

## Why Choose Scala?

### Global leader

SCALA is the leading global manufacturer of nitrogen generators, with nearly three decades of experience creating gas generation systems.



### Turnkey solutions

Our team of highly experienced consultants are experts in designing turnkey solutions that perfectly meet company demands and business needs.



### Expertise and support

Our vast industry and technological expertise, coupled with world-class aftercare support means we define the benchmark for customer service, innovation, quality and product reliability.



### Project management

Our project teams manage every stage of the process, through initial consultation, system design, procurement, installation, commissioning and ensure you are kept fully informed at each step.



### Global partnerships

Together with our industry leading partners in compression & filtration technologies, we offer the best and most diverse mix of technological solutions available on the market.



### Contact us to learn more

Hangzhou Scala Filtration Technology Co., Ltd.  
Room 110, Building A, Kaiyuan Yisu, Liangzhu, Yuhang, Hangzhou, China  
[www.scalacryo.com](http://www.scalacryo.com)

Continuous source of on-site nitrogen gas  
Ultra-high purity PSA Nitrogen generators

**Scala**  
Liquid Nitrogen Solutions



Nitrogen purity:  
95%–99.9995%

## About Scala

Hangzhou Scala Filtration Technology Co., Ltd provides innovative, flexible and technological driven technologies for gas generation, purification, storage, transportation and utilization. Achieving all these through commitment in working towards a low carbon future.

We want to do our part in securing a cleaner future for our future generations.

## Overcoming problems with typical nitrogen supply methods

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. Beyond the highly variable costs of industrial gas, supply methods such as cylinders, dewars and bulk liquid storage also create numerous challenges for businesses, as well as many additional and hidden costs, which ultimately impact on the bottom line.

### Additional costs

- Cylinder or dewar rental & supply delivery charges
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- Multi-yea purchase contract commitments, with long notice periods

### Logistics & safety

- Frequent hazardous truck deliveries to facility
- High pressure storage, with risk of explosive decompression or leaks
- Cylinders & dewars require heavy manual handling
- the cold liquid (-196°C) can rapidly produce thousands of cubic metres of asphyxiant gas

### Product losses & wastage

- Unpredictable supply timescales
- Bulk supply needs frequent switching & monitoring
- 10% gas returned to supplier & 20% lost to 'off-gassing'
- Downtime = lost revenue.



## Nitrogen constantly surrounds us

78% of the air we breathe is nitrogen and 21% is oxygen. If the moisture and dust particles in the air can be removed and the oxygen can be separated, then any user can obtain sufficient nitrogen raw materials. produced at their premises, adjacent to their application, on demand and without the need to rely on expensive gas cylinders or liquid nitrogen.

Why buy bulk nitrogen gas when you can make your own?

## NG nitrogen generators

Scala recognizes the importance of having a safe, reliable and cost effective supply of high purity nitrogen. We have developed the NG 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

When you switch to a Scala NG nitrogen generator you can expect payback typically between 6 to 24 months. It's unique design and energy saving function offer a number of significance advantages over delivered gas options, as well as traditional generator designs.

The compact system can be installed easily and with a minimum cost and disruption and requires only a pre-treated compressed air system to start production. An on-site generator enables users to produce their demand for nitrogen gas on their premises, under their complete control. As a result, companies can generate as much or as little nitrogen as needed at a fraction of the cost of having the gas delivered by an external supplier.

## Benefits

### 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

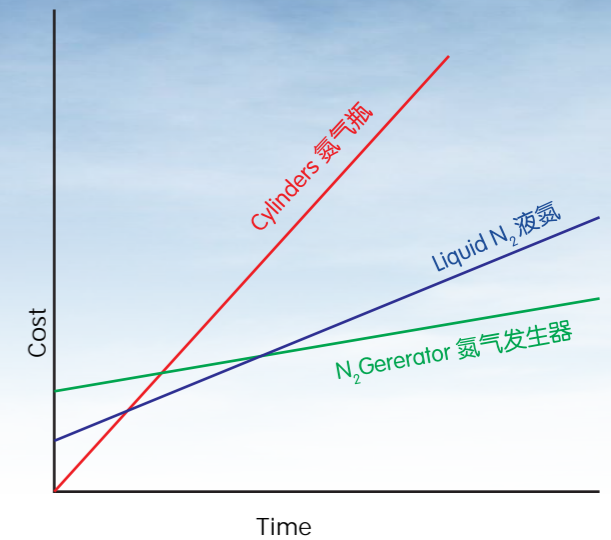
- significant cost savings over cylinder or liquid supply provides a typical return on investment of less than 24 months

### Easy to install

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

### Safe & reliable

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



### Environmentally friendly

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

### 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 of 10 barg (16 barg optional)
- available in a wide range of flow rates and purities from 95% - 99.999%
- can handle any power supply from 110 to 240 VAC in 50 or 60 Hz, 24VDC optional

## Operational principle

The technologically advanced neuair NG nitrogen generator operates on the Pressure Swing Adsorption (PSA) principle to produce a continuous uninterrupted stream of nitrogen gas from clean dry compressed air.

