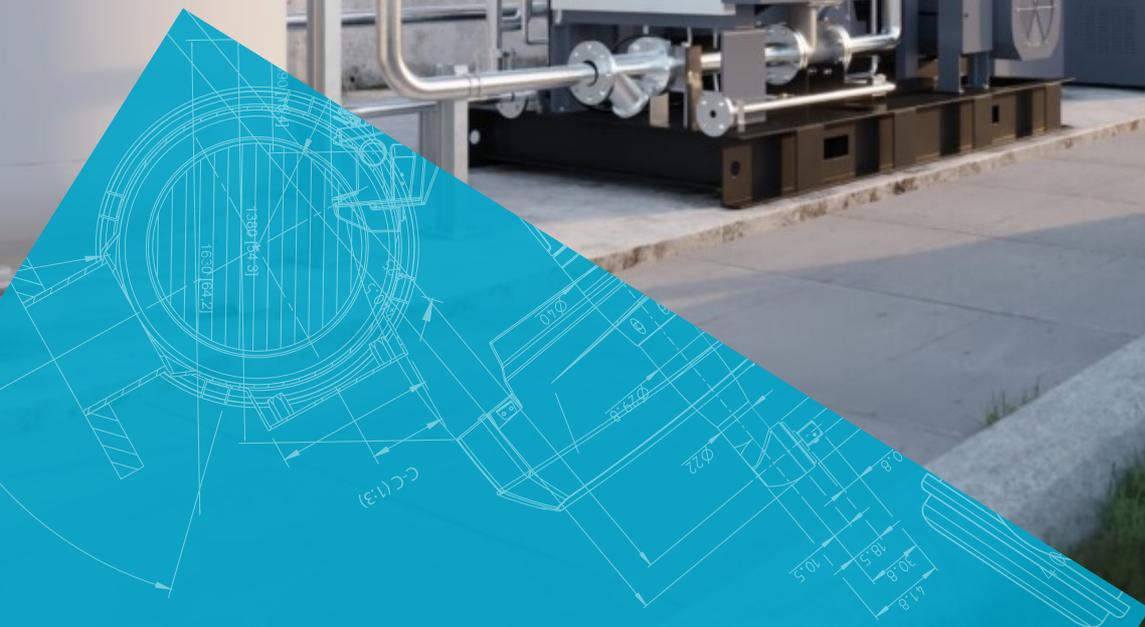


Atlas Copco



Oxygen booster

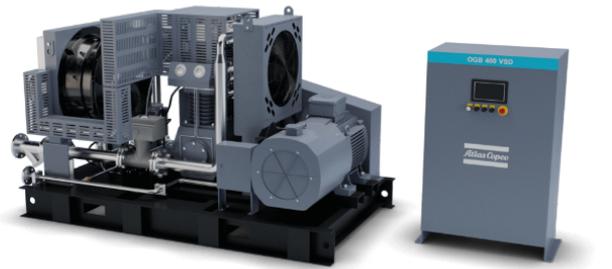
OGB VSD/0.5-10 & OGB VSD/3.5-10

The key values of OGB

The OGB Oxygen Boosters are 100% oil-free compressors, designed for continuous 24/7 operation. They come standard with variable flow functionality, making them suitable for a wide range of applications.

The O₂ booster is always supplied with low-pressure oxygen, typically from an O₂ generator. End-customer requirements can vary significantly. Therefore, it is crucial that the booster and the oxygen generator work seamlessly together to meet these varying demands. The Atlas Copco OGB booster is specifically designed to handle diverse application needs. It offers outstanding flexibility and compatibility, while ensuring optimal efficiency and performance.

Furthermore, because high-purity oxygen can create a potentially hazardous working environment, **safety** is a key focus in the product's design, ensuring reliable and secure operation under all conditions.



Safety

The oil-free solution, together with blow-by ventilation, guarantees safe operation.



Reliability

A vertical cylinder layout, coupled with an optimized compressor and thorough well testing, ensures superior reliability.



Efficiency

Variable Speed Drive (VSD) maximizes efficiency while minimizing operation cost.



Easy to use

Application-focused, compatible design makes the machine easy to operate.



Serviceability

Long service intervals and the oil-free design enhance the machine's serviceability.

Safety

Safety is paramount in any environment where oxygen is present at high concentrations. Oxygen enrichment significantly increases the risk of fire and explosion. Although oxygen itself is not flammable, it strongly supports combustion. Materials that are normally nonflammable can ignite easily and burn intensely in oxygen-rich atmospheres.

