

Custom made air and gas solutions worldwide



About Airpack

Airpack manufactures custom-made turnkey compressors, dryers, nitrogen generators, and desulphurization installations for the oil & gas industry around the world. We design, engineer, and build all our packages according to the customer's requirements at our facilities in Zierikzee. Our packages are all completely interconnected, cabled, programmed, and tested in our workshop. We ensure they are ready to operate upon arrival at site. This turnkey philosophy significantly reduces expensive commissioning time in the field.

As Airpack is an independent manufacturer with all the required in-house expertise, we are free to cooperate with any sub-supplier. This high level of customization creates a package that is completely produced according to the customers' requirements and ideally designed for the application. As we guarantee the highest quality of all our packages, Airpack ensures the warranty, service, and spare parts of all components included in the package. This provides our customers with a single source for the complete installation.

Because Airpack's packages are designed and built according to the required specifications, our customers can be assured of high-quality performance and durability. The custom design allows the packages to operate flawlessly within the harsh conditions of a petrochemical or offshore facility. Whether it is a desert, arctic, elevated, earthquake-sensitive, salty, or sulfurous environment, Airpack always offers the best solution.





An independent manufacturer

History of Airpack

Peter Warnar, CEO and founder of Airpack Nederland bv, started as a commissioning engineer in the Middle East in the early 70s. He quickly learned that assembling installations in the field was time-consuming due to the long and difficult communication channels like Telex and fax. This, in combination with the costly repatriation of specialists, gave Peter the idea to assemble and test the units at a factory first and ship them after trial and testing to save time and money. His home country, The Netherlands, provided the ideal location for this idea. Communication was more advanced, specialists were higher educated, and the infrastructure of The Netherlands allowed for easy international transportation.

To carry out his idea, Peter started his own company in 1978 and named it Airpack Nederland bv. His first office was situated in a small historic residential house in the heart of Zierikzee, a scenic coastal town centered between two of Europe's biggest seaports, Antwerp and Rotterdam. The manufacturing area was located nearby the office and measured 500 m². Today, his initial idea has proven to be very successful. Airpack has grown significantly and built a reputation as a trustworthy supplier of high-quality products. We operate worldwide but are still located in Zierikzee in the industrial area close to the center where it all started. The manufacturing facilities have grown substantially to a total floor area of 13.500 m². The offices are now located next to the manufacturing halls and span a total of 2.400 m².

Since Airpack started manufacturing the first air compressor and air dryer packages, our scope of supply has expanded over the years. It includes gas compressors and dryers, membrane and PSA type nitrogen generators, and our newest addition: desulphurization Units. With this scope of supply, we can provide all the necessary utilities our customers require.

Compressors

Why is compression necessary?

Compression involves diminishing the volume of and simultaneously increasing the pressure on gases. In other words, this activity squeezes gaseous molecules. There are several reasons why energy companies utilize compression. For one thing, gas pipelines can facilitate a more substantial flow rate when compression is applied. Second, the required dimension of process and storage vessels is smaller for compressed gas than gas without compression. A third reason relates to the actual extraction point: compression at the wellhead can yield higher amounts of oil. From recovery to delivery, compressors are essential to transport energy to users.

What are compressors used for?

Compressors have a wide variety of applications. Their many functions include:

- Compressing air for pneumatically powered hand tools like staple guns, nail guns, sanders, riveters, jackhammers, and drills.
- Compressing air for instrumentation, controls, valves, etc., on site.
- Compressing gases like hydrogen and oxygen for chemical processing.
- Compressing light hydrocarbon fractions in oil refineries.
- Compressing natural gas for transport and storage.



Gas Compressor / Booster Compressor

When you are looking to increase the pressure on your air or gas of your already compressed medium, a booster compressor is the solution. We offer a complete range of oil-lubricated and oil-free air and gas booster compressors suitable for any gas, application, and environment. All our products can be customized to your specifications and requirements. We are free to choose any compressor brand upon your request or the best suitable for the application.

Compressor Range

Type			Min. operating pressure bar (g)	Max. operating pressure bar (g)	Min. capacity (Nm³/h)	Max. capacity (Nm³/h)
Reciprocating	Oil-free	Air cooled	3	30	5	500
		Water cooled	1	150	20	5.400
	Oil-lubricated	Air cooled	3	350	5	150
		Water cooled	1	350	30	600
Screw	Oil-free	Air cooled	2	10	200	3.850
		Water cooled	2	10	200	6.000
	Oil-lubricated	Air cooled	4	14	25	1.700
		Water cooled	4	14	500	3.000

Dryers

H₂O is problematic in many delicate industrial applications requiring compressed air. Water vapor can be hazardous to these processes. Air dryers are designed to eliminate this hazard.

