHARACTERISTICS

| | |
|---------------------------|---|
| Nitrogen purity | 95 % - 99,9995 % (5.5) |
| Electrical connection | 230 V, 50/60 Hz, alternatively 110V 50/60Hz |
| Power consumption | ca. 100 Watt |
| Protection class | IP 41 |
| Min. inlet pressure (air) | 8 - 10 bar (g) |
| Outlet pressure (N2) | 5 - 9 bar (g) |
| Ambient temperature | 5°C - 50°C |
| Nitrogen Dewpoint | -50°C |

CLASSIFICATION ACCORDING TO PRESSURE EQUIPMENT DIRECTIVE 97/23/EEC FOR FLUID GROUP 2

| Size | Category | KeMächtigung |
|--------------|----------|--------------|
| GNA2 – GNA50 | III-IV | CE 0045 |

* 8.1 - in Germany defined by the Industrial Safety Ordinance BetrSichV of 27 September 2002 (BGBl. I p.37777) §14 and §15

* 8.2 - Competent person (BP) or approved inspection body (ZÜ)

OTHER GUIDELINES

| Size | |
|---------------|---|
| GNA2 – GNA150 | <p>EMC-Standard (inspection scope for control system, solenoid valve and dewpoint measurement): Emitted interference acc.: EN 55011:1998 + A1:1999 + A2:2002 (limit value class B) EN 61000-3-2:2006-04, EN 61000-3-3:2008</p> <p>Interference resistance acc.: EN61000-6-2:2005</p> <p>The machinery directive 2006/42/EC is not applicable.</p> |

MAINTENANCE RULES

| | Maintenance interval and maintenance work |
|-----------|---|
| all sizes | <p>Daily:</p> <ul style="list-style-type: none"> - check condensate drains on filters and pressure vessels - Check pressure in compressed air and nitrogen tanks as well as gas purity <p>Weekly:</p> <ul style="list-style-type: none"> - Check sensors <p>Monthly:</p> <ul style="list-style-type: none"> - Check the safety valves on the generator and pressure vessels. If they do not function, replace them immediately. <p>Annually:</p> <ul style="list-style-type: none"> - Replace filter elements - Check expansion silencer and change foam filter - Replace sealings <p>Additionally every 3 years:</p> <ul style="list-style-type: none"> - re-calibrate/replace oxygene sensor <p>Additionally every 5 years:</p> <ul style="list-style-type: none"> - replace seat angle valves |

Product data sheet

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