01. Oxygen safety

Combustible materials in oxygen enriched atmospheres

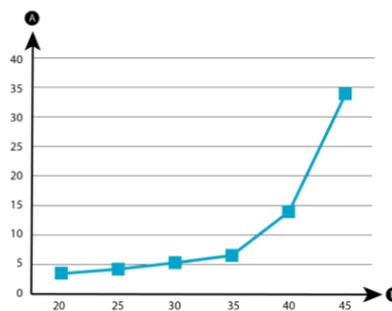
The most common combustible material that affects personnel safety is clothing.

- All clothing materials can burn fiercely in oxygen enriched atmospheres.
- Vent your clothing in a 'normal' atmosphere for at least 15 minutes!



This graph illustrates how cotton behaves when exposed to higher oxygen concentrations.

A = rate of burning cotton clothing (cm/s)
B = oxygen in atmosphere (%)



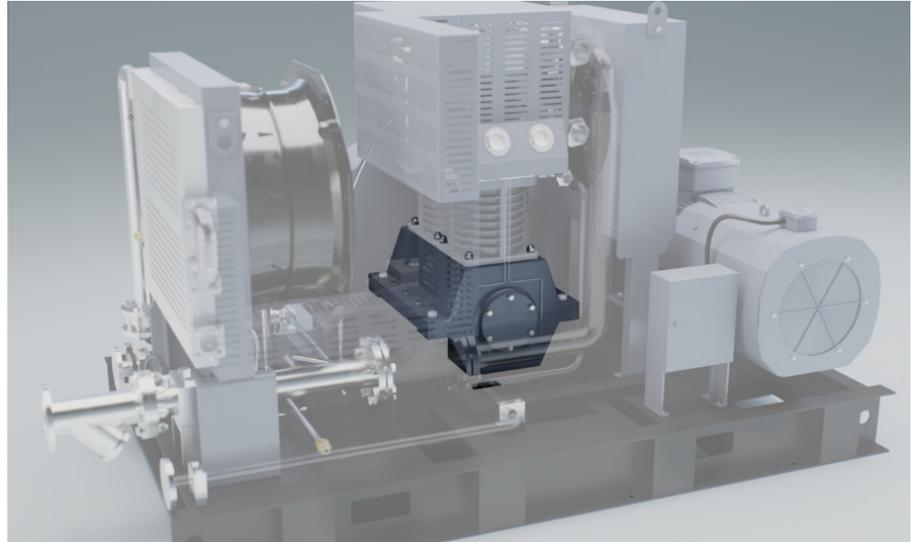
% Oxygen at sea level (atmospheric pressure)	Effects
> 23,5	Increased fire hazard
20,9	Normal
19,0	Some adverse physiological effects occur, but they are unnoticeable.
16,0	Increased pulse and breathing rate. Impaired thinking and attention. Reduced coordination.
14,0	Abnormal fatigue upon exertion. Emotional upset. Faulty coordination. Poor judgment.
12,5	Very poor judgment and coordination. Impaired respiration that may cause permanent heart damage. Nausea and vomiting.
< 10	Inability to perform various movements. Loss of consciousness. Convulsions. Death.

02. Machine safety

Machine safety is a critical component of industrial operations, ensuring that equipment is operated, maintained, and monitored in a manner that prevents accidents and protects personnel. Effective machine safety starts with thoughtful design – incorporating features such as guards, emergency stop systems, interlocks, and clear labeling – to minimize human exposure to potential hazards and create a safer working environment.

