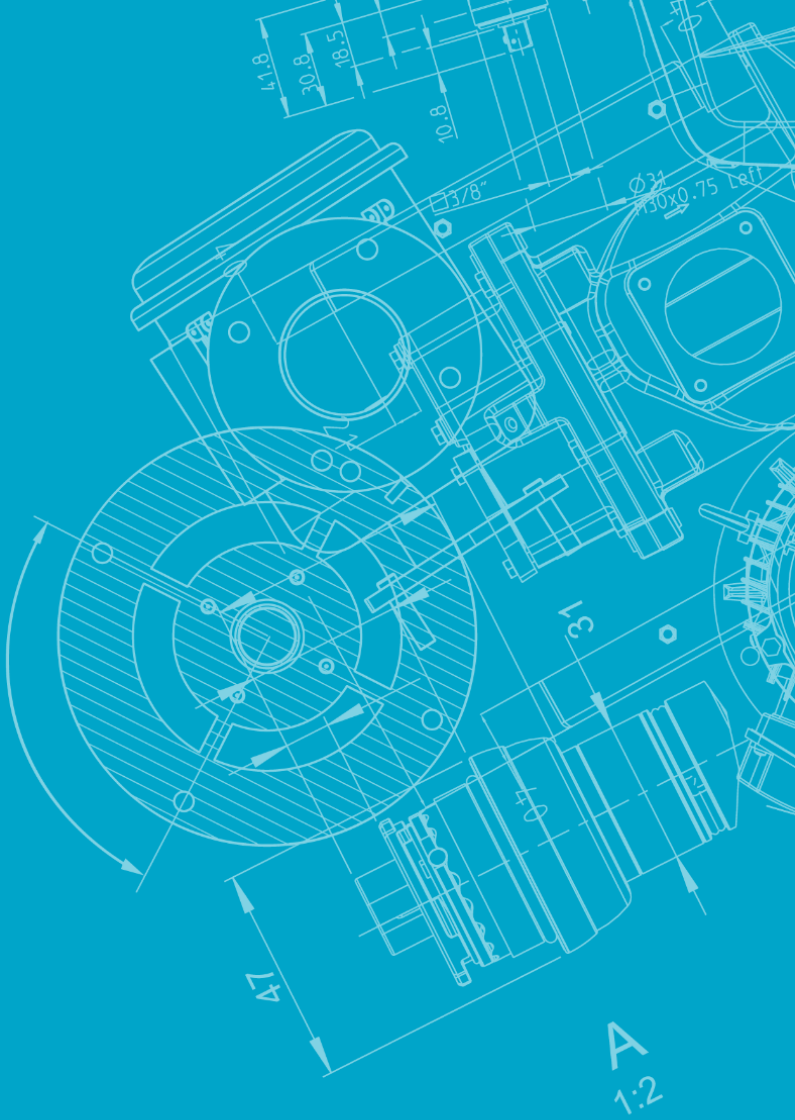
Oil-free rotary screw compressors

ZR/ZT 110-160 (FF)



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Setting the standard in energy efficiency, safety and reliability

The shortest route to superior productivity is to minimize operational cost while maintaining an uninterrupted supply of the right quality of air. The Atlas Copco Z compressor series is focused on effectively saving energy, ensuring product safety – only oil-free machines exclude contamination risks for 100% – and guaranteeing the utmost reliability around the clock. And not just today, but day after day, year after year, with minimal maintenance cost, few service interventions and long overhaul intervals.

Pioneering oil-free air technology

The ISO 8573-1 CLASS 0 certification means, zero risk of our products contaminating the compressed air. This means we won't damage your company's hard-won professional reputation due to oil contamination from our oil-free products.

Maximum energy efficiency

The ZR/ZT's superior oil-free screw elements provide the optimum combination of high Free Air Delivery (FAD) with the lowest energy consumption. Ample sized cooling, low pressure drops and an extremely efficient drive train result in the highest compressor package efficiency.

The most complete package

With the ZR/ZT compressor, Atlas Copco provides a superior solution without hidden costs. The totally integrated, ready-to-use package includes internal piping, coolers, motor, lubrication and control system. The Full Feature version even integrates an IMD adsorption dryer for an impeccable end product. Installation is fault-free, commissioning time is low and no external instrument air is required. You simply plug and run.

Lowest operating costs

Our aftermarket product portfolio is designed to add maximum value for our customers by ensuring the optimum availability and reliability of their compressed air equipment with the lowest possible operating costs.

