

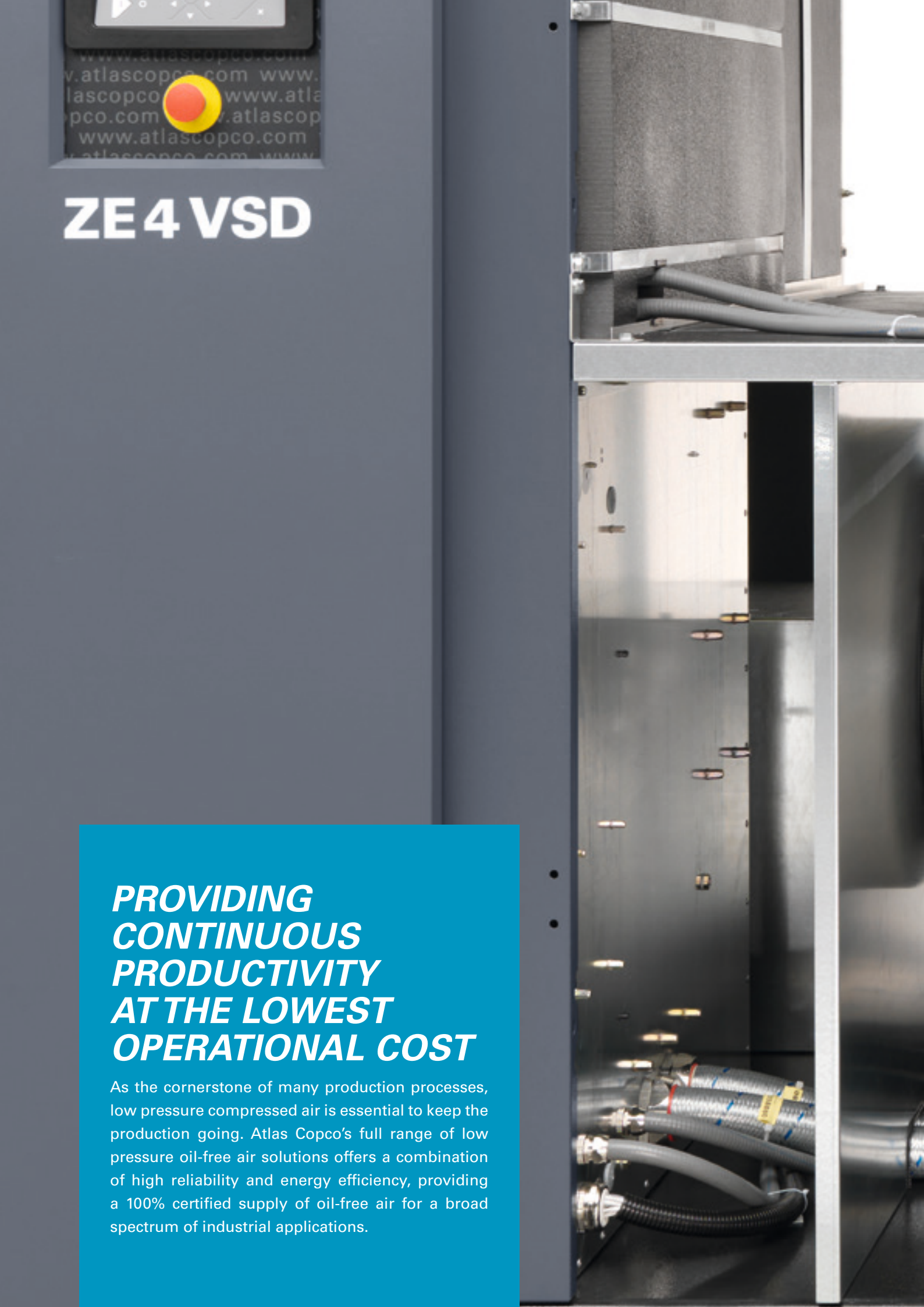
LOW PRESSURE OIL-FREE AIR COMPRESSORS

ZE/ZA 2-6 (1-4 bar(e)/14.5-58 psig) (30-522 kW/40-700 hp)



Atlas Copco



The image shows a large industrial Atlas Copco ZE4 VSD compressor. On the left, a grey panel features a yellow and red emergency stop button and the model name 'ZE4 VSD' in large white letters. Below this, a blue text box contains promotional text. On the right, the main body of the compressor is visible, showing various hoses, pipes, and internal components.

