

ECOVAR®

Leading on-site gas generation
plants with increased reliability
and professional support.



The ECOVAR® concept.

The ECOVAR® concept from BOC is the solution of choice for a broad range of industries that require continuous, if sometimes fluctuating, amounts of high-quality gases. With our ECOVAR® on-site gas generation plants, we ensure a continuous, monitored and flexible gas supply at the customer's site. For the on-site production of oxygen, nitrogen and hydrogen, we combine standardised components which are cost efficiently adapted to the specific demands on location.

BOC's ECOVAR® on-site product line includes plants to produce oxygen, nitrogen and hydrogen, from the very smallest cabinet-style gas generators to plants which produce tonnes of gases per day. You can choose from a wide variety of sizes, along with designs which conserve energy usage any time the plant is producing less than its maximum capacity.

Due to the modular design of our ECOVAR® on-site gas generation plants, the costs of development, production and installation can be significantly reduced. Through optimal combination of the production plant and its corresponding back-up unit, ECOVAR® offers an extremely high level of flexibility and reliability, at low investment and operational costs. You benefit from our knowledge in on-site plant project planning and plant operation – for your entrepreneurial success.

ECOVAR® is successfully deployed in the following industries/sectors:

- Electronics/semiconductors
- Photovoltaic (PV)
- Metallurgy/mining
- Chemicals and petrochemicals
- Glass
- Waste recycling and incineration
- Water treatment
- Food and beverages
- Pharmaceutical
- Refineries
- Heat treatment
- Iron and steel
- Non-ferrous
- Pulp and paper
- Manufacturing
- Energy
- Tyre manufacturing
- Metal fabrication
- Wine industry



Our strengths become your advantages.

BOC application and plant technology experts will work with the customer to ensure the proper on-site solution is selected to meet their production needs, now and in the future. With one of the world's leading plant supply engineering divisions, BOC controls all the details of the installation ensuring on-time, on-target gas supply. With this engineering capability and our broad spectrum of products, BOC can deliver an optimised solution for each individual case, even as the needs evolve into the future.

Services include:

- Analysis of demand profile in close collaboration with customer
- Detailed cost-efficiency and long-term viability analysis
- Evaluation of optimum supply concept, plant type, plant size and backup unit
- Gas application technology
- Support in all plant planning and engineering tasks
- Plant financing
- Supply, assembly and commissioning of the plant by skilled technicians
- Operation, maintenance and insurance of ECOVAR® on-site supply solutions
- Remote monitoring and control (with 24-hour surveillance) from a BOC site

Benefits of ECOVAR®

- Freedom to focus on core business
- Transparent overview of long-term costs
- No upfront investment costs
- No operating risk
- No personnel expenditure
- Zero maintenance and service effort
- No need to keep spare parts on stock

ECOVAR® is a cost effective solution if you have:

- Long-term gas needs
- A relatively constant base load
- A high annual output in terms of operating hours



Benefit from our expert applications knowledge

Nitrogen solutions.

ECOVAR® 'MINI'-N

In these gas generation plants, nitrogen is separated from the air using adsorption-based carbon molecular sieve (CMS). The 'mini'-N range of plants are highly compact and modular which enables easy transport, rapid installation and a provision for future scalability. The 'mini'-N plants also have a low power consumption resulting in reduced on-going operational costs for the end-user.

CRYOSS®-N

In these cryogenic gas generation plants, nitrogen is produced by fractional distillation of liquefied air using a cryogenic process. This process uses the different boiling points of the various constituents of air.

CRYOSS®-N HP/UP

The same basic process is applied, but enhanced to remove impurities such as CO and H₂. This results in high and ultra-high nitrogen purity grades down to ppb levels.

ADSOSS®-N

ADSOSS®-N uses an adsorption-based carbon molecular sieve (CMS) to separate nitrogen from air. Under pressurised conditions, CMS adsorbs oxygen, carbon dioxide and water vapour, whereas the nitrogen passes through the sieve. The sieve is regenerated by simply relieving the pressure. ADSOSS®-N gas generation plants are designed with two absorber vessels which alternate (as they become saturated) to ensure continuous operation. This is referred to as pressure swing adsorption (PSA).

MEMOSS®

Compressed air passes through extremely thin, long, hollow fibres, the walls of which act as semi-permeable membranes. Oxygen penetrates these walls relatively quickly, while nitrogen is generally retained within the hollow fibres until the desired purity is attained.



Oxygen solutions.

ECOVAR® 'MINI'-O

In these gas generation plants oxygen is separated from the air using adsorption-based carbon molecular sieve (CMS). This non-cryogenic process separates air by means of pressure swing adsorption (PSA) technology, which utilizes the properties of zeolite for oxygen production. The 'mini'-N range of plants are highly compact and modular which enables easy transport, rapid installation and a provision for future scalability.

ADSOSS®-O

ADSOSS®-O gas generation plants extract oxygen by means of adsorption. Whereas nitrogen, carbon dioxide and water vapour are readily adsorbed by the surface of the special zeolites, oxygen easily passes through the material. The zeolite is cleaned by reducing the pressure, using vacuum blowers.

ADSOSS®-O gas generation plants are typically designed with two cyclically-operated adsorber vessels to extract oxygen continuously. This is referred to as vacuum pressure swing adsorption (VPSA).

CRYOSS®-O

Oxygen can be generated by separating air with a cryogenic process. This solution can also be designed to produce a combination of oxygen and nitrogen.

Specifications.

Model	Flow range ²	Nitrogen purity max. (Residual O ₂)
'Mini'-N	3.0 – 165 Nm ³ /h	99.99% (0.01%) ¹
ADSOSS®-N	25 – 1500 Nm ³ /h	99.9% (0.1%) ¹
CRYOSS®-N	100 – 2300 Nm ³ /h	>99.9999% (1ppm) ¹
CRYOSS®-N HP/UHP	800 – 7000 Nm ³ /h	>99.9999% (10ppb) ¹
MEMOSS®-N	10 – 1000 Nm ³ /h	99% (0.5%) ¹

Model	Flow range	Oxygen purity max.
'Mini'-O	2.5 – 120 Nm ³ /h	93%
ADSOSS®-O	100 – 7500 Nm ³ /h	93%
CRYOSS®-O	1000 – 7500 Nm ³ /h	99.5%

Notes: 1. Nitrogen purity is actual nitrogen and inerts (i.e. Argon) determined as O₂ level is measured.

2. Based on +20°C ambient temperature. Flow rates vary depending on the ambient temperature.

Global presence meets local support.

BOC, as a Member of The Linde Group, operates in over one hundred countries around the world, serving tens of thousands of customers in almost every market area imaginable. While sharing global expertise and knowledge, BOC still provides the highest quality services our customers have come to expect from their local account representatives. With 48,000 employees, a BOC service expert is never far away, anywhere around the globe.

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