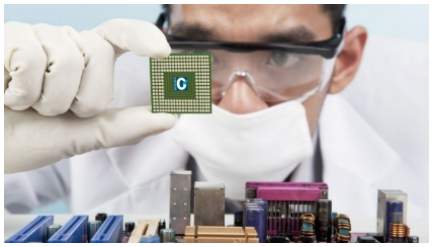
Global presence – local service

We deliver this complete service guarantee through our extensive service organization, maintaining our position as leader in compressed air.


Atlas Copco
ZT 160

The right air quality to protect your products

Compressed air is used in a wide variety of manufacturing and commercial operations. Air is generated from the ambient atmosphere around the compressor and typically would contain contaminants in the form of dust and water which are two naturally occurring impurities while a third impurity which is oil typically gets added to compressed air due to the compression process. Oil though can be avoided/eliminated by using our 100% oil free compressors.



100% oil-free compressed air

For over 60 years Atlas Copco has pioneered the development of oil-free air technology. Resulting in the largest range of air compressors and blowers within our industry. Through continuous research and development, we achieved a new milestone, setting the standard for air purity as the first manufacturer to be awarded ISO 8573-1 CLASS 0 certification. CLASS 0 certification means zero risk of oil contamination from our products.

Air treatment

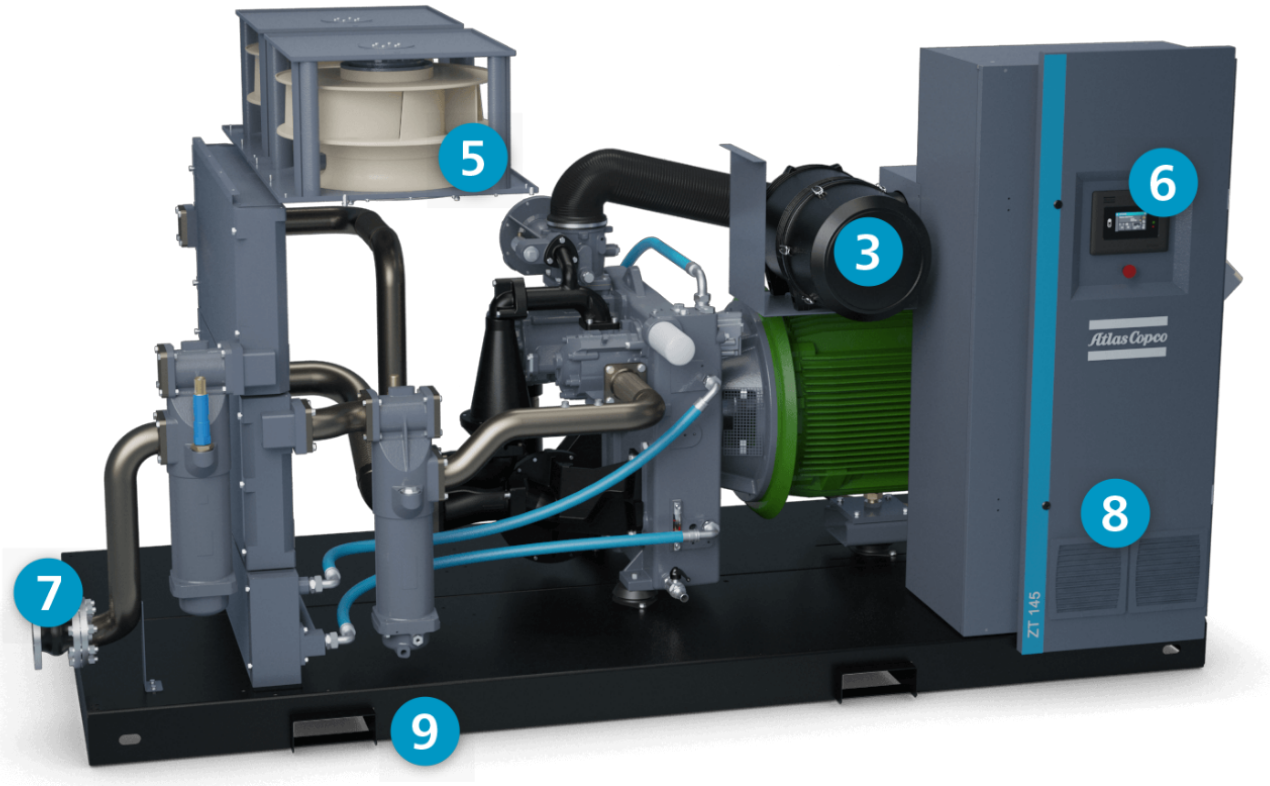
Untreated compressed air contains moisture and possibly dirt particles that can damage your air system and contaminate your end product. The resulting maintenance costs far exceed air treatment costs. Atlas Copco believes in effective prevention and provides a complete range of air treatment solutions to protect investments, equipment, production processes and end products.