How does moisture cause damage?

When water vapor is compressed, it becomes water. Water running through compressed air lines, pneumatic components, magnetic coils, and motors can inhibit the proper function of industrial machines and affect their productive output. Moisture does this in several ways:

- It creates rust and oxidation.
- It displaces the necessary lubricant, causing more significant wear on parts.
- It dilutes paint that may be applied with compressed air.
- It can freeze under certain conditions, rendering parts to become inoperable.
- It can corrupt the air or gas, adversely affecting gauge and meter readings.

Excess moisture leads to higher operating costs due to repairs and delays.

Dryer Range

Type		Min. operating pressure bar(g)	Max. operating pressure bar(g)	Min. capacity (Nm³/h)	Max. capacity (Nm³/h)
Heatless desiccant	Dew point down to -80°C	4	150	5	6.000
Heat regenerated	Dew point down to -80°C	4	150	5	4.000
Refrigerated	Dew point down to +3°C	4	14	25	4.000
Membrane	Dew point down to +3°C	5	14	1	300



How does moisture get into compressed air?

Water vapor is in the air we breathe in various percentages. Compression raises the temperature of the air, consolidating the water vapor within it. As the air cools, the water condenses in the machine segments further down from the compressor – tanks, hoses, valves, etc. – and remains there to damage the equipment. Moisture cannot be prevented, so it must be removed after compression.

Airpack supplies heatless, heated, refrigerated and membrane type dryers. The most suitable type of dryer for the application is determined by the ambient conditions, operating capacity, and required dew point. Please visit our website for more specific information on our dryers.

Desiccant Dryers

Many people are familiar with how desiccant pouches are placed in clothing and textiles to ward off mildew and must that come with moisture. This same principle can work with compressed air. Desiccant materials include activated alumina, silica gel, and a molecular sieve. The porous surfaces of these desiccants adsorb water molecules from the air and hold onto them until the compression process ceases. At this point, the desiccants are stripped from the H₂O content and are reusable. **Heated adsorption dryers** include heating components. Simultaneously, **heatless air dryers** can also employ desiccants for water vapor removal.

Refrigerated Dryers

Refrigeration drying works similarly to the process of cooling. To squeeze the maximum amount of vapor from the compressed air, refrigerant dryers generally obtain a +3 °C temperature, the maximum dew point for condensation. Hot compressed air enters the system to be cooled by the refrigeration component. During this operation, liquid droplets begin to form. These beads of moisture are then separated and trapped by a drain while the dried air passes through the refrigerated compressed air dryer.

Membrane Dryers

Membrane dryers operate as the name implies: a sheath-like bundle of hollow, polysulfone fibers allows air to pass through while capturing the water vapor. The vapor – and some of the dried air – disperses over the membrane surface area while the remaining air moves toward its destination. Afterward, the trapped vapors are flushed out of the system by an air purge mechanism.

Nitrogen Generators



The largest component of breathable air is nitrogen gas, 78%. A noble gas that is not subject to a chemical reaction and is therefore inert. Because it is inert and present everywhere, it is of great use in all oil and gas-related applications. The most common uses are blanketing, maintenance, and purging, but its use extends to many other purposes in other industries. Two methods are commonly used to separate oxygen from nitrogen; a membrane type and PSA (Pressure Swing Adsorption) type. Airpack has an extensive reference list of both.

Membrane-type nitrogen generator

Airpack's membrane-type nitrogen generator packages are the ultimate space-saving solution for generating nitrogen. Our membrane-type packages have a small footprint, are easy to maintain, and can deliver the required purity (up to 99,9%) within a few minutes. This makes them very suitable for intermittent use. Membrane-type nitrogen generators are a very cost-efficient substitute for bottle supply, especially in remote areas, on offshore platforms, or FPSOs. We can also include a bottle rack with a booster compressor along with the nitrogen generator for filling high-pressure bottles that are easily transportable on the plant or platform. Depending on the flow and subsequent costs, the membrane nitrogen generator can be fitted with large or small membranes.



PSA-type nitrogen generator

Airpack's PSA-type nitrogen generator packages are the solution for high-capacity and high-purity nitrogen supply. Our PSA-type packages can deliver up to 99,99% pure nitrogen and can be designed for a wide range of capacities. PSA-type packages are not suitable for intermittent use since it can take a longer time to reach the right purity. We can also include a bottle rack with a booster compressor along with a nitrogen generator for filling high-pressure bottles that are easily transportable on the plant site.

All our nitrogen generators are custom-engineered and calculated in-house to fit the required purity, pressure, and flow.