ZE4 VSD

PROVIDING CONTINUOUS PRODUCTIVITY AT THE LOWEST OPERATIONAL COST

As the cornerstone of many production processes, low pressure compressed air is essential to keep the production going. Atlas Copco's full range of low pressure oil-free air solutions offers a combination of high reliability and energy efficiency, providing a 100% certified supply of oil-free air for a broad spectrum of industrial applications.



Keeping your process up and running

Especially in harsh and dusty environments, a reliable supply of compressed air is critical to ensure process continuity.

Every ZE/ZA is designed, manufactured and tested to comply with ISO 9001 certification. The totally enclosed IP55 motor is built to ensure continuous operation and exceptional reliability in dusty and humid environments.

Driving down energy costs

Energy costs can amount to 80% of the Life Cycle Costs of a compressor. The generation of compressed air can account for more than 40% of a plant's total electricity costs.

Fully compliant with ISO 14001 standards, the ZE/ZA range helps to reduce costs: the IE3 / Nema premium efficiency motor and compression element with Teflon rotor coating and cooling jackets provide the highest air volume at the lowest energy consumption. The integrated Variable Speed Drive (VSD) technology offers approximately 35% extra energy savings by automatically tuning compressor flow to the required air demand.

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 compressors, 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.

Easy installation

Delivered ready for use, ZE/ZA compressors come as all-in-one packages including a powerful controller and optional integrated aftercooler. The complete scope of supply eliminates the need for extras and reduces installation to an absolute minimum, saving you time and money. Built for easy integration in your existing compressed air network, the ZE/ZA compressors are up and running in no time.



A COMPLETE PACKAGE FOR ALL YOUR APPLICATIONS

Built to ensure complete product safety, the ZE/ZA compressors guarantee a continuous, highly reliable, energy-efficient and 100% oil-free air supply for decades in all your applications at the lowest possible life cycle cost.



Pneumatic conveying – dense phase

- Lowest energy cost, representing up to 80% of the compressor life cycle cost.
- Minimized downtime and maintenance cost thanks to innovative single stage screw compressor technology.

Glass blowing

- Higher pressure ratio for mold cooling up to 4 bar(e)/58 psig.
- 100% Class 0 certified oil-free air resulting in the highest air quality.
- Low energy consumption required for continuous operation.

Fermentation

- Lowest energy cost, representing up to 80% of the compressor life cycle cost.
- Low downtime and low maintenance cost thanks to innovative screw compressor technology.
- Very wide flow and pressure operational range.

Mining

- Increased energy efficiency and productivity with low environmental impact.
- Minimized downtime and maintenance cost thanks to innovative single stage screw compressor technology.

CLASS 0: THE INDUSTRY STANDARD

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 and packaging, chemical and petrochemical processing, semiconductor and electronics manufacturing, the medical sector, automotive paint spraying, 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	Concentration total oil (aerosol, liquid, vapor) 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).



ZE/ZA 2: SUPERIOR DESIGN IN EVERY DETAIL

Electrical cabinet

- The standard rating of the short circuit current protection of the electrical cubicles is 50 kA (IEC), resp. 65 kA (CSA/UL).
- Fixed speed and Variable Speed Drive.



Coated rotors

- Unique Teflon coating results in increased efficiency, longer lifetime and protection against corrosion.
- High temperature resistance allows operating pressures up to 4 bar(e)/58 psig.
- The carbon steel rotors are synchronized with Nickel alloyed gears.

Oil pump

- Oil pump mounted on the drive shaft to reduce the number of auxiliary motors.
- Reliable lubrication in wide operation range.



High precision drive system

- Minimized transmission losses, noise and vibration levels.
- Prolonged element lifetime thanks to the AGMA Q13/DIN Class 5 gears in the main drive.



PRE-ENGINEERED SOLUTIONS FOR ALL YOUR NEEDS

In order to provide customers with a more flexible offering for requirements outside the standard product configuration, pre-engineered solutions are defined.

Atlas Copco recognizes the need to combine the advantage of serial produced compressors with the typical requirements of the applications for this kind of equipment. The specifications for low pressure compressors frequently require outdoor installation, operation in remote locations, often exposed to heavy duty conditions. Atlas Copco is offering pre-engineered kits to simplify the sales process.

