

Atlas Copco

Oil-free positive displacement screw blowers
ZS 7-132 / ZS 18+355+ VSD (7-355 kW / 10-475 hp)



Sustainable Productivity

Atlas Copco

Proven technology in a leading design

Low pressure compressed air is the backbone of many production processes. The ZS is the latest addition to Atlas Copco's air blowing solutions, manufactured to the highest standards of quality and reliability. Built to ensure complete product safety, ZS blowers guarantee a continuous, highly reliable, energy-efficient and 100% oil-free air supply for years on end in all your applications.



WASTEWATER TREATMENT

- Lowest aeration blower energy cost, representing 70% of the total operational cost.
- Low downtime and low maintenance cost thanks to innovative screw blower technology.
- Very wide flow and pressure operational range.



PNEUMATIC CONVEYING – DILUTE PHASE

- Lowest energy cost, representing up to 80% of the blower life cycle cost.
- Low downtime and low maintenance cost thanks to innovative screw blower technology.



FERMENTATION

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- Very wide flow and pressure operational range.



NON-WOVEN TEXTILE

24/7 meltblown non-woven textile production to make napkins, diapers, hygienic products... requires:

- Adjustable flow in order to influence fiber characteristics.
- Energy-efficient blowers to come to the lowest operational cost of this 24/7 continuous process.
- Point-of-use installation without noise-preventing measures.

KEEPING YOUR PROCESS UP AND RUNNING

A reliable supply of compressed air is critical to ensure process continuity. Incorporating Atlas Copco's proven screw technology and long standing internal engineering practices, the ZS guarantees exceptional reliability. Designed, manufactured and tested in accordance with ISO 9001 certification, the unique ZS stands for uninterrupted production.



DRIVING DOWN ENERGY COSTS

Energy costs can amount to 80% of the Life Cycle Costs of a blower. The ZS range reduces energy costs by an average of 30% when compared to lobe technology. The integrated Variable Speed Drive (VSD) technology offers extra energy savings by automatically tuning the compressed air flow precisely to the air demand.

EASY INSTALLATION

Delivered ready for use, ZS+ VSD blowers come as all-in-one packages including a PLC based Elektronikon® controller, integrated converter, forklift slots, check valve, air filter, blow-off valve and silencer. The complete scope of supply eliminates the need for extras and reduces installation to an absolute minimum, saving you time and money.



PROTECTING YOUR REPUTATION AND PRODUCTION

In virtually any application, oil contamination of the air supply causes serious productivity issues and increases costs. As the first manufacturer to receive ISO 8573-1 CLASS 0 (2010) certification for its oil-free air blowers, Atlas Copco has set a new standard in air purity. Focusing on the protection of critical applications as well as today's increasing quality demands, Atlas Copco offers TÜV-certified 100% oil-free air.

ASSURING YOUR PEACE OF MIND

Through continuous investment in our competent, committed and efficient service organization, Atlas Copco ensures superior customer value by maximizing productivity. With a presence in over 170 countries, we offer professional and timely service through interaction and involvement. Uptime is guaranteed by dedicated technicians and 24/7 availability.



ZS: the energy-efficient lobe replacement



1

Integrated gearbox

- Compared to lobe technology, screw technology does not require belt and pulley replacement.
- Reduced maintenance costs and increased uptime.



2

TEFC IP55 motor

- TEFC IP55 motor designed for continuous operation in dusty and humid environments.



3

Oil system

- Longer lifetime of bearings and gears due to lower oil temperature which is achieved by optimum oil system design including an oil pump, oil cooler and filter.





4

State-of-the-art oil-free screw element

- Incorporating acclaimed screw technology, years of experience and innovation.
- Precision timing gears for proven reliability and increased uptime.
- Industry proven element coating for closer tolerances and increased lifetime.



5

Air inlet filter

- The lifetime of the blower is increased by filtering particles up to 3μ at a performance of 99.9%.

6

Pressure gauge

7

Check valve

8

Discharge pulsation damper

- Eliminating the need for external silencer.

9

Base frame with forklift slots

- Simple, time-saving installation.
- Reduced start-up costs.

10

ZS Interface-Box (ZS-IB) option

- Safeguards your investment.
- Ensures maximum machine safety and easy networking.
- Facilitates quick and smooth commissioning.
- Monitors all parameters to ensure maximum reliability for your blower installation.