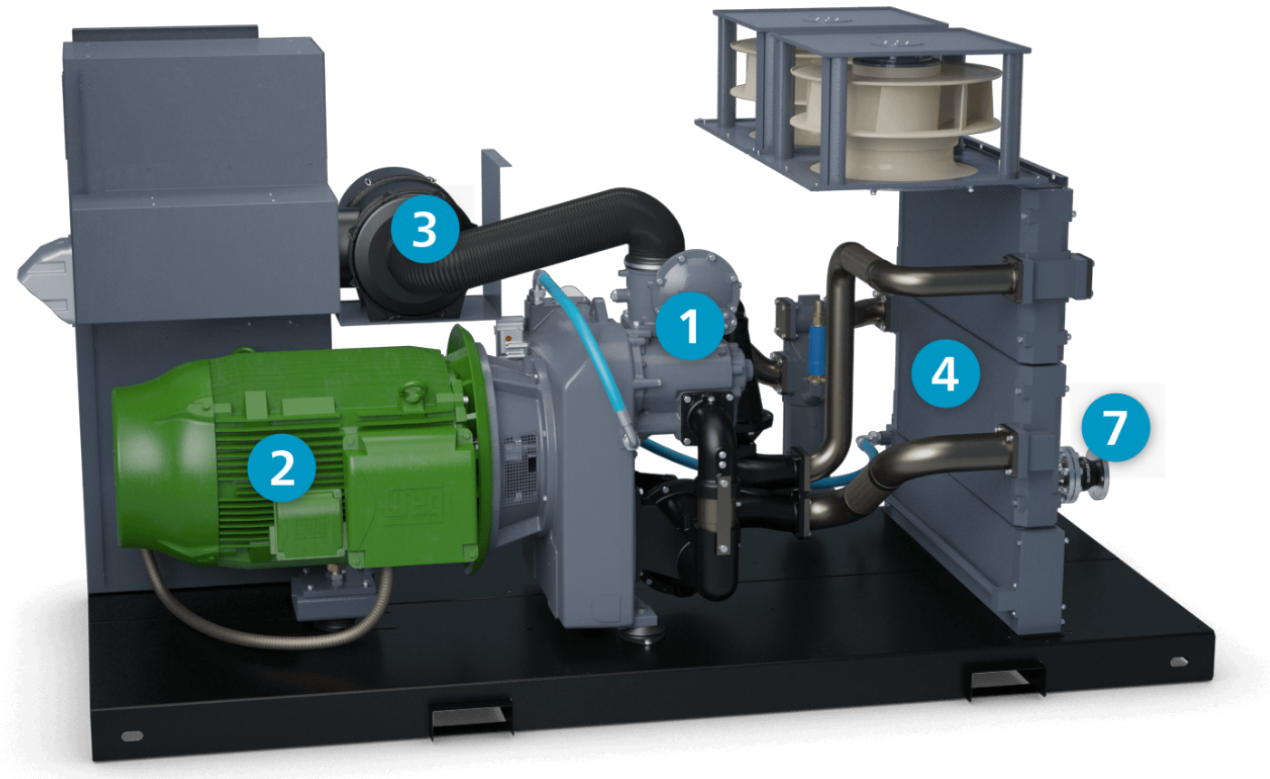
Avoid downtime

Low quality air heightens the risk of corrosion, which can lower the life span of production equipment. The air treatment solutions produce clean air that enhances your system's reliability, avoiding costly downtime and production delays. Compressed air coming into contact with your final products should not affect their quality. Atlas Copco provides clean, dry air to protect your production and reputation in the market.

Engineered for the highest reliability

ZT 90-160 VSD





1 Oil-free air (Class 0)

- Unique Z seal design guarantees certified oil-free air.
- Superior rotor coating for high efficiency and durability.
- Cooling jackets ensure world class compression in varying conditions.