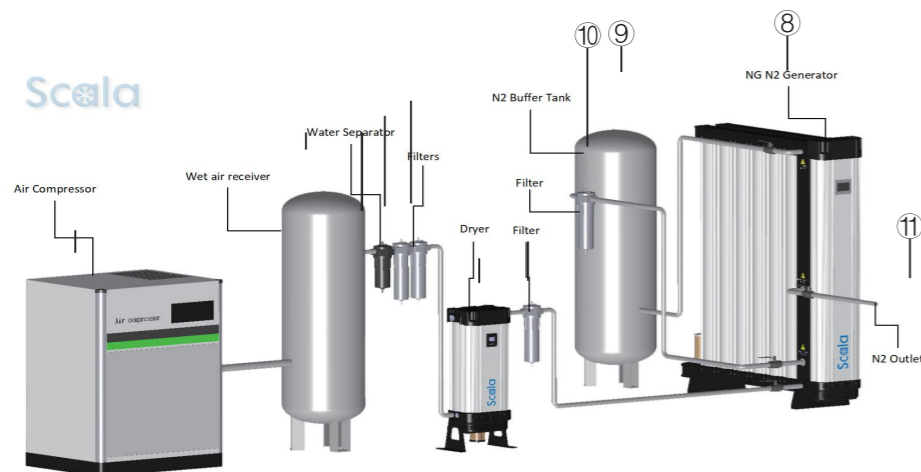
Pairs of dual chamber extruded aluminum columns are filled with Carbon Molecular Sieve (CMS). Joined via an upper and lower manifold, the high density filled columns produce a two bed system.

Clean, 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 neuair F1 buffer vessel filter before re-entering 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



## System performance

### 1. "Blizzard style" molecular sieve filling

- The "blizzard style" filling makes the molecular sieves in the adsorption bed uniform and dense without mutual movement and friction to form dust, making the adsorption bed uniform and stable, extending the service life of the dust removal filter, and providing users with the quality stable and clean nitrogen gas they need.

### 2. Multi-bank design

- The unique multi-bank design enables additional generators to be added in the future as demand increases. Your NG nitrogen generator can grow with your company.

### 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 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.

### 4. Oxygen analyser

- A built in oxygen analyser continuously monitors the oxygen concentration in the nitrogen stream. Our new remote mounted analyser utilises world leading sensor technology to give a more reliable measurement, faster response time and longer life compared to traditional analysers. Incorporated into the PLC controls, our oxygen analyser guarantees our oxygen analyser guarantees the nitrogen purity is constantly maintained and gives an instant visual confirmation of the output gas quality. 4-20mA outputs facilitate remote monitoring if required and the possibility to data log for complete traceability.

### 5. Design quality

- Mass flow controller - can prevent nitrogen generator overflow and ensure that the required purity and pressure are maintained regardless of downstream conditions. Continuous overflow of nitrogen generator will cause irreversible damage to CMS and affect its ability to restore gas purity.

- Non standard gas bypass technology automatically emits nitrogen gas that does not meet standards, and monitors the nitrogen quality instrument to ensure nitrogen quality.

- Inlet and outlet pressure regulation - Control the nitrogen pressure to meet system requirements, prevent damage to the nitrogen generator, and ensure that your process is not affected by overpressure.

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

### 6. Escmode energy saving control

- This unique control feature utilises an outlet pressure monitor to reduce energy consumption during periods 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 neuair 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. This highly durable valve system is backed by a comprehensive two year warranty.

### 8. Maximum corrosion protection

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

## What nitrogen quality do I need?

The majority of applications that use nitrogen gas do not need the 10ppm (99.999%) purity supplied by the traditional gas companies as bulk liquid or gas (cylinders). Providing customers with ultra-high purity nitrogen in all instances is an unnecessary waste of money and energy

## What do we mean by 'purity'?

By purity SCALA means the maximum remaining oxygen content in the output nitrogen gas. Scala nitrogen technology when combined with Scala's compressed air pre-treatment, guarantees the nitrogen gas to be commercially sterile, oil free, dry and particulate free. (Within the specifications defined in the product information data contained in this brochure.)

The maximum remaining oxygen content required will vary with every application.

Maximum cost and energy savings = maximum oxygen level permissible



### High Purity

10 ppm to 1000ppm  
(99.999% to 99.9%)

Laser cutting

50ppm to 500ppm

Heat Treatment

10ppm to 1000ppm

Electronics Soldering

50ppm to 500ppm

Pharmaceutical

10ppm to 5000ppm

### Mid Purity

0.1% to 1% (99.9% to 99%)

Food MAP

0.1% to 1%

Food processing

0.1% to 1%

Beer dispense

0.5%

Wine blanketing

0.5%

Oil sparging

0.5%

Brazing

0.5%

Injection molding

0.5% to 1%

Wire annealing

0.5%

Aluminium sparging

0.5%

### Low Purity

1% to 5% (99% to 95%)

Fire prevention

5%

Explosion prevention

2% to 5%

Pressure testing

5%

Gas seal blanketing

5%

Pigging

5%

Chemical blanketing

1% to 5%

Autoclaves

5%

Laser Sintering

2%

Dry boxes

2%

## Sizing & specifications

NG generator model	rated outlet Row(1)	nitrogen purity at the outlet (maximum oxygen content)											
		10ppm	50ppm	100ppm	200ppm	500ppm	0.10%	0.50%	1%	2%	3%	4%	5%
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 Air Quality	8573-1:2010 Class 2.2.2(2.2.1 with high oil vapour content)
Inlet Air Pressure Range	5-13 barg

### Port Connections

Air Inlet	G1
N2 Outlet to Buffer	G1
N2 Inlet from Buffer	G1/2
N2 Outlet	G1/2

### Electrical Parameters

Supply Voltage	115 / 230 ±1115 / 230 ±10% V ac 50/60Hz
Power	80W
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)

### 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
- (2) for pressures above 10 barg, contact sales@scalacryo.com
- (3) requires an upstream dryer. Contact neuair for assistance selecting the optimum dryer for your application
- (4) If 99.9995% nitrogen is required, please contact sales@scalacryo.com
- (5) to be used as an approximate guide only. All applications should be confirmed by n-psi. Contact us for sizing assistance

### 重量和尺寸

型号	高度(A) mm	宽度(B) mm	深度(C) mm	重量 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