Nitrogen Generator Range

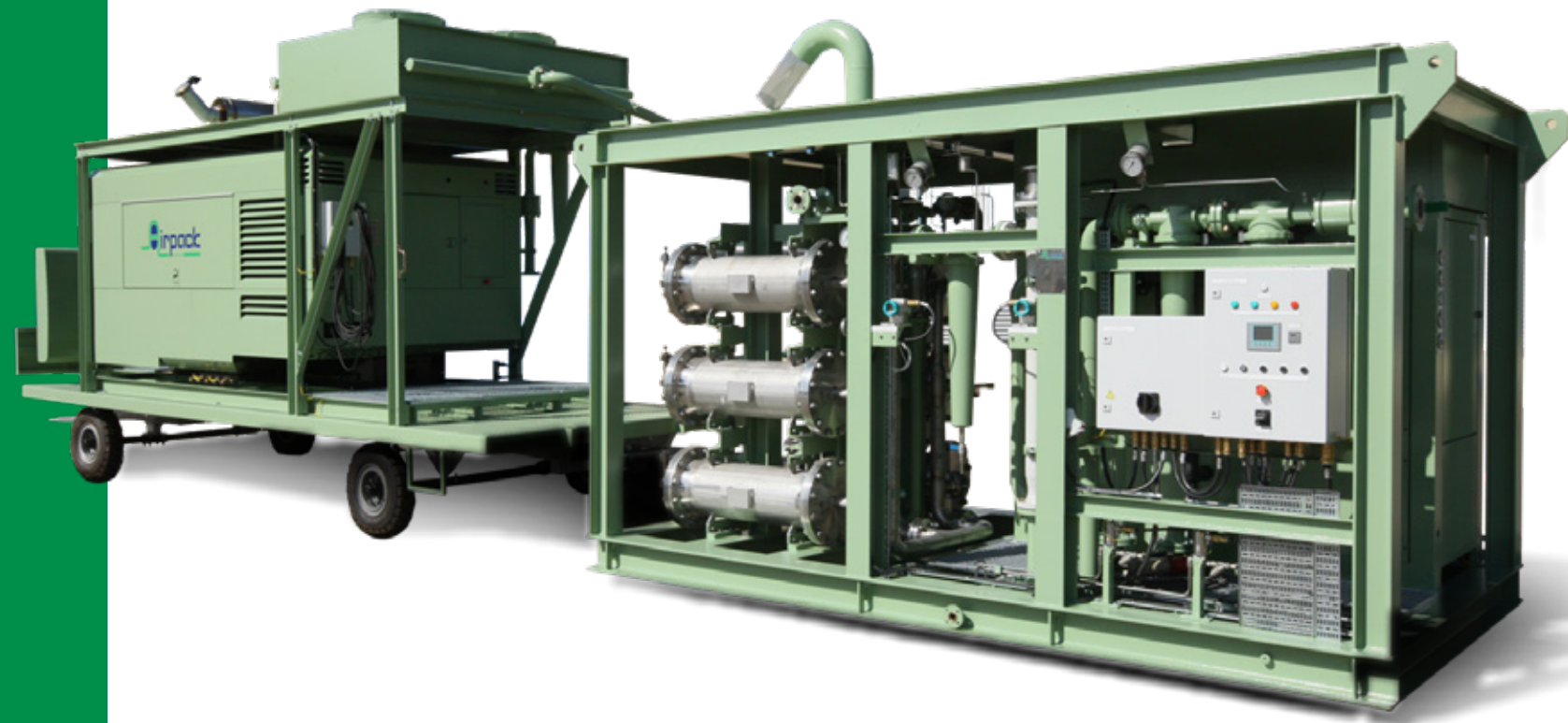
Type		Min. operating pressure bar(g)	Max. operating pressure bar(g)	Min. capacity (Nm³/h)	Max. capacity (Nm³/h)
Membrane	Purity up to 99,9%	4	34	0,1	3.000
PSA	Purity up to 99,99%	4	34	5	3.000

Portable Packages

Why portable?

Portable installations offer an advantage over static equipment because they can operate anywhere. A portable unit is a useful asset when compressed air or nitrogen is needed alternately in multiple locations. For locations such as a significant plant in the desert where mobility is advantageous, or a compact environment like an FPSO where maneuverability is essential, consider portable packages as an option.

Airpack offers portable packages with the same options as stationary units, including all-weather and explosion-proof designs. One mobile unit is a low-cost alternative to purchasing multiple units. In an environment where efficiency, flexibility, and sustainability are critical, Airpack provides custom portable solutions.



Customized design & engineering

Like our stationary packages, our containerized or portable packages are uniquely designed and manufactured. Precisely according to our customer's requirements and specifications. The packages are ready to operate at their designated locations even under the harshest conditions. Whether the containerized or portable package is manufactured for an onshore or offshore location, desert, arctic, tropical, earthquake, or elevated destination and application, our engineers will optimize the available space and implement your specifications and requirements. We focus on secure maximum efficiency.