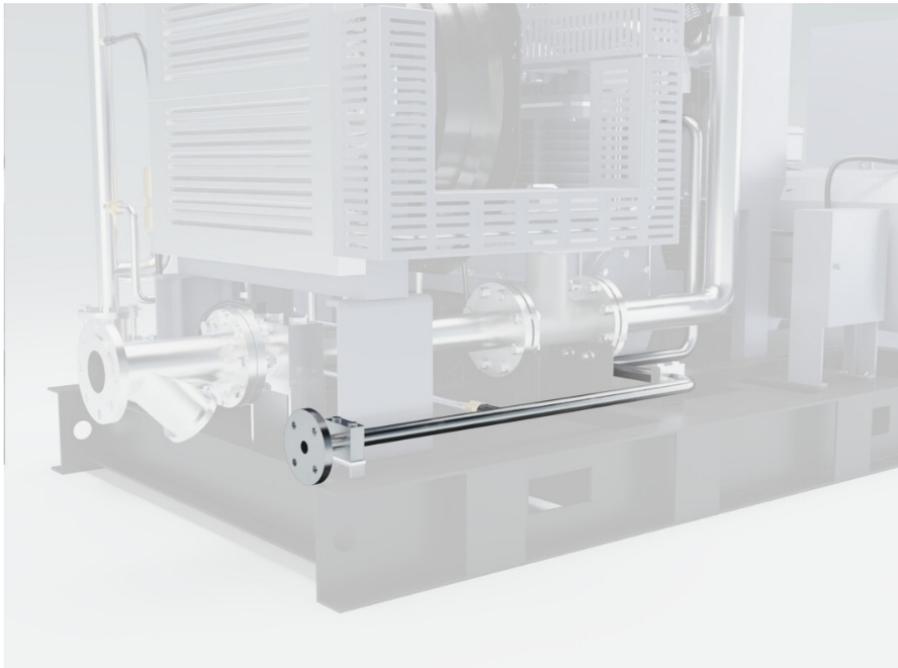
Dry-run design

By running without oil, the booster safeguards oxygen purity. This design also prevents potential explosion hazards that could arise from contact between oxygen and oil.



Dedicated ventilation pipe

All released or vented oxygen is safely collected through a dedicated ventilation pipe. The system can be connected outside the workspace to minimize risks.



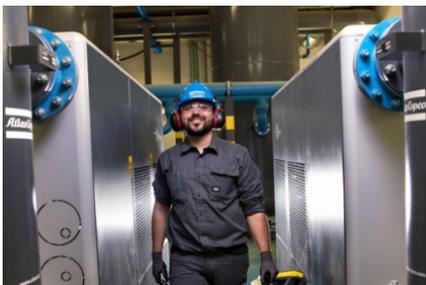
Remote control

Operate the machine effortlessly from a safe distance with our advanced Elektronikon. This remote control feature allows the operator to start, stop, and monitor key functions without being near the equipment, reducing exposure to potential hazards and improving overall safety. Ideal for challenging environments, it ensures convenience, reliability, and peace of mind during operation.



03. Operation safety

To ensure safety, all oxygen systems must be kept free from oil, grease, and other contaminants, as these substances can spontaneously ignite upon contact with high-pressure oxygen.



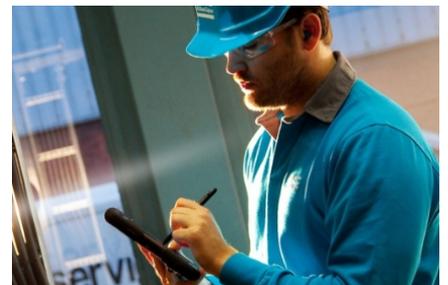
Installation

- Follow the installation instruction and ensure proper piping diameters to limit flow velocity
- Select appropriate equipment and materials, such as filter, piping, vessel,...



Cleanliness

- Compliance with cleanliness requirements during installation and maintenance
- The presence of oil or excessive particles can lead to an explosion in the O2 booster
- O2 Booster inlet quality 2:2:1



Monitoring

- O2 is colorless, odorless, non-toxic, non-flammable gas
- Ensure the installation area is well ventilated
- Install O2 level monitoring system



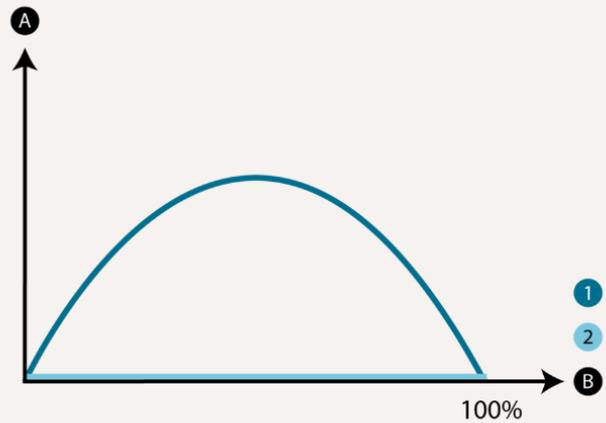
Reliability

The reliability of machines is a cornerstone of operational excellence in any industry. Reliable machinery minimizes unexpected failures, which can lead to costly downtime and disruptions in productivity.

