

# Oil-free air centrifugal blowers

ZB 5-6 VSD+

*Atlas Copco*





## ***The ZB turbo blower: a unique design with proven efficiency***

With its new generation of ZB magnetic bearing turbo blowers, Atlas Copco releases one of the most efficient oil-free turbo blower in the market in all aspects. Paired with the highest efficiency, the ZB range proves an incomparable reliability and lifetime with its unsensitivity to process changes.

## Durable technology, smart design

Using magnetic bearings for turbo blowers is the choice Atlas Copco made to ensure a complete peace of mind to users. As no air is used from the system to operate the machine, pressure variations will not trouble the operation of the blower at all. This technology combined with the fact that no power bank is needed in case of power failure makes the Atlas Copco ZB one of the most straight forward magnetic bearing blower ever made.

## Much more than only the turbo technology

Having a very efficient turbo technology is not enough. To really enhance its capacities every component has been designed and selected to deliver the best performance and the longest lifetime.

## No hidden surprises

Comparing blowers can be a hard and confusing job. Our motive is very simple: you will get what we quote. We don't want to confuse you with differences between inlet or delivered flow, shaft or package power. We will tell you exactly which flow and pressure our machines will produce for your process as well as how much electricity in total it will consume. If you are lost just call us and we will help you!



# *The ZB range: a reliable solution for your applications*

Not only the active magnetic bearing technology but also its complete design makes the ZB range one of the most reliable turbo blowers in the market, insuring a perfect fit for all your low pressure applications.



## — **Wastewater treatment**

The ZB blowers have a very wide flow and pressure operational range, making them suitable for different wastewater treatment applications. Typically, the major energy consumers in these plants are the blowers. ZB however helps you to reduce your energy bill significantly thanks to the efficient impeller and bearing design.

## — **Pneumatic conveying**

Conveying is a delicate process which needs 100% clean oil-free air for trouble-free and continuous operation. The ZB blowers are a perfect fit for this kind of applications, ensuring energy-efficient Class 0 certified oil-free compressed air you can rely on.





## — Food and beverage

The ZB provides 100% pure oil-free air for all kinds of applications in the food and beverage industry such as fermentation, packaging, aeration for wastewater treatment purposes. Class 0 certified ZB blowers avoid compromising the purity of your end product and ensure zero risk of contamination by ensuring no oil is added during the compression process and thus delivering you 100% oil free air if the atmosphere doesn't contain any oil particles.

## — Flue gas desulphurization

In coal-fired power plants, who are running 24/7, the compressed air solution needs to be highly reliable and no downtime can be permitted. With the ZB blowers, you don't need to worry about this. They are designed to offer a constant reliable air flow at minimal energy cost.



# High efficiency and reliability



## 1. Protecting electrical cubicle

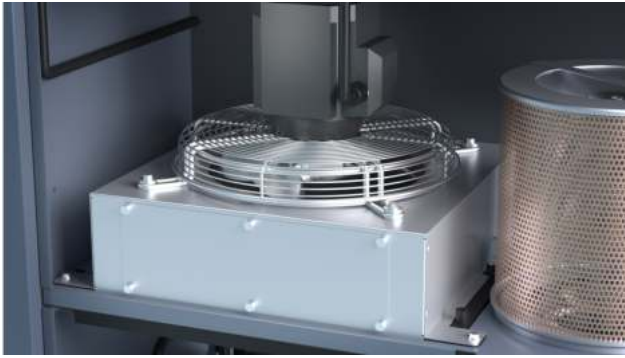
- Separated from the mechanical components to ensure proper cooling and compactness
- Includes all necessary components to protect the machine as well as the complete electrical network (RFI filters, AC choke, LC filters, sine filters etc.)
- Temperature controlled with integrated cooling fan and heating system to maintain a constant temperature in all conditions

## 2. Compact and low heat rejection frequency drive

- The high-frequency variable speed drive is the component ensuring the motor's optimum operation
- Water-cooled, it provides minimum rejection and is the most compact as well.

## 3. Magnetic bearing controller

- Compiles information from position sensors to dynamically adjust the shaft's position
- Full control of the rotor is guaranteed by the magnetic force adjustment
- No external source required nor UPS in case of power failure. Energy is pulled from the variable frequency drive through a DC/DC converter.