ZS+ VSD: intelligent plug and run



1

Dedicated variable speed motors

- With very wide speed range to meet flexible air demand.
- With bearing current protection and optimized motor cooling at lower speeds.



2

Electrical cubicle with integrated VSD converter

- Proven design integrating all required electrical components for optimum reliability (EMC filter, Variable frequency drive, RFI filter, Elektronikon® controller).
- Reduced installation and start-up cost thanks to complete integration.





3 Elektronikon® controller

- To ensure maximum machine safety and easy networking, the Elektronikon® system controls both the blower and the integrated converter.
- Monitoring of all parameters to ensure maximum reliability for your blower installation.



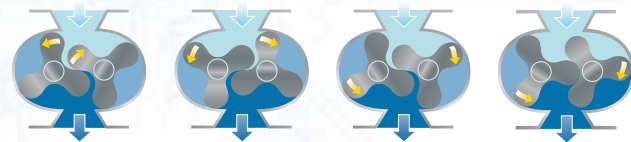
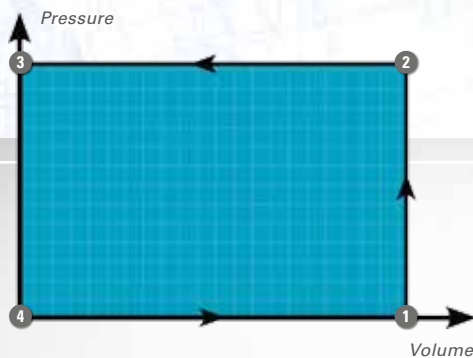
4

Noise enclosure with internal baffling

- Intelligent internal baffling design coupled with totally enclosed canopy providing reduced sound levels to 72 dB(A) for an improved working environment.
- Reduced installation costs as there is no need for noise insulated rooms and doors.

Minimize energy costs with the ZS screw blower

ENERGY LOSSES BY LOBE TECHNOLOGY

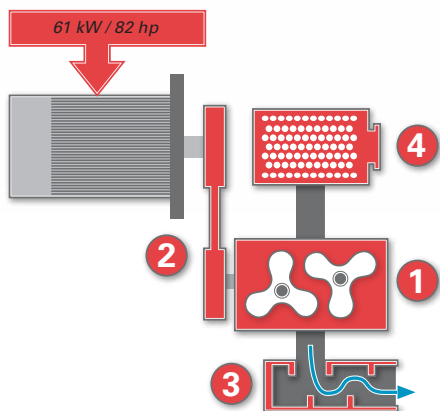
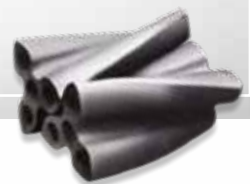


Pressure/Volume diagram of a lobe blower

● Thermodynamic energy consumption

- 4→1: Suction.** Air enters the compression chamber. The air volume remains constant while the lobe rotors turn.
- 1→2: External compression.** The air is compressed externally due to back-pressure of the connected pipeline.
- 2→3: Discharge.** Air is pushed out into the pipeline.

As shown in the Pressure/Volume diagram, the compression work is represented by the blue area and is proportional to the energy consumed.



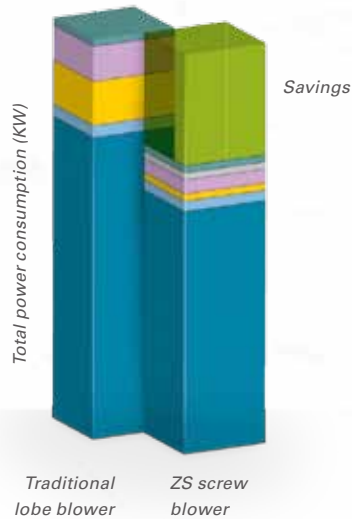
ENERGY LOSSES IN PACKAGING

High resistance to the internal air flow leads to high pressure drops and increased energy consumption.