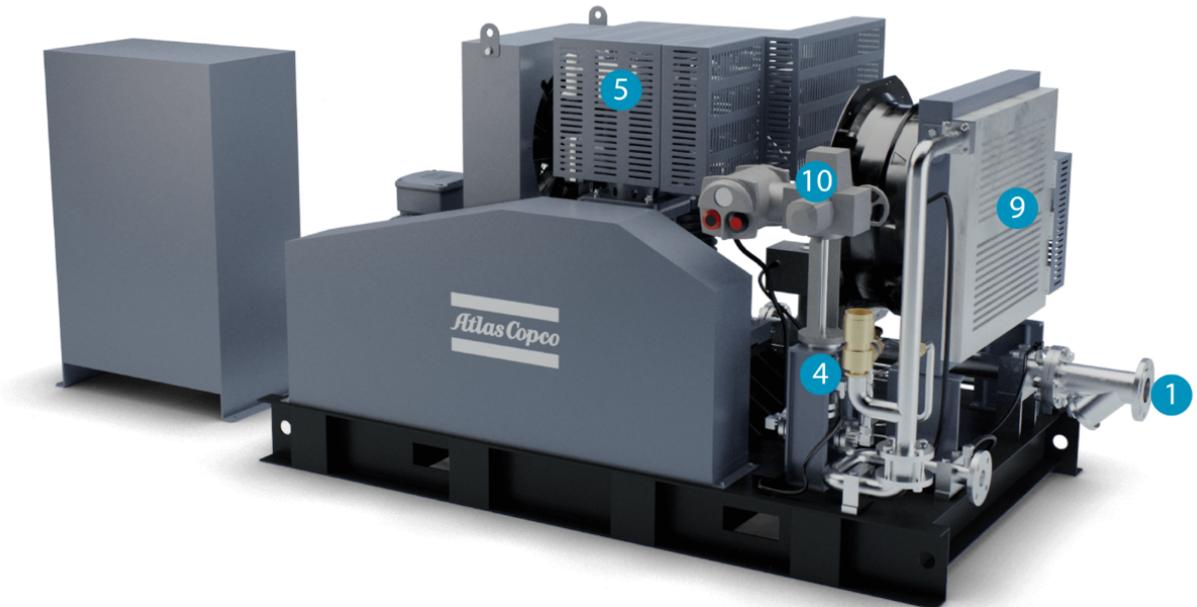
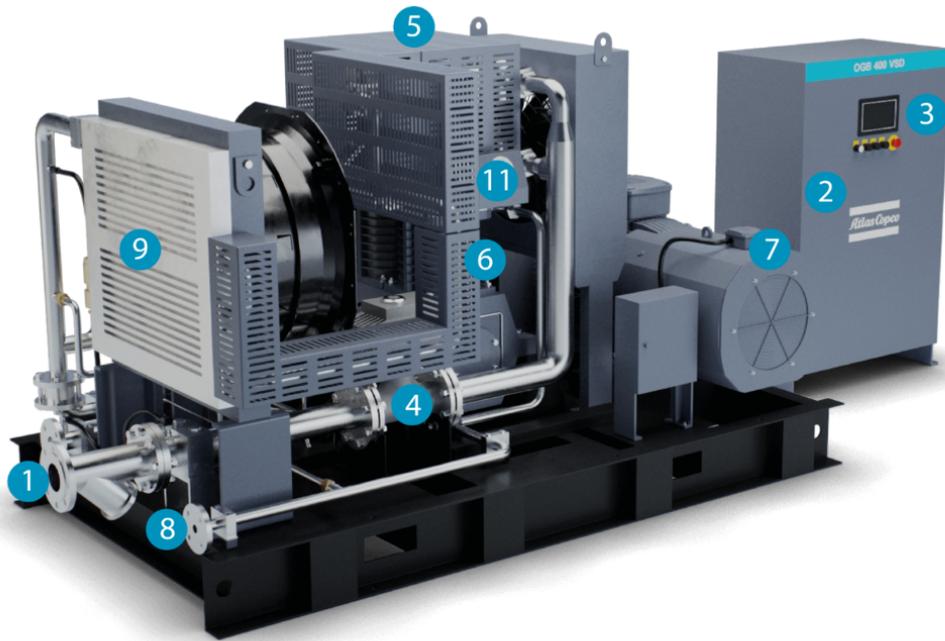
VSD & circulation valve increases machine reliability

The Variable Speed Drive and circulation valve ensure smooth, continuous operation by matching output to demand, eliminating frequent load/unload cycles and start/stop events. This reduces mechanical stress, lowers wear, and extends the booster's service life.