#### 4. Minimum internal temperature with heatsink cooling fan

- Reduces cooling water temperature for the permanent magnet motor and drive
- Cools down mechanical components inside the machine to ensure the lowest operating temperature and longest lifetime
- Centralized warm cooling air to one single common location on the machine's roof to ease ducting and heat extraction



#### 5. Actuated modulating blow-off valve

- Integrated and factory mounted modulating blow-off valve protecting the blower from overheating.
- Advanced control algorithm which allows the machine to run in the most efficient way in an extended operating flow range (from 100% to 0% turndown)



#### 6. Integrated blow-off silencer

- Integrated and factory mounted blow-off silencer to reduce noise from blow-off operation
- Attenuated noise through built-in internal turns



#### 7. High-efficiency process air filters

- Separated process air path to ensure lowest intake temperature and highest mass flow
- Parallel high-efficiency filters
- Easily accessible from the back of the machine and replaceable

#### 8. Separated process air inlet

- Manifold leading air directly from intake point to blower's impeller to separate it from internal heat
- Maintains the process air temperature to a minimum to increase mass flow delivered by the blower

# All components required to protect the machine and your network



## Advanced components

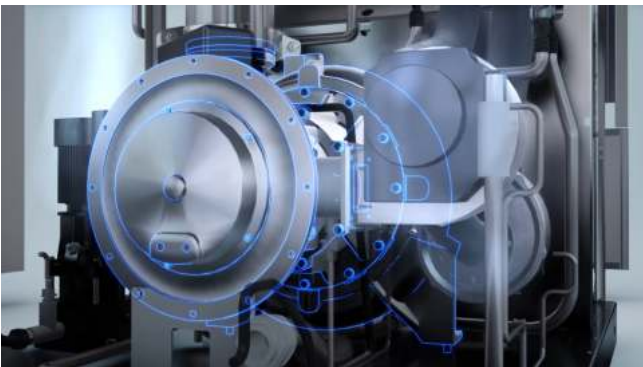
The ZB range electrical cubicle combines one of the most advanced systems to ensure the machine's reliability as well as the network in which it is connected to:

- RFI filters reducing harmonic disturbances in the network
- AC chokes against high voltage peaks
- Unit controller
- High-frequency variable speed drive
- DC/DC converter energizing the magnetic bearing controller in case of power failure
- Magnetic bearing controller dynamically adjusting the blower's shaft position
- LC filters protecting the permanent magnet motor of harmonics





# *The lowest operating temperature for all components*



## **Separated cooling air paths for one single common outlet**

The design of the Atlas Copco ZB turbo blower includes an advanced design in term of cooling paths. Three different cooling paths are joined to a single outlet source at the top of the machine. Below details of each cooling path:

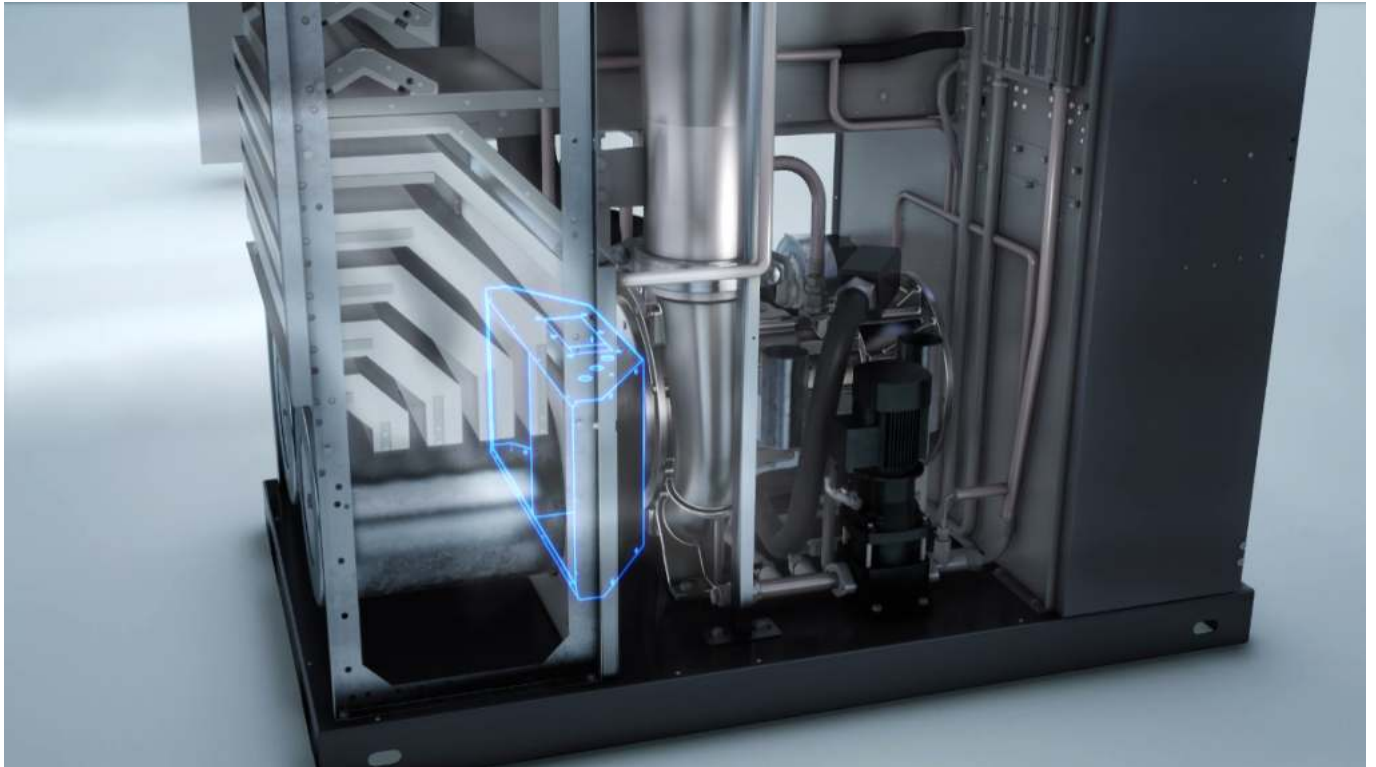
- Magnetic bearing cooling path is using fresh air from outside of the blower which is cleaned and ducted directly onto the bearings
- Internal cooling path also uses fresh cleaned air from outside of the machine to circulate around the mechanical components such as the permanent magnet motor
- Electrical cubicle cooling path is taking fresh air from the bottom of the cubicle to the top, cooling down each and every component

