Modular PSA High Purity Nitrogen Generators

SR
Gas Purification Solutions

NG Series

Purity : 95%-99.999%

About SR

"Trust,Growing,Win-Win"is our philosophy. Our goal is to provide the most comprehensive range of filters that allow customers to filter gases and liquids simply and reliably, even in the most demanding conditions.We are a leading supplier of high efficiency filters for a variety of industries and applications in China. Through a wide choice of standard designs in an assortment of materials, our comprehensive range of filter housings enables greater flexibility for customers. The development of new products is client driven, which ensures continual improvement of our capabilities. We will continue to cooperate with our world class suppliers to provide the unique solutions.

Our logo SR means Supportting/ Save /Solutions and Reliable /Reward/Reputation.

Problems that need to be solved in typical nitrogen supply methods

Additional costs

- Rental fees,refill and delivery surcharges of the liquid or bottled oxygen
- Permits,installation,leasing and maintenance costs for large liquid storage
- Years of order processing charges and the increasing costs due to the continuous rise in prices

Logistics & safety

- Potential frequent transportation hazards
- High-pressure storage can easily cause decompression or leakage, and even explosions
- Nitrogen cylinders or liquid nitrogen tanks require laborious manual handling
- Once liquid nitrogen leaks, it can easily cause serious frostbite accidents and even suffocation.

Loss and waste

- It is unpredictable whether the gas supplier can continue to supply stably
- About 10% of the nitrogen remains in the cylinder, and 20% of the liquid nitrogen will evaporate
- Downtime = loss of revenue

Nitrogen is readily available

78% of the air is nitrogen and 21% is oxygen. If we can separate out this oxygen and remove the moisture and dust particles from it, then we will obtain sufficient nitrogen.

Since we can produce nitrogen on - site with a nitrogen generator, why do we still have to spend money on expensive stored nitrogen?

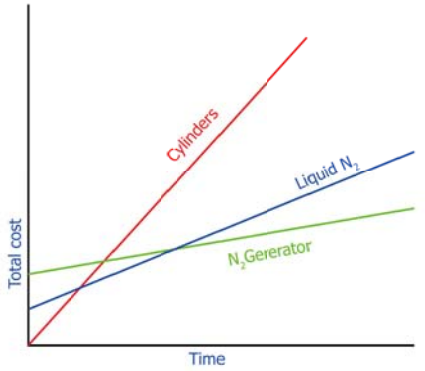
NG series nitrogen generators

SR recognize the significance of providing customers with high-purity nitrogen that is safe, reliable and costeffective.

We have developed the NG series modular PSA nitrogen generator, which is energy-saving and efficient, can be used on-site to meet users' increasing demands for high-quality nitrogen generation solutions.

When you choose an NG series nitrogen generator, you can usually recover the investment cost within 6 to 24 months. Compared with traditional nitrogen generators, bottled nitrogen and liquid nitrogen, its unique modular design and energy-saving and efficient features have greater advantages.

The NG series nitrogen generator has a compact structure and is easy to install. It can produce nitrogen on site as long as there is a pre-treated compressed air system. On-site nitrogen production can generate nitrogen according to the actual demand, and the nitrogen production cost is much less than purchasing nitrogen from suppliers.



Compared with purchasing bottled oxygen, the investment payback period of OG series oxygen generators is less than 1 year.

Compared with purchasing liquid oxygen, the investment payback period of OG series oxygen generators is 2 to 3 years.

Benefits you will get

Guaranteed performance

- Reliable performance based on decades of experience with pressure swing adsorption technology.
- 100% function and performance tested at our factory.
- 1 year warranty.

Rapid return on investment

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

Easy to install

- The compact design makes the size and weight of the nitrogen generator less than half that of the twin-tower nitrogen generator, saving space and facilitating installation.

Safe & Reliable

- Eliminate the safety hazards of transporting and storing nitrogen cylinders or liquid nitrogen.

Environmentally friendly

- Lower air consumption and refined controls provide provide greater energy efficiency.
- Reduce carbon emissions by eliminating the transportation of gases to factories.

Easy to maintain

- Advanced PLC with HMI touchscreen controls simplify operation and require minimal training.
- Innovative piston valves significantly reduce maintenance schedules and minimise downtime.

Fits any application

- Maximum design operating pressure is 10 barg(16 barg is optional).
- Provide various flow rates and purities range from 95% to 99.999%.
- Can handle any power supply from 120 to 240 VAC in 50 or 60 Hz, 24VDC is optional.