A = Frequency of load/unload
B = Flow ratio*
1 = Fixed Speed Drive
2 = VSD (OGB)
* Flow ratio = demanding flow/ max flow



OGB VSD



1 Oxygen inlet

The quality of the inlet oxygen has a significant impact on the booster's performance and reliability. The minimum recommended inlet O₂ quality is Class 2:2:1 in according with ISO 8573-1:2010.

2 Variable Speed Drive

- Lowers starting current, reducing impact on the local power grid.
- Deliver the flow according to consumption, eliminating the waste during unload operation, and lowering energy consumption.
- The adjustable flow provides the flexibility for OGB to suit all applications, even those with high flow fluctuations.

3 Elektronikon

- Dedicated start/stop button with warning indicator, providing operators with an intuitive control and a clear visual alert on operational status.
- Remote control connectivity allows integration with the central control system, enabling automated workflows and the ability to start or stop the machine from a safe distance, reducing exposure to potential hazards.

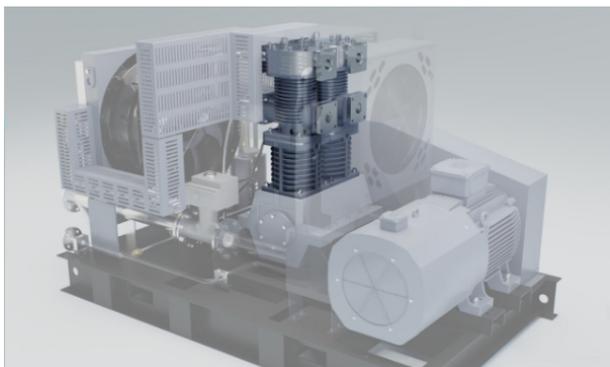
4 Blow-off valve

The blow-off valve releases outlet pressure before startup, allowing the machine to start under no-load conditions.



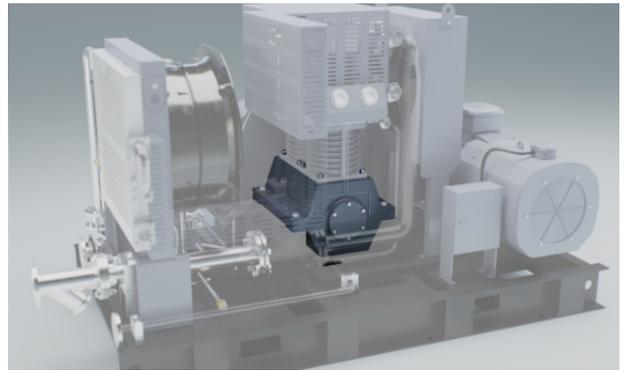
5 Pump block

- The double-acting design improves performance while keeping the pump block compact.
- The vertical inline cylinder aligns piston movement with gravity, reducing wear and extending component life.



6 Oil-free crankcase

- No oil needed in the booster, eliminate contamination risks with O₂.
- Prevents potential explosion hazards caused by contact between O₂ and oil.



7 Main motor (IE3)

The IE3 motor delivers high mechanical output with minimal energy loss, boosting overall efficiency.

8 Oxygen ventilation

Leaked or vented O₂ is safely collected through a dedicated pipe that can be routed outside the work area.

9 Cooler

High performance cooler ensures the stable inter/outlet temperature and enhance over all machine reliability.

10 Circulation

- Enables flow delivery based on application requirements even under high flow fluctuation.
- Eliminates the load/unload and enhancing overall system reliability.

11 Pressure gauge

Inlet and outlet pressures are clearly visible at a glance, making operation and monitoring easier.



