

# GSA Nitrogen Generators

## GNG Series

PSA Nitrogen Generators

*Global Standard Air & Gas*



# Why N<sub>2</sub> Generator?

## Why N<sub>2</sub> Generator?

Nitrogen is an odorless and colorless gas used as a key ingredient of fertilizer. Liquefied nitrogen is also used for quick freezing in regeneration technology, medicine and research. Unlike oxygen, nitrogen does not have any reactivity so that it is one of the most commonly used industrial gases.

Nitrogen is leased or provided by a third party through a nitrogen tank or small high-pressure container or internally produced and used, using compressed air. GSA N<sub>2</sub> Generator adopting pressure swing adsorption (PSA) technology is the best choice to use high-quality nitrogen anytime in a stable fashion at the lowest costs.

## Applications

- Electricity and electronics
- Pharmaceuticals
- Power plant
- Heat treatment
- Fire prevention
- Metal working
- Food and beverage packaging
- Chemical processing
- Laboratory
- Blazing
- Oil refining
- Laser cutting



## Positive Effects



- Installed on the site and immediately produces nitrogen from compressed air
- No production setbacks from an issue in nitrogen refill, delivery or supply
- Reduction of operating and maintenance costs
- Able to design diverse purity according to customer needs (95% to 99.999%)

## N<sub>2</sub> Generator

The N<sub>2</sub> generator is operated under the following mechanism: Nitrogen is supplied by separating oxygen from compressed air, using desiccants filled in two absorption towers. Compressed air including both nitrogen and oxygen supplies nitrogen by adsorbing oxygen while passing through a carbon molecular sieve (CMS) layer which has micro pores filled in the absorption towers.

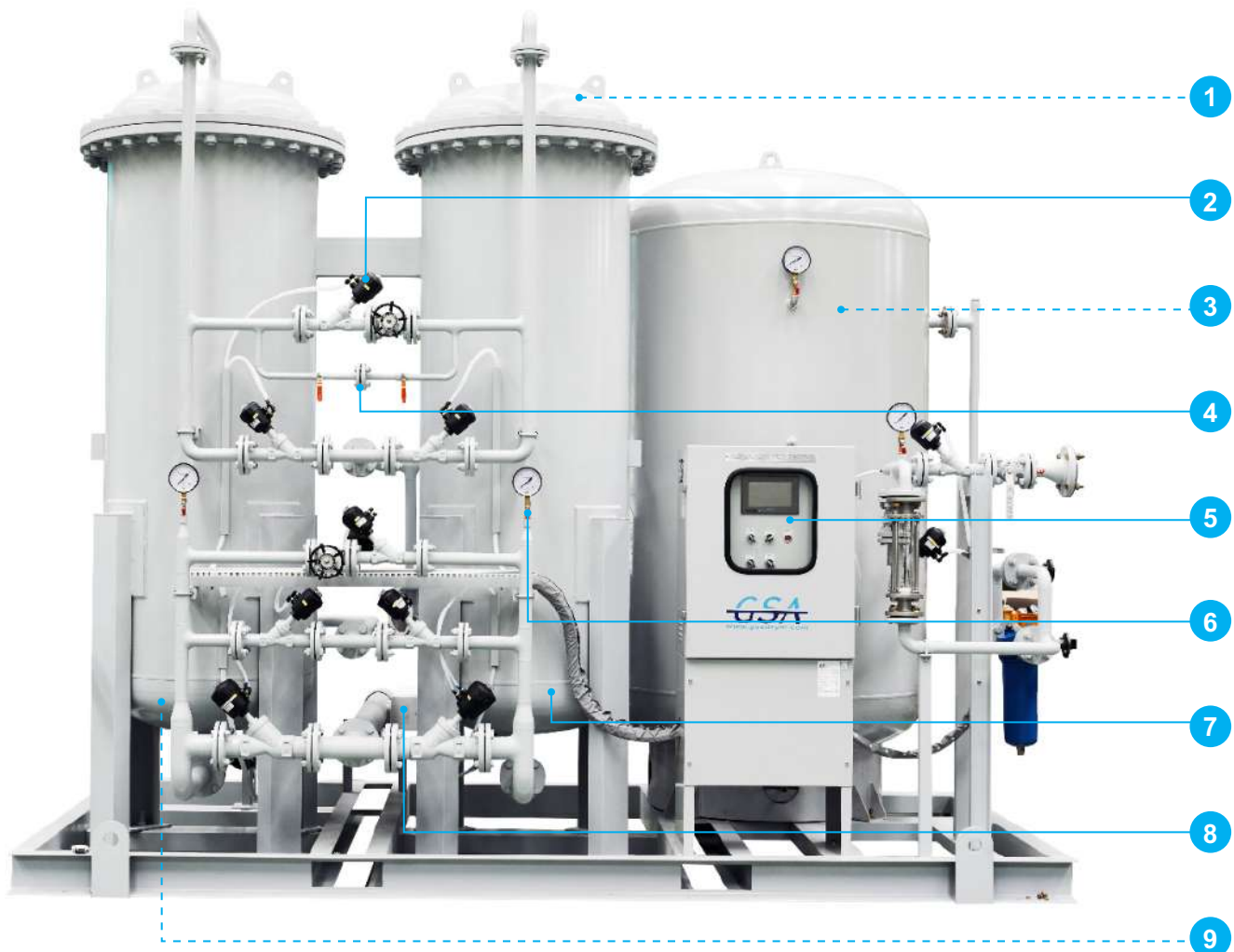
The two absorption towers repeat pressurizing, absorption, depressurizing and cleaning by taking turns and supply nitrogen consecutively.

