# FOREVER
## GAS INDUSTRY

# NITROGEN GENERATOR

## High Efficiency Nitrogen Generation:

Forever Industry offers high quality nitrogen generators tailored to your industrial needs. Optimise your business processes with reliable and efficient production.

## Custom Design and Modular Solutions:

Meet the requirements of your business with our custom-designed FRVR-N series nitrogen generators and modular solutions tailored to customer needs. Flexibility and performance in one!

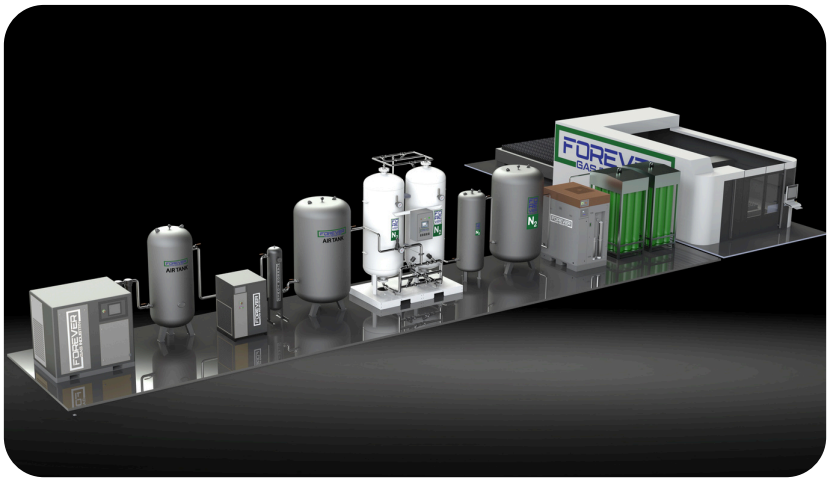
## Low Energy Consumption and Cost Savings:

Reduce your nitrogen production costs with high energy efficiency. Switch to a sustainable production process with our environmentally friendly solutions.

## Industry Standard Reliability:

Our FRVR-N Series nitrogen generators are fully compliant with industry standards and offer a long-lasting and reliable performance. Increase your business continuity!

| | |
|---|---|
| Purity Range | : 95 -99,999 |
| Max. Output Pressure | : 11 barg |
| Inlet Air Quaility According to | : 1.4.1 |
| 1SO8573 Operating Temperature | : 5 to 45 |
| Protection | : 54 |
| Frequency [Hz] | : max. 85 |
| Noise Level [dB(A)] | : 50-60 |
| Power Consumption [kW] | : 0,15 |



