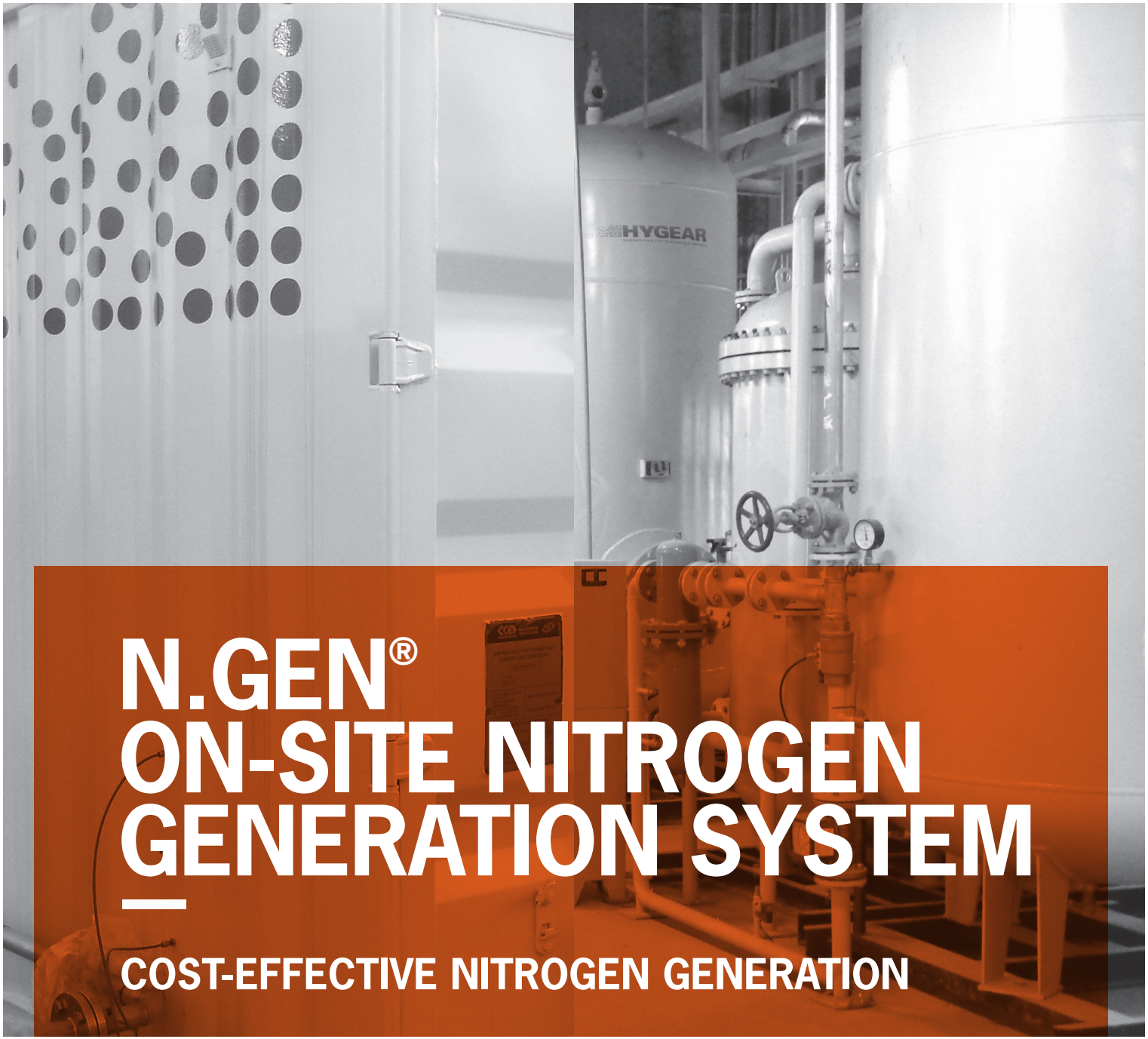


N.GEN®
ON-SITE NITROGEN GENERATION SYSTEM

COST-EFFECTIVE NITROGEN GENERATION

HYGEAR

ENERGY EFFICIENT NITROGEN GENERATION

HyGear offers Nitrogen supply ranging from 100 Nm^3/h to 3000 Nm^3/h by means of small scale on-site generation systems. There are 3 models available; N.GEN 100, N.GEN 250 and N.GEN 500 which are containerised and can be placed in parallel. This makes them highly suitable to be installed at industrial sites

The highly efficient on-site nitrogen generator is based on HyGear's extensive experience in PSA gas separation technology and gas processing systems. Due to its high quality components, the N.GEN® requires minimum maintenance while having extended operation lifetime. The systems are flexible in capacity and can be combined with HyGear's on-site hydrogen and oxygen generation systems to offer total on-site gas supply.