GSA's pressure swing adsorption (PSA)-based N<sub>2</sub> generator has a specially designed distributor at the bottom of the absorption towers so that it is able to supply high-quality nitrogen which meets customer needs in a continuous and stable manner. In addition, the use of durable valves enables stable operation. Since diverse features needed to control the system are supported, settings and operations which meet user needs are enabled.



# N<sub>2</sub> Generator for Stable Supply

## N<sub>2</sub> Generator with Diverse Features



- |  |   |   |
|--|---|---|
| <p><b>1</b> <b>PRESS. SAFETY VALVE</b><br/>Guarantees system stability with KOSHA-certified safety valves</p>                            | <p><b>4</b> <b>Precision Orifice</b><br/>Minimizes flow rates for regeneration, using a precision orifice</p>   | <p><b>7</b> <b>Activated Alumina</b><br/>Activated alumina added to the bottom, ensuring stable performances</p>  |
| <p><b>2</b> <b>Reliable AUTO Valve</b><br/>Guarantees stable operations even under frequent use with proven angle-sheet valves</p>       | <p><b>5</b> <b>Control Panel</b><br/>Enables stable and precise control, using PLC and touchscreen</p>  | <p><b>8</b> <b>High-quality Muffler</b><br/>Minimizes noise which occurs during purge with Allied Witan or an optimally designed muffler</p>                  |
| <p><b>3</b> <b>High-quality Desiccant</b><br/>Supplies Nitrogen in a stable fashion, using high-quality carbon molecular sieve (CMS)</p> | <p><b>6</b> <b>High-quality Measuring Instruments</b><br/>Low failure rates and great operating performances with high-quality measuring instruments such as a pressure gauge</p> | <p><b>9</b> <b>Distributor for Stable Purity</b><br/>Installs a distributor to prevent drifting inside a large absorption towers and ensure stable purity</p> |