We can even include 'walking paths' around the equipment or inside the container, enabling access for maintenance when required. Containerized portable packages can also be manufactured to 100% ATEX compliance.

Worldwide Reliability



The performance and durability of each package we produce will meet your specified application. A full package warranty after installation is what we guarantee. We dedicate ourselves to finding the best suitable solution for your technical challenge, regardless of:

- extreme ambient or environmental conditions,
- explosion-proof or hazardous area requirements, or
- stringent technical specifications or footprint restraints at offshore areas.

We excel at swiftly adapting to clients' requests thanks to our in-house expertise. It allows us to be flexible in implementing your requirements and provide you with fast and direct support. Our expertise can be found in various disciplines, from 3D engineering to PLC programming, welding, and performing non-destructive tests.

As an independent manufacturer, we work with a broad selection of sub-suppliers, ensuring an optimal and complete solution for any application. As a packager, we integrate the various parts into a perfect operating installation and guarantee the operation of the entire package.

Global Support & Spare Parts

Airpack installations are delivered turnkey and ready to operate upon arrival at the site. After that, we also provide a full range of support services:

- (Pre-)commissioning
- On-site installation start-up
- Training responsible engineers on-site or at our office in The Netherlands
- Package maintenance
- Troubleshooting

Airpack has an in-house spare parts department and warehouse, enabling fast and accurate delivery of all required spares in the field. We provide you with a full-service solution of long-term contracts for the supply of spare parts and maintenance. With our service center in the GCC area, we can also provide local support to our customers in the region. Please contact us for more information.

Desulphurization Units



Since its establishment in 2006, Gazpack has developed into a household name in the (bio)gas industry. In turning (bio)gas into clean and useable gas streams, with our Sulaway® and Sulago® systems to be precise.

These systems can be applied in various situations, from a small local farmer's manure fermentation unit to an industrial-scale installation for energy production. One of the steps in this process is removing H₂S (hydrogen sulfide).

Sulaway®

The patented Sulaway system is based on a technique to desulphurize raw gas streams. The system works with two towers filled with an adsorbent to remove H₂S from the gas. One tower adsorbs, and the other tower regenerates. The extracted H₂S is directed into a flare where the H₂S is converted into H₂SO₄. This is better known as battery acid, which can be sold and used for various applications.

Besides desulphurization, the Sulaway system also uses membrane technology to remove carbon dioxide (CO₂), which can be captured and sold as extra revenue or stored in an old well. Sulaway is designed for capacities of 1.500 Nm³/h and higher with high H₂S contents. The system has no monthly downtime but only 1 to 2 days of yearly maintenance. Most importantly, there is no waste since all outgoing streams can be reused. The ecological yield of biogas produced by the Sulaway system is nearly 100%, with a 22% higher financial yield than commonly used methods such as active carbon.

Sulago®

In addition to the Sulaway system, Gazpack offers equipment to handle smaller capacities (1.500 Nm³/h or less) with lower H₂S contents. The system for smaller capacities is called Sulago. It uses an absorbent called Sulafer to remove H₂S from the gas. Sulafer is an eco-friendly absorbent that can be regenerated. Therefore, it has a longer lifetime than other methods for removing H₂S. Like Sulaway®, Sulafer also has two towers to guarantee continuous operation during regeneration. After the absorbent is saturated, it can be disposed of as normal waste. Besides the H₂S, the Sulago system removes CO₂ with the same membrane technology.

Airpack worldwide

Highlights



Nitrogen Generator Package

Hawiyah Unayzah Gas Reservoir Storage Project

End-user Saudi Aramco

Location Saudi Arabia



Nitrogen Generator Packages

ONEgas N2 Purge on Vent Stacks Project

End-user Shell Netherlands NAM Consortium (ONEgas)

Location The Netherlands



Nitrogen Generator Package

Umm Lulu Phase II Full Field Development Project Package 2

End-user Abu Dhabi Operating Company (ADMA OPCO)

Location United Arab Emirates



Compressor & Dryer Package

Basrah Refinery Project

End-user South Refineries Company (SRC)

Location Iraq



Compressor, Dryer & Nitrogen Generator Package

Gas Compression & Reinjection Station of ZCINA Hassi Messaoud Project

End-user Sonatrach

Location Algeria



Compressor & Dryer Package

New Water Centre Project

End-user Kuwait Oil Company

Location Kuwait



Compressor, Dryer & Nitrogen Generator Package

Complex Gas Treatment Plant (CGTP-3) project

End-user Zhaikmunai LLP

Location Kazakhstan

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