Applications

- Flat glass industry
- Metal industry
- Food industry
- Electronics industry
- Medical industry
- Oil & Gas industry
- Chemical industry

KEY BENEFITS

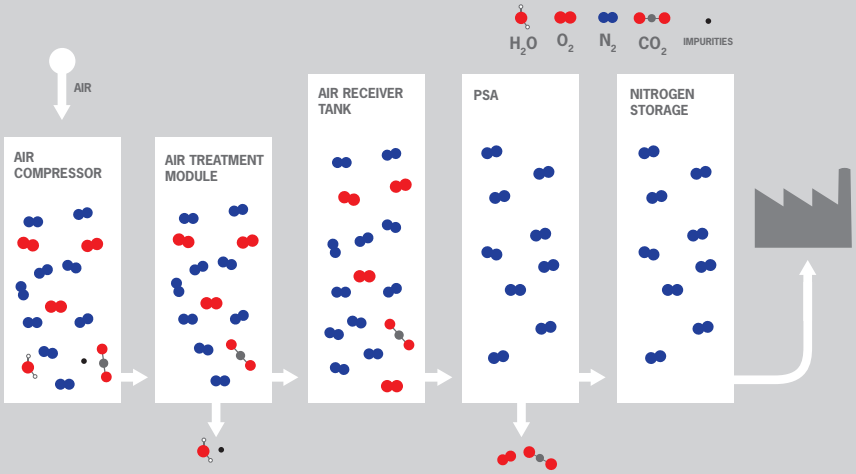
- Cost-effective
- 100% reliability through backup supply
- Flexible contracting
- Low maintenance
- Autonomous and safe operation
- Compact and modular system
- Independency of third party supply
- Energy efficient process

TECHNOLOGY

In the first section of the N.GEN® atmospheric air is compressed. The compressed air is subsequently fed in the air treatment module (ATM), to remove water, oil and impurities. The ATM consists of multiple filters, a dryer and an activated carbon oil remover. The clean, dry and oil-free compressed air is captured in the buffer tank.

The second stage of the N.GEN® is the adsorption process. HyGear uses highly efficient Pressure Swing Adsorption (PSA) technology. The PSA separates the nitrogen from other gaseous species by using the differences in adsorption properties. The two parallel active vessels enable a continuous cleaning process.

The produced nitrogen is stored in a storage tank to balance the pressure fluctuation and ensure a stable nitrogen supply. Depending on the required pressure, a compressor can be added.



Highly efficient PSA technology

The N.GEN® is based on very efficient and reliable PSA technology to increase the nitrogen production yield and purity. The N.GEN has one of the world's best air-to-nitrogen ratios, resulting in minimised energy consumption.

Qualitative adsorption material

HyGear has selected the best Carbon Molecular Sieve (CMS) as adsorption material for the N.GEN®. This CMS minimises the air and power consumption, while maintaining the required purity levels over time. A special CMS filling method is used to ensure higher density and better distribution of the adsorption material. This increases the production efficiency and ensures a longer lifetime of the material.

Selective air treatment

The selective filtration module ensures accurate pre-treatment of the compressed air and prevents impurities and water from entering the PSA.