Efficiency

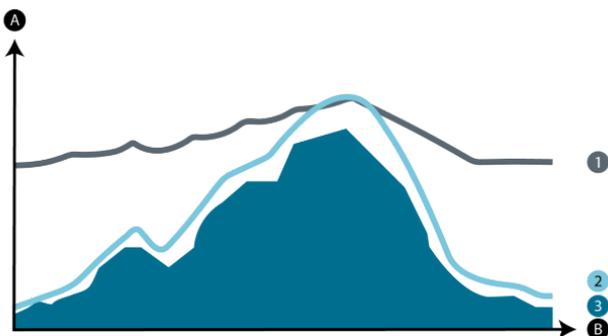
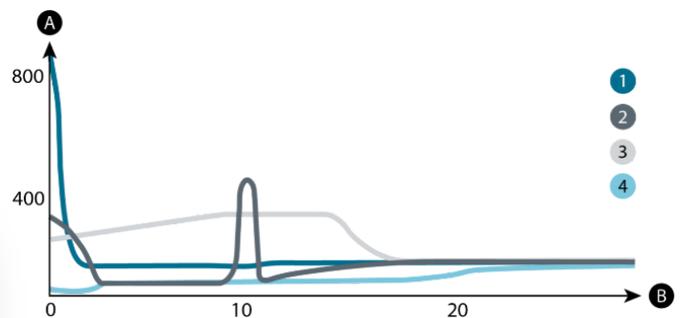
The efficiency of the booster is critically, as energy consumption represents the largest share of total cost of ownership. Even small improvements in efficiency can translate into substantial cost savings. The OGB Oxygen Booster is equipped with a Variable Speed Drive (VSD), a feature that makes a world of difference by optimizing performance and maximizing energy savings.

Designed for VSD

Reduce requirement of operation

A VSD significantly reduces the starting current of a machine by gradually increasing the voltage and frequency during startup. This reduces the strain on both the machine and the electrical system, prevents voltage drops, and puts less demand on the local power grid.

A = % full load current
 B = Seconds
 1 = Direct Online starter
 2 = Star Delta
 3 = Soft starter
 4 = VSD



VSD increases machine efficiency

VSD automatically adjusts the booster's operating speed to match production of compressed O₂ to demand in real time. VSD is designed for operations where application requirement fluctuates, such as facilities that operate different processes or multiple shifts so flow demand increases and decreases throughout the day.

Unlike fixed speed machines which always run at full capacity and waste energy when machine is at unload situation, VSD motors can adjust their speed to the load. This results in substantial energy savings, often 20–50% or more.

A = Air demand
 B = Time
 1 = Energy consumption fixed speed load/unload
 2 = Energy consumption VSD
 3 = Air demand

Easy to use

The ease of use of a booster is an important factor that directly affects productivity, safety and overall user satisfaction. It encompasses the machine's transportation, installation, operation, and compatibility with other equipment.

1. Variable Speed Drive

Our advanced Variable Speed Drive technology significantly lowers the starting current, minimizing the impact on the local power grid. By adjusting the flow to match the application requirements, even during high fluctuations, the system ensures optimal efficiency. This feature maintains stable and precise pressure at all times, delivering consistent performance for demanding operations.



2. Remote control & connectivity

The integrated remote control capability allows seamless connection to a central control system. This enables full support for automated workflows, improving operational efficiency and reducing manual intervention. With smart connectivity, you can monitor and manage your equipment from anywhere, ensuring maximum uptime and productivity.

3. Forklift-friendly design

Designed with mobility in mind, the unit includes forklift slots for easy on-site movement. This simplifies relocation and installation, making it ideal for dynamic work environments where flexibility is key.

4. 100% duty cycle

Engineered for continuous and reliable operation, the system is built to handle a full-duty cycle without compromise. Perfect for applications that demand uninterrupted performance, it delivers durability and peace of mind.



5. Blow-off function

The blow-off function ensures the booster starts quickly and effortlessly without counter pressure. This feature reduces strain on components and guarantees smooth operation from the very first start.

Service

Regular maintenance keeps machines efficient, safe, and reliable. With fast access to spare parts and timely support, downtime is minimized, ensuring smooth operations.

Atlas Copco's local service network in over 140 countries guarantees customers get expert support wherever they are.

Easy serviceability keeps machines running smoothly with minimal downtime. Quick and simple maintenance reduces costs, extends equipment life, and ensures customers get maximum productivity from their investment.



Dry-run design

No booster oil change required.

Long service interval

4000-hour service interval reduces maintenance needs.

Easy maintenance

Global and local service network provides timely support, spare parts availability, and professional maintenance. This ensures minimal downtime, consistent quality, and peace of mind.

Installation & guidelines

Correct installation of a booster system is essential to guarantee its safe, stable, and reliable performance.



1 Booster selection

Choose the perfectly sized oxygen booster and generator to meet application requirement.