Losses by:

- | | |
|--------------------------------|------------------------|
| 1. External compression | 3. Silencer |
| 2. Belt/pulley | 4. Inlet filter |

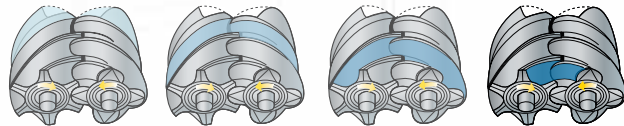
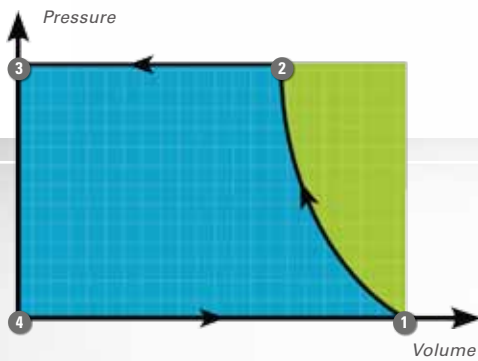
To deliver a flow of 1600 m³/hr (942 cfm) at a pressure of 0.8 bar(e) (11.6 psig), the tri-lobe blower consumes 61 kW (82 hp) on average.



True package power comparison

- Savings
- Oil Pump, Cooling Fan, Ventilation Fan
- Motor
- Frequency Converter
- Transmission (drive gear vs belt)
- Pressure Drops
- Compression

ENERGY SAVINGS BY SCREW TECHNOLOGY

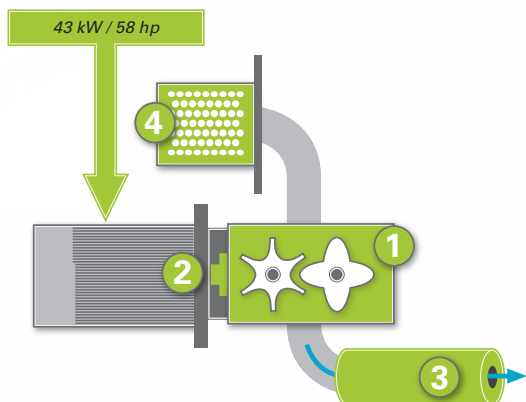


Pressure/Volume diagram of a screw blower

- Thermodynamic energy consumption
- Energy savings

- 4→1: Suction.** Air enters the compression chamber.
- 1→2: Internal compression.** As the rotors move towards each other, the air volume decreases.
- 2→3: Discharge.** Air is pushed out into the pipeline.

As shown in the Pressure/Volume diagram, the compression work is represented by the blue area and is proportional to the energy consumed. The green area represents energy savings of a screw blower compared to a traditional 'Roots' type rotary lobe blower. This is due to the internal compression.



ENERGY SAVINGS BY INTEGRATION

In the ZS screw blower, the internal air flow path is optimized to reduce pressure drops and air turbulence.

Maximum savings by:

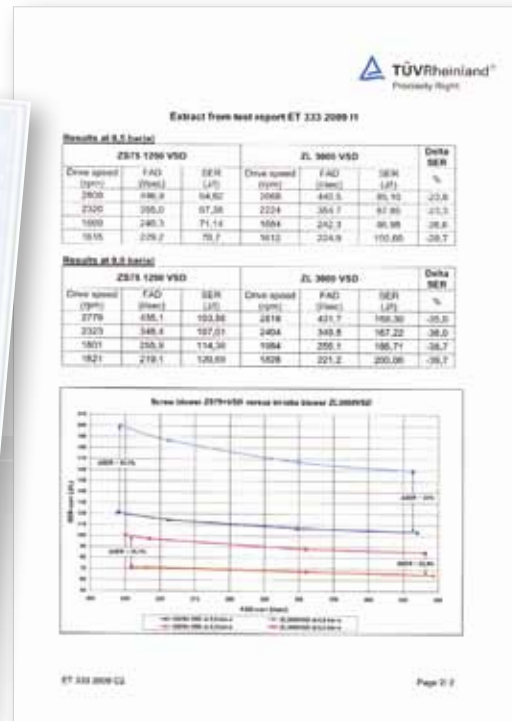
- | | |
|--------------------------------|---------------------------|
| 1. Internal compression | 3. Smooth silencer |
| 2. Integrated gearbox | 4. Inlet filter |

To deliver a flow of 1600 m³/hr (942 cfm) at a pressure of 0.8 bar(e) (11.6 psig), the screw blower consumes 43 kW (58 hp) on average.

SCREW

The superiority of the screw proven

The performance of the new ZS screw blower was tested against a tri-lobe blower by TÜV, according to the international standard ISO 1217, edition 4.



It was proven that the ZS+ VSD is **23,8 percent more energy efficient** than a tri-lobe blower at 0,5 bar(e)/7 psig, and **39,7 percent** at 0,9 bar(e)/13 psig. The world-class efficiency of the ZS is mainly attributed to the superior screw technology.