The special requests from original equipment manufacturers (OEM's) for detailed documentation and material certificates are provided through a simplified order routine.

Deviations on the standard motor selection (request for different brand, oversized motor or motor options) and tests witnessed by the customer are other services which are supported through the competent organization behind pre-engineered solutions.

Atlas Copco

Test Procedure

1 General information

Test procedure for ZE:EA

Product Range	Atlas Zeo
Document number	Compressor / Quality Plan
Revised by	Quality Department/Atlas Zeo/EA
Revised on	January 2019 - edition 02

2 Document Overview

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ZE/ZA 3-4: THE PREFERRED CHOICE FOR TOTAL RELIABILITY AND EFFICIENCY



Integrated Variable Speed Drive (VSD) (optional)

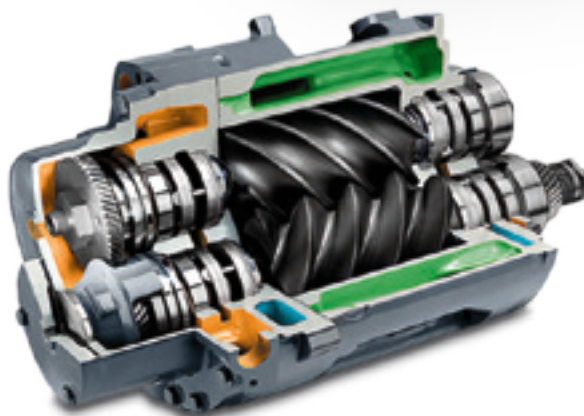
- Electrical cabinet with fully integrated frequency converter and control panel: no additional engineering and installation required.
- Specifically selected drive components: the settings are fine-tuned to achieve maximum efficiency.
- No blow-off of compressed air to the atmosphere at partial air flow requirement.
- Optimized component selection.
- Reduced installation cost.
- No interferences.
- EMC compliance tested and certified.

Air in- and outtake

- Air intakes and cooling air outlets are provided with mounting positions to allow easy ducting.
- All gratings are provided with internal baffling to reduce the noise level.
- Cooling air flows are internally separated to avoid recirculation.

State-of-the-art screw compression element

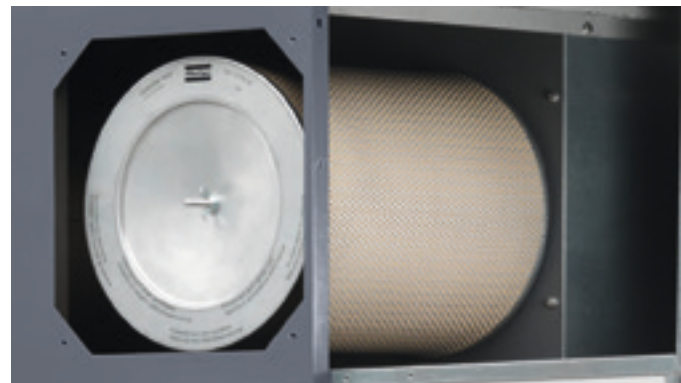
- Cooling jackets improve reliability and efficiency by ensuring rotor clearances are always kept to the absolute minimum.
- Efficient shaft sealing eliminates the risk of oil leakage, reduces wear, and guarantees 100% oil-free air.





Totally enclosed motor

- IP55 TEFC protection against dust and humidity.
- Highly efficient motors according to IE3 (equal to NEMA Premium).
- Dry motor coupling requires no lubrication, eliminating service requirements.



Air filter

- Quality air inlet filters provide high filtration class, process reliability and energy efficiency.
- Long life time extends the service interval.

Integrated air-cooled aftercooler*

- The highly efficient cooling reduces energy consumption and dryer loads.
- Variable speed fan motors allow for constant temperature control, energy savings and noise reduction (ZE 3-4).
- Combination of stainless steel pre-cooler and aluminum aftercooler to cope with high heat stress and guarantee long life time.
- User-friendliness is increased and costs reduced thanks to easy installation and easy access for cleaning.

* Option.



ZE/ZA 5-6: HIGH PERFORMANCE AT A LOW OPERATIONAL COST



Advanced element bearings

- The bearings adapt easily to changing loads, providing the flexibility and efficiency to make production processes run smoothly.
- Proven durability: two axial bearings limit internal leakage losses by maintaining small clearances between the rotor surfaces.