# NITROGEN GENERATOR

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## NITROGEN GENERATOR

$N_2$

| MODEL | CAPACITY($m^3$/h) PURITY %95,0 | CAPACITY($m^3$/h) PURITY %97,0 | CAPACITY($m^3$/h) PURITY %98,0 | CAPACITY($m^3$/h) PURITY %99,0 | CAPACITY($m^3$/h) PURITY %99,5 | CAPACITY($m^3$/h) PURITY %99,9 | CAPACITY($m^3$/h) PURITY %99,99 | CAPACITY($m^3$/h) PURITY %99,995 | CAPACITY($m^3$/h) PURITY %99,999 |
|---|---|---|---|---|---|---|---|---|---|
| Class | | | | 2 | 2,5 | 3 | 4 | 4,5 | 5 |
| Residual $O_2$ (ppm) | | | | 10000 | 5000 | 1000 | 100 | 50 | 10 |
| FRVR-N 125 | 6,5 | 6 | 5 | 4 | 3,3 | 2,4 | 1,6 | 1,2 | 0,9 |
| FRVR-N 150 | 13 | 10,2 | 9,1 | 7,2 | 5,9 | 4,2 | 2,4 | 1,8 | 1,6 |
| FRVR-N 175 | 19,5 | 16 | 14 | 11 | 9,7 | 6,5 | 3,6 | 2,7 | 2,3 |
| FRVR-N 200 | 28 | 22 | 20 | 16 | 13 | 9 | 4,6 | 3,6 | 2,9 |
| FRVR-N 225 | 35 | 30,5 | 25 | 21 | 18,5 | 13 | 8,7 | 6,6 | 5,1 |
| FRVR-N 250 | 58 | 46 | 40 | 32 | 28 | 21 | 14,5 | 11 | 8,5 |
| FRVR-N 300 | 97 | 68 | 60 | 52 | 46 | 33 | 22 | 17 | 14 |
| FRVR-N 1000 | 117 | 93 | 84 | 71 | 60 | 46 | 32 | 24 | 21 |
| FRVR-N 1100 | 152 | 124 | 106 | 85 | 76 | 60 | 41 | 32 | 25 |
| FRVR-N 1200 | 215 | 181 | 157 | 121 | 105 | 85 | 60 | 47 | 42 |
| FRVR-N 1300 | 270 | 221 | 196 | 165 | 146 | 127 | 90 | 70 | 58 |
| FRVR-N 1400 | 385 | 325 | 295 | 230 | 197 | 170 | 121 | 95 | 85 |
| FRVR-N 1500 | 450 | 379 | 329 | 259 | 224 | 190 | 136 | 107 | 96 |
| FRVR-N 1600 | 640 | 535 | 467 | 376 | 327 | 260 | 185 | 143 | 128 |
| FRVR-N 1700 | 925 | 772 | 670 | 520 | 445 | 350 | 234 | 182 | 163 |
| FRVR-N 1800 | 1200 | 962 | 845 | 661 | 605 | 430 | 275 | 215 | 192 |
| FRVR-N 1900 | 1500 | 1481 | 995 | 763 | 650 | 492 | 310 | 245 | 220 |

1. Stated flow in Nm3/h are for operation with reference to 20 °C, sea level, 8 bar inlet pressure.
2. Required inlet pressure is 1-1,5 bar(g) aboved required product outlet pressure depending on the purity and vessel sizes
3. Stated IP rating for the electrical cabinet is IP54. Others available on request. contact with us.

# OXYGEN GENERATOR

## Healthy and Reliable Oxygen Production:

Ensure high quality oxygen production with our FRV-O series oxygen generators designed for use in healthcare, medical and industrial fields.

## Compact and Portable Solutions:

Benefit from the advantages of mobile and portable use with compact oxygen generators suitable for your needs. Gain flexibility in your healthcare services.

## High Precision Control and Monitoring:

Our FRV-O series oxygen generators are equipped with precise control and monitoring systems. Meet with technology to achieve reliable results.

## Solutions for Various Application Areas:

Get solutions for every sector with our FRV-O series oxygen generators that offer a wide range of applications for use in healthcare, industry, laboratories and many more.

| FRV-O OXYGEN GENERATOR SERIES | | | | |
|---|---|---|---|---|
| MODEL | CAPACITY (Nm³/h) | PURITY | | |
| | | 90,0% | 93,0% | 95,0% |
| FRV-O-1100 | | 0,8 | 0,7 | 0,6 |
| FRV-O-1200 | | 1,4 | 1,2 | 1,0 |
| FRV-O-1300 | | 2,7 | 2,5 | 2,2 |
| FRV-O-1400 | | 3,9 | 3,6 | 3,3 |
| FRV-O-1500 | | 5,7 | 5,2 | 4,6 |
| FRV-O-1600 | | 9,9 | 8,6 | 8,1 |
| FRV-O-1700 | | 12,6 | 11,6 | 10,0 |
| FRV-O-1800 | | 15,0 | 13,6 | 12,4 |
| FRV-O-1900 | | 20,1 | 17,1 | 16,0 |
| FRV-O-2000 | | 30,0 | 27,0 | 25,0 |
| FRV-O-2100 | | 42,0 | 38,5 | 35,0 |
| FRV-O-2200 | | 60,0 | 55,0 | 50,0 |
| FRV-O-2400 | | 106,0 | 96,0 | 91,0 |
| FRV-O-2600 | | 156,0 | 141,0 | 129,0 |

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# COMPRESSOR

## High Performance Compressor Technology:

Our company is at the forefront of industrial compressor technology. We are working with preferred brands for high performance, low energy consumption and long life.

## Compressors in Various Capacities:

We offer solutions tailored to your business needs with our compressor models in various capacities suitable for your air, gas and vapour compression needs.