# Technical Specification

| Nitrogen Capacity (Nm <sup>3</sup> /h) |     |      |      |      |      |      |      |       |       |        |       |       |       |       |
|--|-----|------|------|------|------|------|------|-------|-------|--------|-------|-------|-------|-------|
| 95% (1.5N)                             | 9.3 | 16.2 | 23.6 | 37.9 | 55.0 | 67.4 | 82.7 | 100.4 | 145.8 | 228.5  | 301.5 | 409.3 | 479.8 | 648.3 |
| 97% (1.7N)                             | 8.6 | 14.9 | 21.7 | 34.9 | 50.7 | 62.1 | 76.1 | 92.5  | 134.2 | 210.4  | 277.5 | 376.8 | 441.7 | 596.8 |
| 98% (1.8N)                             | 8.1 | 14.2 | 20.7 | 33.2 | 48.3 | 59.1 | 72.4 | 88.0  | 127.6 | 200.14 | 264.0 | 358.4 | 420.1 | 567.7 |
| 99% (2N)                               | 7.4 | 12.9 | 18.8 | 30.2 | 43.9 | 53.7 | 65.9 | 80.0  | 116.1 | 182.0  | 240.1 | 326.0 | 382.1 | 516.3 |
| 99.50% (2.5N)                          | 6.7 | 11.7 | 17.1 | 27.5 | 40.0 | 48.9 | 60.0 | 72.9  | 105.8 | 165.8  | 218.7 | 297.0 | 348.1 | 470.4 |
| 99.90% (3N)                            | 5.4 | 9.5  | 13.8 | 22.1 | 32.2 | 39.4 | 48.4 | 58.7  | 85.2  | 133.6  | 176.3 | 239.4 | 280.6 | 379.1 |
| 99.95% (3.5N)                          | 4.6 | 8.0  | 11.6 | 18.6 | 27.0 | 33.1 | 40.6 | 49.3  | 71.5  | 112.2  | 147.9 | 200.9 | 235.5 | 318.2 |
| 99.99% (4N)                            | 3.8 | 6.7  | 9.7  | 15.6 | 22.7 | 27.7 | 34.0 | 41.3  | 60.0  | 94.1   | 124.1 | 168.5 | 197.5 | 266.8 |
| 99.999% (5N)                           | 2.6 | 4.6  | 6.7  | 10.8 | 15.7 | 19.2 | 23.5 | 28.6  | 41.5  | 65.1   | 85.9  | 116.6 | 136.7 | 184.7 |

| Dimensions (mm) |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
|-----------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| L               | 2,200 | 2,600 | 2,800 | 3,000 | 3,500 | 3,600 | 3,700 | 3,800 | 4,100 | 4,900 | 5,300 | 6,000 | 6,200 | 6,400 |
| W               | 1,300 | 1,450 | 1,750 | 2,100 | 2,300 | 2,450 | 2,450 | 2,550 | 2,700 | 3,300 | 3,600 | 4,100 | 4,400 | 4,600 |
| H               | 2,050 | 2,050 | 2,050 | 2,100 | 2,100 | 2,100 | 2,300 | 2,350 | 2,650 | 2,700 | 2,800 | 3,200 | 3,250 | 3,300 |

| Required Compressed Air (Nm <sup>3</sup> /h) |    |    |    |    |     |     |     |     |     |     |     |     |     |       |
|--|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-------|
| Capa.  | 19 | 33 | 48 | 77 | 112 | 137 | 168 | 204 | 296 | 464 | 612 | 831 | 974 | 1,316 |

## Design Conditions

- Inlet Air Press. : 7.0 barg
- Inlet Air Temp. : 5 °C ~ 45 °C
- Ambient Temp. : 20 °C
- Inlet Air Quality : ISO8573-1 class 1-4-1
- Unit Performance : ±5%

## References

- Models under membrane type as well as PSA are also customizable.
- Models under ASME in addition to KS are also customizable.
- Large models bigger than those stated in the specifications above are also customizable.
- The specifications are subject to changes without notice for product improvement.

## Nomenclature

GNG - XX - XXX

Purity

Product Flow Rate

## Components

- 1 Air Compressor
- 2 Air Receiver Tank
- 3 5 8 Air Filter
- 4 After-cooler
- 6 Ref. Air Dryer or Cooler
- 7 Desiccant Air Dryer
- 9 Nitrogen Generator with N<sub>2</sub> Holder