WHO IS TÜV?

The TÜV, Germany's Technischer Überwachungs-Verein or Technical Inspection Association, is an independent, international organization that specializes in evaluating the safety and quality of technology. The TÜV is recognized worldwide for its independence, neutrality, professional expertise and strict standards.

VSD: Driving down your energy costs

Energy consumption typically represents over 80% of a compressor's and blower's Life Cycle Cost. Looking continuously to innovate and reduce customer costs, Atlas Copco pioneered the Variable Speed Drive technology (VSD) in 1994. VSD stands for major energy savings, while protecting the environment for future generations. Due to our ongoing investments in R&D, Atlas Copco offers the widest range of integrated VSD blowers on the market.

VARYING AIR DEMAND IN 92% OF ALL INSTALLATIONS

In almost every production environment, air demand fluctuates depending on different factors (time of the day, week or even month). Extensive measurements and studies of compressed air demand profiles show that 92% of all compressor and blower installations have substantial variations in air demand. Only 8% of all installations have a more stable air demand. Tests prove that, even in this case, VSD blowers save energy.

Profile 1



- 64% of all installations
- Factory working 24 hrs/day: low demand at night & high demand during the day

Profile 2



- 28% of all installations
- Factory working 2 shifts/day, no weekend work: erratically varying air demand

Profile 3



- 8% of all installations
- Factory working 2 shifts/day, no weekend work: typical 'fixed' speed application



ENERGY SAVINGS OF UP TO 35%

Atlas Copco's VSD technology closely follows the air demand by automatically adjusting the motor speed. This results in large energy savings of up to 35%. The Life Cycle Cost of a blower can be cut by an average of 22%. In addition, lowered system pressure with VSD minimizes energy use across your production dramatically.

Total compressor and blower Life Cycle Cost

- Energy
- Investment
- Energy savings with VSD
- Maintenance

FIND OUT HOW MUCH YOU CAN SAVE

Atlas Copco can help you map the air demand profile of your current blower installation and indicate potential energy savings with VSD blowers. **For more information, please contact your local Atlas Copco representative.**

CLASS 0: customers choose oil-free



Oil-free air is used in all kinds of industries where air quality is paramount for the end product and production process. These applications include food and beverage processing, pharmaceutical manufacturing, chemical and petrochemical processing, fermentation, wastewater treatment, pneumatic conveying, non-woven textile manufacturing and many more. In these critical environments, contamination by even the smallest quantities of oil can result in costly production downtime and product spoilage.

FIRST IN OIL-FREE AIR TECHNOLOGY

Over the past sixty years Atlas Copco has pioneered the development of oil-free air technology, resulting in a range of air compressors and blowers that provide 100% pure, clean air. Through continuous research and development, Atlas Copco achieved a new milestone, setting the standard for air purity as the first manufacturer to be awarded ISO 8573-1 CLASS 0 certification.

ELIMINATING ANY RISK

As the industry leader committed to meeting the needs of the most demanding customers, Atlas Copco requested the renowned TÜV institute to type-test its range of oil-free compressors and blowers. Using the most rigorous testing methodologies available, all possible oil forms were measured across a range of temperatures and pressures. The TÜV found no traces of oil at all in the output air stream. Thus Atlas Copco is not only the first compressor and blower manufacturer to receive CLASS 0 certification, but also exceeds ISO 8573-1 CLASS 0 specifications.

CLASS 0 MEANS:

- ✔ Zero risk of contamination.
- ✔ Zero risk of damaged or unsafe products.
- ✔ Zero risk of losses from operational downtime.
- ✔ Zero risk of damaging your company's hard-won professional reputation.



WHY CLASS 0?

Industries depend on true oil-free technology to exclude any risk of contamination and its severe consequences, such as spoiled or unsafe products, production downtime, costly product recalls and legal issues. Atlas Copco's Class Zero technology safeguards and protects your brand's image and reputation.

CLASS 0, A MUST FOR SPECIFIC APPLICATIONS:

- In pneumatic conveying, compressed air is used for the transportation of products such as pharmaceuticals, flour, grains, pellets and powders. Oil-free compressed air safeguards the product quality.
- Oil-free compressed air is vital for the diffused aeration application as part of the wastewater treatment process. Oxygen is brought into wastewater tanks to digest the waste by means of fine bubble injection through diffusers. Diffuser disks or membranes will fail prematurely if the compressed air is contaminated with oil, and its unpredictable repair and replacement is costly.