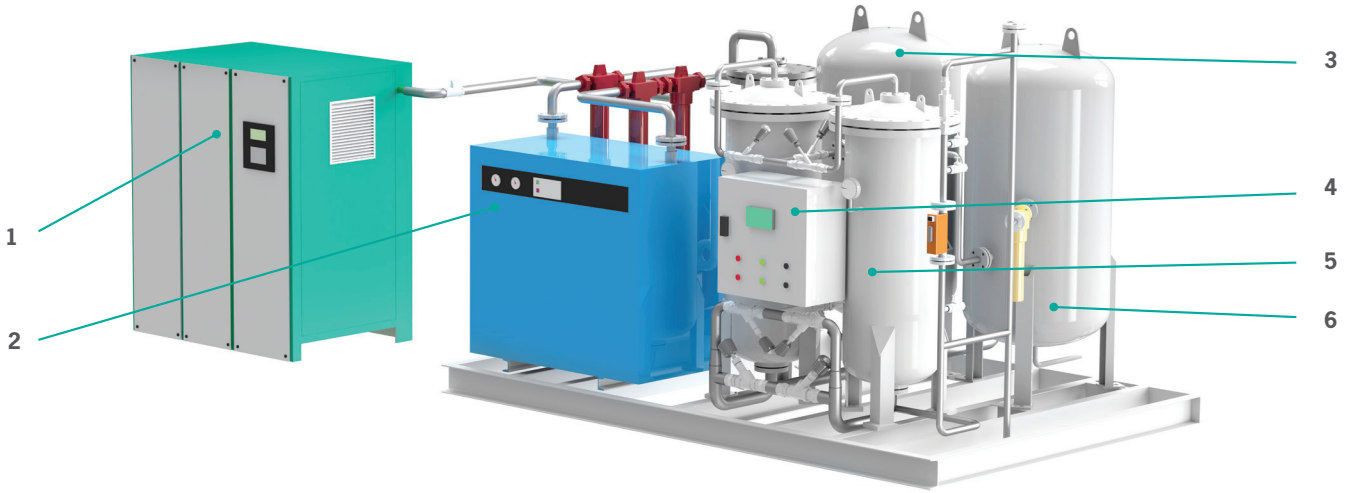
Advanced compressor

HyGear uses high quality compressors to minimise maintenance and shutdowns and to lower the energy consumption.

Secure and easy operation

An advanced control system is integrated in the N.GEN®, to monitor and control the performance of the system from HyGear's head office. The control system enables autonomous and safe operation.

WHAT'S INSIDE



1. Air compressor
2. Air treatment part
3. Air receiver tank
4. Electronics cabinet
5. PSA-vessels
6. Nitrogen buffer

SPECIFICATIONS

MODEL	N.GEN® 100	N.GEN® 250	N.GEN® 500	N.GEN®*pure* 100	N.GEN®*pure* 250	N.GEN®*pure* 500
OUTPUT						
Purity	99.5%	99.5%	99.5%	99.999%	99.999%	99.999%
Nominal nitrogen flow	92 Nm^3/h	230 Nm^3/h	460 Nm^3/h	92 Nm^3/h	230 Nm^3/h	460 Nm^3/h
Pressure	6 bar(g)	6 bar(g)	6 bar(g)	6 bar(g)	6 bar(g)	6 bar(g)
TYPICAL CONSUMPTION DATA						
Process air	267 Nm^3/h	668 Nm^3/h	1336 Nm^3/h	293 Nm^3/h	734 Nm^3/h	1467 Nm^3/h
Electricity consumption	2 kWe	2 kWe	3 kWe	4 kWe	9 kWe	18 kWe
Instrument air (at 6 bar(g))	2 Nm^3/h	3 Nm^3/h	4 Nm^3/h	2 Nm^3/h	3 Nm^3/h	4 Nm^3/h
Hydrogen	0	0	0	1.2 Nm^3/h	3 Nm^3/h	6 Nm^3/h
Cooling water	0	0	0	10 l/min	24 l/min	48 l/min
DIMENSIONS						
Size	20 ft	20 ft	40 ft	40 ft	40 ft	40 ft
Weight	7,000 kg	10,000 kg	17,000 kg	10,000 kg	15,000 kg	20,000 kg
OPERATING CONDITIONS						
Start up time	15 min	15 min	15 min	30 min	30 min	30 min
Ambient temperature Range	-20 °C to +40 °C	-20 °C to +40 °C	-20 °C to +40 °C	-20 °C to +40 °C	-20 °C to +40 °C	-20 °C to +40 °C

All data and values are indicative and based on nominal and non-frost conditions.
Values might differ due to local circumstances and feedstock characteristics.

IF YOU REQUIRE OTHER SPECIFICATIONS, CONTACT US TO ASSIST YOU WITH THE MOST OPTIMAL SOLUTION.

FIND US

USA
T +31 88 9494 304
E USA@hygear.com

Europe
T +31 88 9494 300
E info@hygear.com

Asia
T +65 6909 3062
E Asia@hygear.com

HyGear Asia Pte. Ltd.
62 Ubi Road 1
#08-13 Oxley Bizhub 2
Singapore 408734

HEAD OFFICE

NETHERLANDS

FIND US
Westervoortsedijk 73
6827 AV Arnhem

SEND US
P.O. Box 5280
6802 EG Arnhem

CONTACT US
T +31 88 9494 300
E info@hygear.com
W www.hygear.com

SALES
T +31 88 9494 308
E sales@hygear.com

www.hygear.com

HYGEAR