Load/unload regulation

- Throttle valve controlled without the need for an external air supply.
- No air compression at unload operation to reduce power consumption.



Sound enclosure

- Highly efficient noise reduction achieved through sound reflection in the sheet metal and noise absorption by the silencing foam.
- Reduced noise installation cost of the compressor room.
- Doors allow easy and quick access to all components.



Advanced Elektronikon® unit controller

- One integrated control system for compressor.
- Overall system performance status with pro-active service indications, alarms for malfunctions and safety shutdowns.
- Multi-language selectable user interface.
- Designed to interface with the Atlas Copco ES central controller.
- Remote control and monitoring is possible via Profibus and Modbus communication.

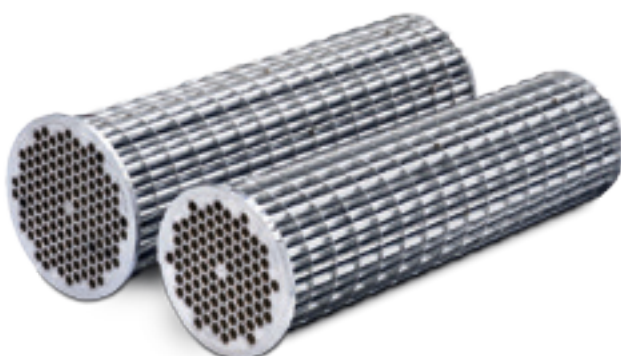


Standard NEMA 4 electric cubicle



Motors

Low and medium voltage motors available with or without starter.



Stainless-steel water-cooled aftercooler

- Corrosion-resistant stainless steel tubes.
- The risk of leaks is eliminated thanks to highly precise robot welding.
- Cooling water outside tubes guided by baffles:
 - Low pressure drop.
 - No dead zones – limited fouling.
 - No degradation in cooler performance.
 - Easy cleaning.
 - Very long service intervals.

VSD: DRIVING DOWN ENERGY COSTS

Over 80% of a compressor's lifecycle cost is taken up by the energy it consumes. Moreover, the generation of compressed air can account for more than 40% of a plant's total electricity bill. To cut your energy costs, Atlas Copco pioneered Variable Speed Drive (VSD) technology in the compressed air industry. VSD leads to major energy savings, while protecting the environment for future generations. Thanks to continual investments in this technology, Atlas Copco offers the widest range of integrated VSD compressors on the market.

What is VSD technology?

- 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 many blowers 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 compressors 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

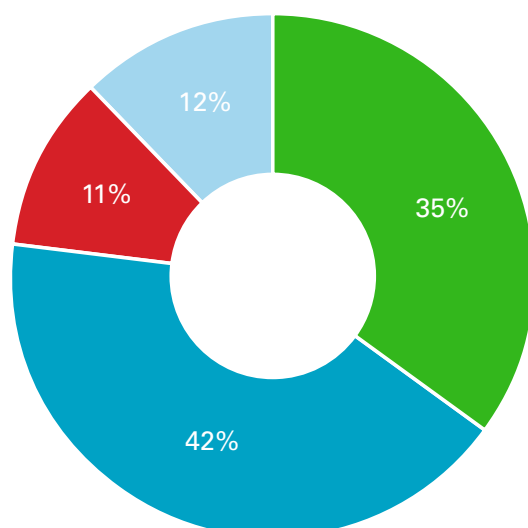
Profile 3



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

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 compressors save energy.



Energy savings on average 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 compressor can be cut by an average of 22%. In addition, lowered system pressure with VSD minimizes energy use across your production dramatically.

Total compressor lifecycle cost

- Energy
- Energy savings with VSD
- Investment
- Maintenance

A STEP AHEAD IN MONITORING AND CONTROLS

The Elektronikon® operating system offers a wide variety of control and monitoring features that allow you to increase your compressor's efficiency and reliability. To maximize energy efficiency, the Elektronikon® controls the main drive motor and regulates system pressure within a predefined and narrow pressure band.