3 Low & high pressure oxygen tank

Select appropriate low pressure and high pressure tank sizes as recommended in the installation manual.



2 Oxygen filter

Use an oxygen-rated filter of the correct size. Do not use standard air filters for oxygen service.



4 Inlet oxygen quality

Make sure the oxygen supplied to the booster meets Class 2:2:1 (ISO 8573-1:2010).

5 Cleaning

Ensure that all pipes, valves, and tanks are properly cleaned for oxygen service in accordance with ASTM G93.

From inlet to outlet: The flow of our O₂ booster

Compressing flow

The blue lines represent the compressing flow (A). Low-pressure O₂ flows through the booster, is compressed to a higher pressure, and then discharged through the outlet.

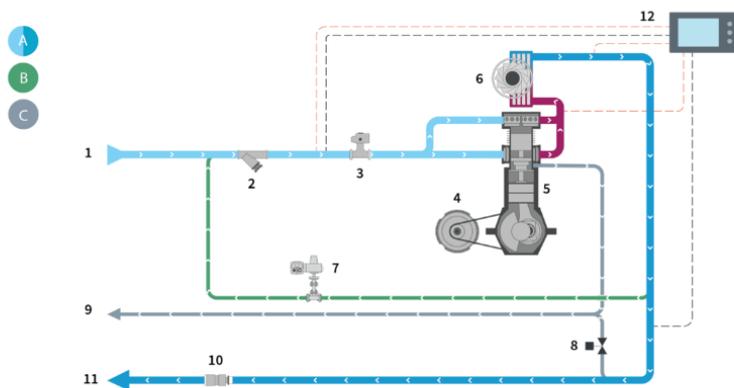
Regulating flow

The green line represent the regulating flow (B). When the flow decreases to the turndown limit of the VSD, the regulating valve automatically opens to recycle excess oxygen to the booster inlet, maintaining stable and continuous operation.

Blow-by flow

The gray line represent the blow by flow (C). Blow-by occurs when, as the piston moves upward to compress oxygen (O₂), a portion of the gas leaks between the piston and the cylinder wall and passes into the crankcase. During normal operation, if the O₂ pressure exceeds the safety valve setpoint, the safety valve will release oxygen to relieve the excess pressure. In addition, when the O₂ booster stops, it will vent the remaining compressed oxygen in the system. The blow-by flow collects all of these released O₂ and directs them safely out of the booster.

1-stage flow



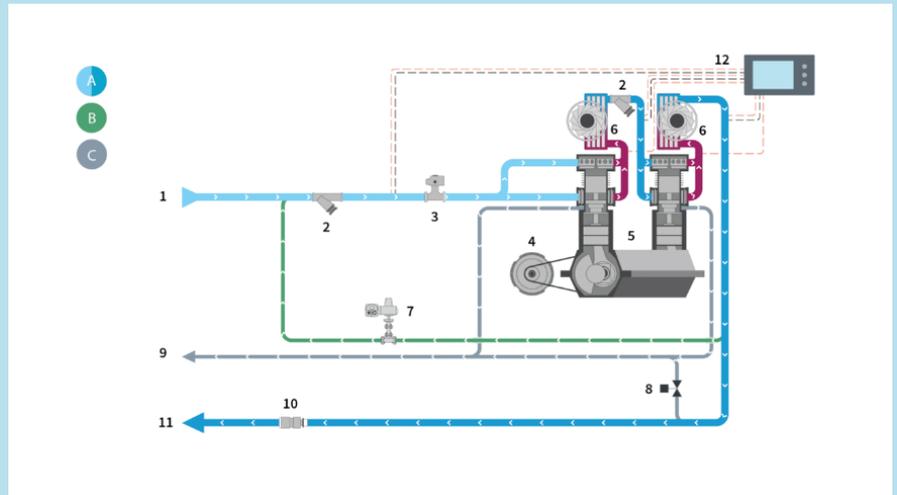
A = Compressing flow
B = Regulating flow
C = Blow-by flow

- 1 = Inlet
- 2 = Strainer
- 3 = Solenoid valve
- 4 = Motor
- 5 = Pump block
- 6 = Cooler
- 7 = Regulating valve
- 8 = Solenoid valve
- 9 = Blow-by
- 10 = Check valve
- 11 = Outlet
- 12 = Controller