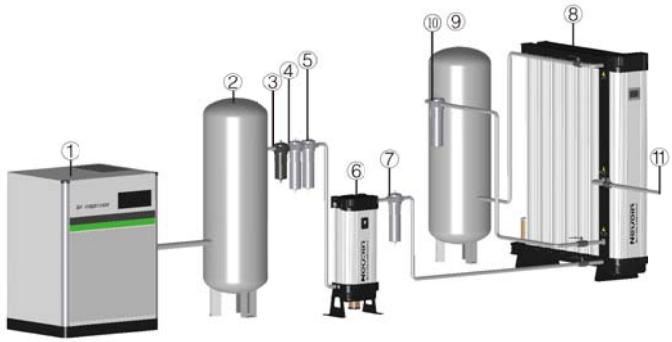
■ Working principle

The NG series nitrogen generator uses clean and dry compressed air as raw material, and continuously separates out nitrogen by using the principle of pressure swing adsorption.

The dual chamber adsorption cylinder formed by high-strength aviation aluminum extrusion is filled with carbon molecular sieve (CMS) and connected through upper and lower manifolds, forming a dual-bed adsorption system.

Clean and dry compressed air enters through the inlet manifold to the bottom of the'online'bed and flows up through the CMS to separate the compressed air where oxygen and other trace gases are preferentially adsorbed. The nitrogen then passes through the supporting bed layer and outlet manifold to the buffer vessel and a buffer vessel filter before reentering the NG 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 is exhausted to atmosphere. A small portion of the outlet nitrogen gas is expanded into the bed to accelerate the regeneration process.

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



■ Performance

1.'Blizzard style' molecular sieve filling

The 'blizzard style' filling makes the molecular sieves(ZMS) in the adsorption bed uniform and dense without mutual movement and friction to form dust, making the adsorption bed stable, extending the service life of the dust removal filter, and providing users with high quality oxygen they need

2.Mult-bank design

The unique mult-bank design enables additional generators to be added in the future as demand increases.

3.PLC controlled operation

Each NG nitrogen generator is operated by a reliable PLC control system with digital and analog (optional) outputs for remote monitoring and alarm capabilities. NG has an easy-to-operate touch screen which offers valuable features including'power on','hours run','oxygen purity','pressure','online column'and 'service required'. In addition, four pressure gauges provide continuous pressure indication of column A, column B, air inlet and nitrogen outlet.

4.Oxygen analyzer

Built-in high-quality oxygen analyzer continuously monitors oxygen concentration, featuring advanced sensing technology, higher accuracy, faster response, and longer service life.

The oxygen analyzer outputs signals to the PLC control system, providing intuitive oxygen concentration information.It also offers network communication and 4 - 20 mA output for remote monitoring.

5.Design quality

Mass flow controller - prevents the nitrogen generator from overflowing, ensures correct application pressure and flow.

Remote monitoring - enabling connection to proprietary remote management and generator control systems

6.ESC energy saving control

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

7.Reliable high performance valves

Inlet, outlet and exhaust valves are managed through unique integrated high quality 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/nitrogen ratios and extend CMS life.

8.Maximum corrosion protection

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

■ What kind of nitrogen quality do we need ?

Most applications require nitrogen with purities lower than 99.999%, rather than ultra-high purity nitrogen.

■ What does 'purity' mean?

'Purity', we refer to the maximum residual oxygen content in the output nitrogen. Our nitrogen technology, combined with compressed air pretreatment, ensures that the nitrogen is sterile, oil-free, dry and particle-free for commercial applications (Product information data included in this manual).

The required purity will vary depending on the applications

Maximum cost and energy conservation = Maximum permissible oxygen content

High purity
10 ppm ~ 1000 ppm
(99.999% ~ 99.9%)

10ppm ~ 1000ppm
Heat treatment

10ppm ~ 5000ppm
Pharmaceutical manufacturing

50ppm ~ 500ppm
Laser cutting
Electronic welding

Medium purity
0.1% ~ 1%
(99.9% ~ 99%)

0.1% ~ 1%
Food gas-filled packaging
Food processing

0.5%
Beer packaging
Wine packaging
Paint spraying
Brazing
Steel wire annealing
Aluminum alloy spray forming

0.5% ~ 1%
Injection molding

Low purity
1% ~ 5%
(99% ~ 95%)