Built-in intelligence

- Improved user-friendliness: 5.7" color display with clear pictograms for easy readout.
- Monitoring of running conditions and graphical indication of the service plan.
- Regulates system pressure within a predefined narrow pressure band.
- Integrated energy savings functions like dual pressure set point, 4 different programmable week schedules.
- Comprehensive icon indications and intuitive navigation.
- 31 different languages including character-based languages.
- Durable keyboard to resist tough treatment in demanding environments.
- Internet-based compressor visualization using a simple Ethernet connection.
- Remote control and advanced connectivity functions.



Online & mobile monitoring

Monitor your compressors over the Ethernet with the new Elektronikon® controller. Monitoring features include warning indications, compressor shut-down and maintenance scheduling.

An Atlas Copco App is available for iPhone/Android phones as well as iPad and Android tablets. It allows fingertip monitoring of your compressed air system through your own secured network.



SMARTLink*: Data Monitoring Program

- A remote monitoring system that helps you optimize your compressed air system and save you energy and cost.
- It offers you a complete insight in your compressed air network and anticipates on potential problems by warning you up-front.

* Please contact your local sales representative for more information.

OPTIMIZE YOUR SYSTEM

With the ZE/ZA, Atlas Copco provides an all-in-one standard package incorporating the latest technology in a built-to-last design. To further optimize your ZE/ZA's performance or to simply tailor it to your specific production environment, optional features are available.

Standard scope of supply

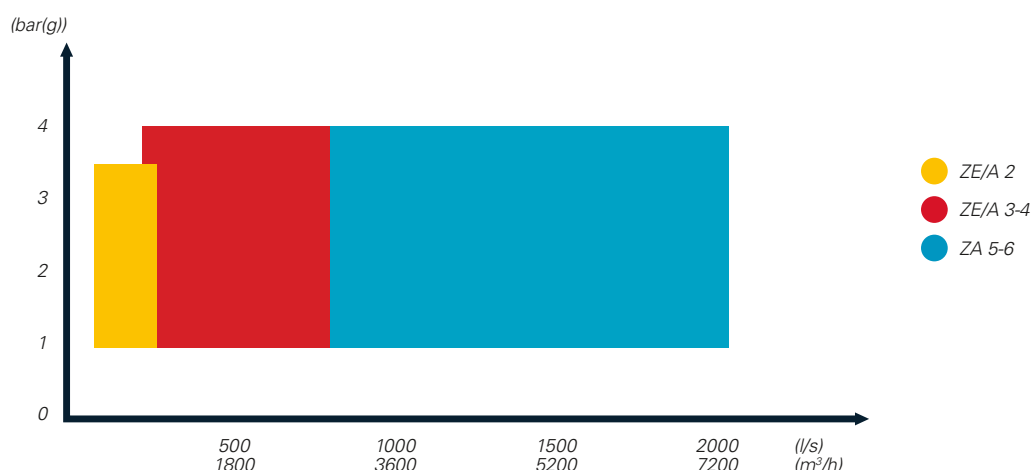
General	Air intake filter and silencer	Electrical components	IP55 water and dust-proof TEFC motor
	Flexible air intake		Pre-mounted electric motor
	Full load/no load regulator		Pre-mounted electric cubicle
	Outlet air silencer		Elektronikon® control and monitoring system
	Discharge expansion joints		Built-in starter
	Coated rotors		PT1000 Thermal Protection (≥90 kW motor)
	AGMA class 13; DIN class 5 gears		Thermistors in windings (<90 kW motor)
	Outlet air flange	Framework	Sound-insulated enclosure
	Integral blow-off		Base frame with forklift slots
	Check valve	Mechanical approval	ASME approval
	Safety valve		CE approval
Oil circuit	Supplied oil-filled	Electrical approval	IEC
	Completely pre-piped oil circuit		CSA/UL
	Built-in oil breather system		
Cooling circuit	Air- or water-cooled variant		
	Single-point inlet and outlet connections		
	Back-flush arrangement for cooler cleaning*		
Connections	ANSI flanges		
	DIN flanges		

Options

Thermistors in motor windings	ISO1217 test certificate	Outdoor
Anti-condensation heaters	ISO1217 witnessed performance test	Special canopy color
PT1000 in windings and bearings	Nitrogen version	Motor routine test certificate
No motor	Freeze protection	Earthing bosses
Anchor pads	Winterisation	
Material certificates	High ambient temperature	

*For more details please contact your Atlas Copco sales representative.

Product range





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.



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