## Advanced Control and Automation Systems:

Our compressors are equipped with advanced control and automation systems. Use smart technology to increase the efficiency of your business.

## Reliability:

Our compressors are characterised by easy maintenance and long life. We offer a reliable solution to ensure your business continuity.

SCREW TYPE COMPRESSOR

TURBO COMPRESSOR

MEDIUM PRESSURE
(40 BAR) BOOSTER

HIGH PRESSURE
(200-300 BAR) BOOSTER

OIL-FREE
OXYGEN BOOSTER


NITROGEN &
GENERATOR


N2
N2


FOREVER
O2


FOREVER
DRY VESSEL TANK
O2


FOREVER
N2


& OXYGEN
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N2
SCHMITZ
SCHMITZ CARGOBULL
The TrailerCompany


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FOREVER
GAS INDUSTRY
DRY VESSEL


FOREVER
GAS INDUSTRY
NITROGEN
N2


NITROGEN & OXYGEN
GENERATOR
FOREVER
GAS INDUSTRY


N2
HKT 515


FOREVER
NITROGEN
$N_2$


FOREVER
GAS INDUSTRY
AYKOM COMPRESSOR
ATV
11 TD
DRY VESSEL TANK
NITROGEN
$N_2$


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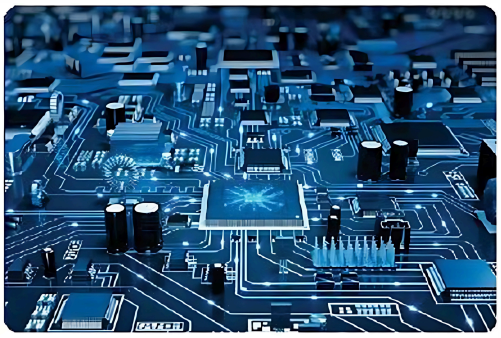
GAS INDUSTRY
5
ÇIKIŞ
DEOXY
NITROGEN
PURIFIER


FOREVER
GAS INDUSTRY


ÜRETİN
ÜRETİM

## ELECTRONICS

By using high purity nitrogen gas, our customers ensure that oxidation is prevented in soldering processes. Resulting in a cleaner and more durable soldering process. With high purity nitrogen gas, the connection quality of circuit boards is improved after production, and labour costs are reduced due to less cleaning and less rework.



## LASER CUTTING

The use of high purity nitrogen gas as cutting gas in laser cutting machines prevents oxidation on the cutting surfaces of stainless steel materials and provides cleaner cutting surfaces. The preference of nitrogen gas instead of oxygen gas in the cutting of carbon steel with the developed fibre laser cutting machines increases the cutting speed by approximately 2.5 - 3 times.

## COAL AND GOLD MINING

The use of pure nitrogen gas in coal mines allows the removal of oxygen from the environment, thus preventing combustion and explosions in the mine. The use of pure oxygen in gold separation processes shortens the duration of the process and significantly benefits productivity.

## OIL & GAS INDUSTRY

With nitrogen gas used in the Oil and Gas Industry, tankers in refineries are blanketing filled and emptied safely, thus avoiding chemical reactions and preventing fires that may occur. Nitrogen gas is used for scavenging long pipelines of refineries and testing them at different pressures. Thus, it is possible to prevent damage and losses in advance.

## MARINE AND OFFSHORE

In chemical tankers, cruide oil, liquefied gases tanker transport, inerting and sweeping operations are carried out with nitrogen gas during loading, unloading and transport of products to tankers. For tankers larger than 8000 DWT, on board nitrogen gas production system has been made compulsory. As FOREVER INDUSTRY, we install nitrogen generator systems for a safe shipment and offer more environmentally friendly solutions thanks to our low energy costs.

## MEDICAL

Oxygen is a vital gas for hospitals. With Forever Oxygen Generator Systems, we offer a better alternative to liquid oxygen and cylinder sources in hospitals. We design our oxygen generator systems with 93%-95% purity at low operating costs and ensure uninterrupted production. We eliminate your installation problems with our plug and play oxygen generator systems in containers and on chassis.