## **Ducted cooling paths for even more savings!**

With the possibility to duct or pipe the inlet and outlet cooling air paths, even more energy savings can be aimed. With air coming from a colder location (outside of the blower room for example), its cooling capacity is even higher and requires the dedicated cooling fans to operate less. Also, directing the warm outlet air outside of the location where the blowers are installed will result in a smaller need of blower's room cooling and consequently lead to further energy savings. With these simple two connections, high savings can be considered in the long run!



# ***Straight from the ambient to your process***



## **Minimum temperature rise and pressure drops are key**

Having air delivered to your process in the most efficient way, will be ensured by two simple principles: maintaining the air intake temperature at a minimum and inducing as few resistance as possible to the air passing through each component of the process air path. Both are achieved in the way the ZB range is packaged:

- No mix between process air and cooling air is guaranteeing low temperature into the impeller and leads to the most efficient compression
- Smoothest path for the process air to move from outside of the blower to your process without turns or drastic direction changes which could lead to several pressure and efficiency losses

# Technical specifications

## ZB 5 VSD+ - ZB 6 VSD+

TYPE	Working pressure		Max Capacity FAD		Noise level (1)	Max installed motor power		Dimensions							
	mbar(g)	psig	m <sup>3</sup> /hr	cfm		kW	hp	L		W		H		Weight	
					mm			in	mm	in	mm	in	kg	lb	
<b>50 Hz</b>															
ZB 5 VSD+	1200	17.4	6000	3531	69	140	190	1900	75	1200	48	1954	77	1500	3307
ZB 6 VSD+	1200	17.4	12000	7062	75	250	335	2265	90	1200	48	1954	77	2500	5512

(1) A-weighted emission sound pressure level at the work station, L<sub>p</sub> WSA (re 20 µPa) dB (with uncertainty 3 dB). Values determined according to noise level test code ISO 2151 and noise measurement standard ISO 9614.



# Technical specifications

Below you will find all the technical information related to the Atlas Copco ZB turbo blower as well as a hands-on preselection tool based on your flow and pressure requirement.

## A complete turbo blower range for all your needs

Atlas Copco turbo blowers make the difference. The state-of-the-art components combined in a flexible design will meet all your needs. Already for decades, Atlas Copco has proven its superiority in pairing key features into superior machines.

The scope of these plug-and-play packages can be extended with their range of standardized options. Don't hesitate to contact your local representative for more information.





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## ***COMMITTED TO SUSTAINABLE PRODUCTIVITY***

We stand by our responsibilities towards our customers, towards the environment and the people around us. We make performance stand the test of time. This is what we call – Sustainable Productivity.



ISO 9001 • ISO 14001  
OHSAS 18001  
ISO 22000

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