1% ~ 5%
Chemical coverage

2%
Laser sintering
Drying oven

2% ~ 5%
Explosion-proof

5%
Fire prevention
Pressure testing
Nitrogen sealing
Pipeline cleaning
Autoclave

■ Sizing & Specifications

Model	rated outlet flow	Outlet nitrogen purity (maximum oxygen content)											
		10ppm	50ppm	100ppm	200ppm	500ppm	0.10%	0.50%	1%	2%	3%	4%	5%
		99.999%	99.995%	99.99%	99.98%	99.95%	99.90%	99.50%	99%	98%	97%	96%	95%
109	Nm³/h	0.9	1.7	2	2.5	3	3.6	5.2	5.8	9.3	8.3	9.5	10
209	Nm³/h	1.8	3.4	4	5	6	7.2	10.4	12	15	16.7	19	21
309	Nm³/h	2.7	5.1	6	7.5	9	10.8	15.6	17	22	25	29	31
115	Nm³/h	2.5	3.6	4.5	5	5.7	6.6	9.5	10.5	13	15.2	17.5	19
215	Nm³/h	5.1	7.2	8.9	10	11.4	13.2	18.9	21	26	30.3	35	38
315	Nm³/h	7.7	10.8	12.6	15	17.1	19.8	28.4	32	40	45.5	52	56
415	Nm³/h	10.2	14.4	16.8	20	22.8	26.4	37.8	42	53	60.6	69	75
515	Nm³/h	12.7	18.1	21.0	25	30.3	33	47.2	52.5	66	75.7	86.5	94
615	Nm³/h	15.3	21.6	25.2	30	34.2	39.6	56.7	63	79	90.9	104	113
715	Nm³/h	17.8	25.2	29.4	35	39.9	46.2	66.1	73.5	92.5	105	121	131
815	Nm³/h	20.4	28.8	33.6	40	45.6	52.8	75.6	84	106	121	138	150
816	Nm³/h	21.8	30.8	35.9	42.7	48.7	56.4	80.7	89.7	113	129	147	160
1015	Nm³/h	23.5	33.1	38.6	46	52.4	60.7	86.9	97	121	139	159	173
1016	Nm³/h	25.1	35.3	41.2	49.1	55.9	64.8	92.8	103	129	148	170	184
1215	Nm³/h	27.2	38.4	44.9	53.3	60.9	70.5	100.9	112	141	162	184	200
1216	Nm³/h	29.0	41.1	47.8	56.9	65.2	75.3	107.6	119	150	173	196	213

Inlet Parameters

Inlet Ar Quality	ISO 8573-1:2010 Class 2.2.2(2.2.1with high oil vapour content)
Inlet Ar Pressure Range	5-13 barg

Port connection

Air Inlet	G1
N_2 Outlet to Buffer	G1
N_2 Inlet from Buffer	G1/2
N_2 Outlet	G1/2

Electrical Parameters

Supply Voltage	100-240VAC 50/60Hz
Power	80 W
Fuse	3.15A

Environmental Parameters

Ambient Temperature	5- 50°C(41 - 122°F)
Humidity	50% @ 40°C(80% MAX ≤ 31°C)
IP Rating	IP20 / NEMA 1
Altitude	<2000m (6562 ft)
Noise	< 80 dB(A)

Weight and size

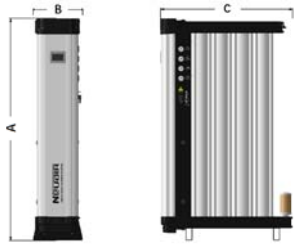
Model	height(A) mm	width(B) mm	depth(C) mm	weight kg
109	1218	400	584	144
209	1218	400	752	202
309	1218	400	919	260
115	1818	400	584	180
215	1818	400	750	269
315	1818	400	916	358
415	1818	400	1082	447
515	1818	400	1248	536
615	1818	400	1414	625
715	1818	400	1580	714
815	1818	400	1746	803
816	1918	400	1746	843
1015	1818	400	2078	981
1016	1918	400	2078	1031
1215	1818	400	2410	1159
1216	1918	400	2410	1219

Temperature correction factors(5)

inlet air temperature(°C)	5	10	15	20	25	30	35	40	45	50
correction factor	0.80	0.90	0.94	1.00	1.00	0.98	0.95	0.90	0.85	0.72

Pressure correction factors(5)

inlet air pressure(barg)	6	7	8	9	10-16
correction factor	0.88	1.00	1.10	1.20	1.20



(1)At 7 barg inlet pressure and 20 to 25°C inlet temperature. For outlet flow at all other conditions, refer to the correction factors above or contact us.
(2)For pressures above 10 barg, please contact us.
(3)If you equire an upstream dryer, please contact us.
(4)If nitrogen with a purity of 99.9995% is required, please contact us.
(5)To be used as an approximate guide only, all applications should be confirmed by us.

Why choose SR ?

Industry Leader

SR is the leader in compressed air post-treatment systems, with many years of industry experience in this field.

Professional solutions

Our team is highly experienced and can provide you with one-stop solutions to meet your needs.

Technical Support

With years of industry experience and professional aftersales service support, we provide reliable products and reassuring services to customers throughout the whole process.

Global partner

Our business and partners are spread all over the world, and we can provide you with the best and most diverse one-stop gas filtration and drying technology solutions.

SR Filtration Technology(Dalian) Co.,Ltd.
Sendfin Technologies(Dalian) Co.,Ltd.

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