## CHEMICALS

With Forever nitrogen generators, you can guarantee the safe transfer of chemical materials, the removal of unwanted oxygen and impurities by sweeping the chemicals in the tanks before changing the chemicals in the tanks, the prevention of oxidation that may occur during production, the structure of the chemicals with the protective atmosphere during storage, as well as the absence of harmful gases into our atmosphere.

## GLASS INDUSTRY

The use of oxygen gas in the glass industry allows the glass to be melted faster and more efficiently, cut, polished and heat treated more efficiently. At the same time, oxygen prevents the formation of air bubbles as it can dissolve in the glass melt better than air.

## METAL AND HEAT TREATMENT

Heat treatment is the general name of the processes applied to improve the mechanical properties of metals. In heat treatment furnaces and autoclave furnaces that require high temperature application, it is possible to prevent oxidation of metals by creating a protective atmosphere in the furnace with nitrogen gas. In autoclave composite furnaces used for the developing aviation, defence and automotive industries, nitrogen gas is sent into the furnace at high pressures of approximately 12-15 bar.

## FOOD & BEVARAGE

Nitrogen, a dry and inert gas, prevents oxidation, degradation and contamination in the processing of food and beverages, preserving quality and original flavour. Nitrogen is a gas widely used in packaging and protects the product against crushing by keeping the packaged product more inflated. In addition, by packaging with pure nitrogen gas, the shelf life of the products is significantly increased.

## AVIATION

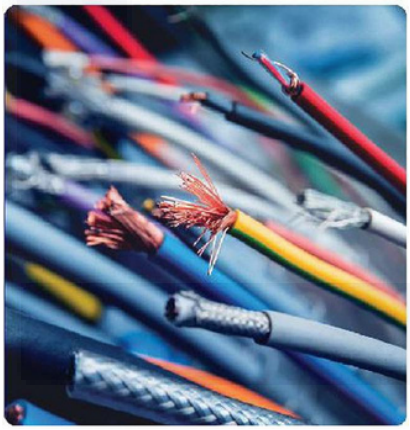
Dry and inert nitrogen gas is useful in preventing oxidative damage to tyres caused by moisture and oxygen. In addition, nitrogen gas keeps tyre pressure more stable and eliminates problems caused by heating. In addition, there is nitrogen gas in shock absorber systems and escape slide bearing systems.

## PLASTIC INJECTION

The use of high pressure nitrogen gas in the plastic injection moulding production process ensures that the product surface quality and the colour of the product are of better quality. In addition, thanks to the gaps created in the product with high pressure nitrogen gas, it allows saving raw materials in production and thus reducing costs.

## PHARMACEUTICALS

Pure nitrogen gas helps maintain product (drugs) integrity in pharmaceutical packaging and laboratory processes. In processes s uch as the transfer and packaging of products, product quality is maintained by deoxygenation and the shelf life of the products is increased.



## WIRE AND CABLING

During cable manufacturing, air, moisture and oxygen molecules enter the coating material and the wire when coated. Oxidation is prevented by performing the process under nitrogen gas atmosphere. At 450 °C, the liquid zinc residue on the galvanised wires removed from the liquefied zinc bath is removed by spraying nitrogen gas. Copper wire material is subjected to annealing process to increase flexibility and resistance. During the annealing process, nitrogen is pushed into the furnace to prevent oxidation at high temperatures in the furnace.

## AQUACULTURE &OZONE

Since fish take oxygen through direct contact with water, dissolved oxygen is the most important factor in obtaining good results in fish farming. The efficiency of fish farming with oxygen gas feeding is significantly improved. Adequate oxygen levels in the water always favour not only growth but also the health, appetite and general welfare of the fish. Oxygen also helps to reduce the effects of heatinduced stress in fish.

## GAS SPRING INDUSTRY

Gas springs consist of a precision rod connected to a piston that moves in a sealed pipe containing pressurised nitrogen gas and oil. Gas springs contain pure nitrogen gas at pressures of 200-250 bar for load carrying purposes. Nitrogen gas with 7-8 bar pressure produced with FOREVER nitrogen generators is pressurised into the shock absorber at the desired pressures with the help of a nitrogen booster. Gas springs are widely used in automotive, aviation, furniture and medical sectors.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