HOW WE DESIGN CLASS 0



Efficient shaft sealing design of the oil-free blower element eliminates the risk of oil leakage and guarantees 100% oil-free air. We have triple safety barriers to prevent any oil to enter into the blower chamber:

- Threaded seal at oil side
- Carbon seal at air side
- Venting hole in between both seals

CLASS	Concentration total oil (<i>aerosol, liquid, vapor</i>) mg/m ³
0	As specified by the equipment user or supplier and more stringent than class 1
1	< 0.01
2	< 0.1
3	< 1
4	< 5

Current ISO 8573-1 (2010) classes (the five main classes and the associated maximum concentration in total oil content).

Choose the most suitable unit for your application

With the ZS range, Atlas Copco provides the most suitable scope of supply for both replacements and new installations by offering basic, standard and premium variants.

SCOPE OF SUPPLY

Air circuit	Air intake filter
	Flexible air intake pipe
	Coated screw element
	Starting/safety valve
	Check valve
	Discharge pulsation damper
	Outlet air flange
Oil circuit	Supplied oil-filled
	Completely pre-piped oil circuit
	Oil pump
	Oil cooler
	Oil filter
	Built-in oil breather system
Connections	ANSI or DIN flanges
Electrical components	Pre-mounted TEFC IP55 motor
Framework	Base frame with forklift slots
Mechanical approval	ASME or CE approval

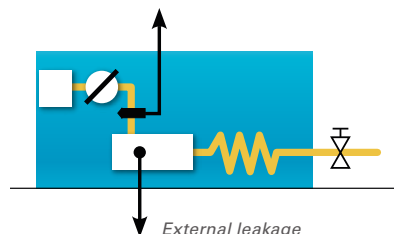
ADDITIONAL FEATURES & OPTIONS

	ZS BASIC	ZS STANDARD	ZS+	ZS+VSD
Additional features				
Pressure gauge	✓	✓		
Sound enclosure		✓	✓	✓
Integrated Variable Speed Drive (VSD)				✓
Flow control via 4-20 mA (external source)				✓
LAN or Internet control/monitoring			✓	✓
Control system (Elektronik®)			✓	✓
EMC filter			✓	✓
RFI filter			✓	✓
Options				
Wooden case	o	o	o	o
Variable speed duty motor	o	o	✓	✓
ZS-IB control box	o	o		

o : Optional ✓ : Standard

TRUE PERFORMANCE

Atlas Copco's ZS blowers are measured according to ISO 1217, Annex C, latest edition, stipulating the FAD measurement at the outlet of the package, net of all losses. Atlas Copco specifications correspond to the capacity and pressure the customer receives, not to the intake volume of the blower. Differences are substantial.



INTAKE VOLUME

Intake Volume - l/s - m³/min - cfm

Inlet flow referred to blower element inlet conditions.

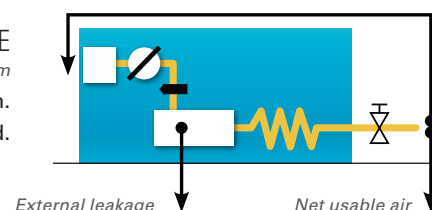
Seal leakages and inlet losses should not deprive you of the air you paid for.

DELIVERED VOLUME

FAD - l/s - m³/min - cfm

FAD according to ISO 1217, Annex C, latest edition.

A ZS blower truly delivers what is promised.







Driven by innovation

With more than 135 years of innovation and experience, Atlas Copco will deliver the products and services to help maximize your company's efficiency and productivity. As an industry leader, we are dedicated to offering high air quality at the lowest possible cost of ownership. Through continuous innovation, we strive to safeguard your bottom line and bring you peace of mind.



Building on interaction

As part of our long-term relationship with our customers, we have accumulated extensive knowledge of a wide diversity of processes, needs and objectives. This gives us the flexibility to adapt and efficiently produce customized compressed air solutions that meet and exceed your expectations.



A committed business partner

With a presence in over 170 countries, we will deliver high-quality customer service anywhere, anytime. Our highly skilled technicians are available 24/7 and are supported by an efficient logistics organization, ensuring fast delivery of genuine spare parts when you need them. We are committed to providing the best possible know-how and technology to help your company produce, grow, and succeed. With Atlas Copco you can rest assured that your superior productivity is our first concern!



www.atlascopco.com