2-stage flow

A = Compressing flow
B = Regulating flow
C = Blow-by flow

1 = Inlet
2 = Strainer
3 = Solenoid valve
4 = Motor
5 = Pump block
6 = Cooler
7 = Regulating valve
8 = Solenoid valve
9 = Blow-by
10 = Check valve
11 = Outlet
12 = Controller



Low-pressure oxygen (O_2) enters through the inlet (**1**). Its quality is crucial for booster performance and must meet ISO 8573-1:2010 Class 2:2:1 standards. The strainer (**2**) removes large particles from the pipeline. It only filters out coarse impurities and should not be used as a regular filter. Once the booster is ready, the controller (**12**) signals the solenoid valve (**3**) to open, allowing O_2 into the pump block (**5**). During the piston's downward stroke, O_2 is drawn in; on the upward stroke, it's compressed. Compression may occur in one or two stages depending on the required outlet pressure.

Some O_2 leaks past the piston into the crankcase during compression. This is known as blow by (**9**).

As compression raises the O_2 temperature, the cooler (**6**) reduces it to meet application requirements. When demand drops to the VSD's turndown limit, the regulation valve (**7**) opens to recycle excess O_2 back to the inlet, ensuring stable operation. The check valve (**10**) allows high-pressure O_2 to exit the booster while preventing backflow. When the booster stops, the controller (**12**) activates the solenoid valve (**8**) to vent remaining compressed O_2 .

Throughout the process, the controller (**12**) manages start-up, shutdown, pressure regulation, and system protection, continuously monitoring performance.



Technical data

Mode	Main motor nominal power (kW)	Stage	Inlet pressure (bar)		Outlet pressure (bar)		Flow (m3/hr)
			Min	Max	Min	Max	
OGB85-VSD/0.5-10	15	2	0.5	0.8	7	10	85
OGB110-VSD/0.5-10	18.5						112
OGB170-VSD/0.5-10	30						171
OGB290-VSD/0,5-10	60						293
OGB420-VSD/0.5-10	74						425
OGB160-VSD/3.5-10	15	1	3	5			160
OGB200-VSD/3.5-10	18.5						204
OGB400-VSD/3.5-10	30						405

Flow is based on 50 HZ

Flow is based on [max inlet pressure & max outlet pressure](#)

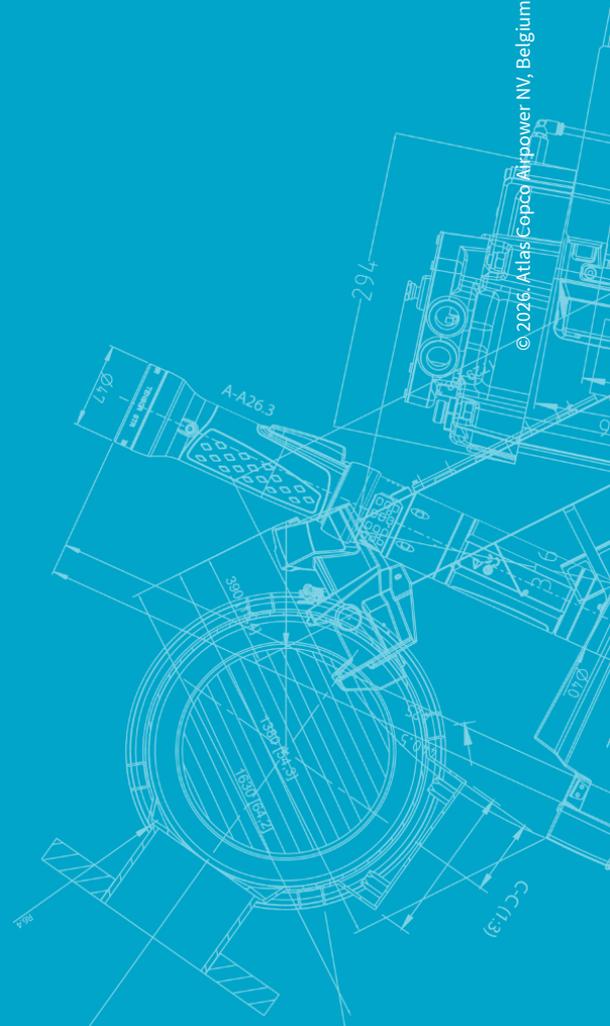
Flow is tested based on ISO 1217 Ed4 2009 (Ambient temperature 20 °C, and relative Humidity 0%)



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