2 Robust motor

- IP 55 TEFC motor protects against dust, chemicals, and humidity.
- Continuous operation under severe ambient temperature conditions.

3 Efficient intake air filtration

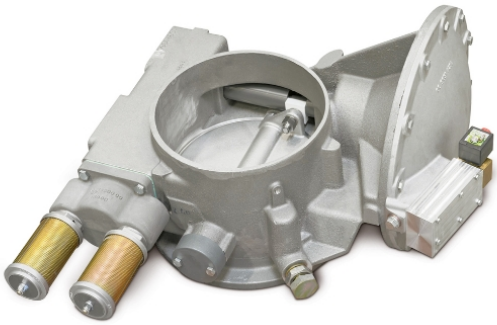
- 2-stage dust removal system (99.9% for 3 micron).
- Minimum intake losses and low pressure drop.
- Efficient protection of the compressor.

4 High performing coolers

- Compact and efficient design with low air approach temperature and low pressure drop.
- Water separator separates condensate from compressed air.
- Low moisture carry-over protects downstream equipment.

5 Reliable load/unload regulation

- No external air supply required.
- Mechanical interlock of inlet and blow-off valve.
- Low unload power.



6 Advanced touch screen monitoring system

- User-friendly Elektronikon® Touch with enhanced connectivity potential.
- Integrated smart algorithms optimize system pressure and maximize energy efficiency.
- Warning indications, maintenance scheduling and online visualization of the machine's condition.

7 Complete Plug-and-play package

- All-in-one solution including internal piping, coolers, motor, drive, lubrication, and control system.
- Fault-free installation.
- Easy commissioning and quick start-up.

8 Soundproof design

- Silenced canopy improves conditions for workers in the immediate environment.
- Optimized internal ducting and integrated pulsation damper to reduce the noise level.

9 Quick, easy maintenance

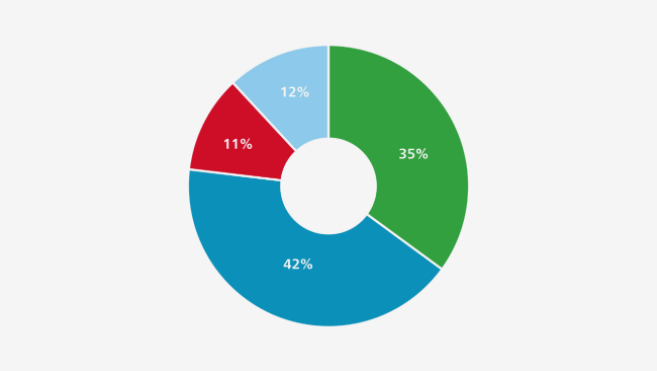
- Minimal service time with service parts grouped together for ease of access.
- All components are designed for serviceability and long lifetime.
- Optional service plans available to extend the warranty.

Reducing consumption throughout your process

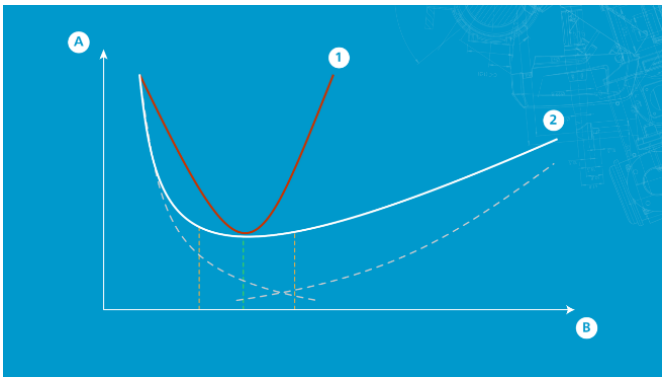
Did you know that compressed air generation amounts to over 40% of a plant's total electricity bill? And that energy consumption can account for over 80% of a compressor's lifecycle cost? Atlas Copco pioneered Variable Speed Drive (VSD) technology in the compressed air industry to help businesses reduce energy consumption and increase their profits. While continuing to invest in VSD, we have also developed a range of control, monitoring and energy recovery technologies that reduce running costs while protecting the environment for future generations.

What is Variable Speed Drive (VSD)?

Atlas Copco's VSD technology automatically adjusts the motor speed to air demand, reducing energy consumption by up to 35% and cutting the compressor's life cycle cost by an average of 22%. In addition, lowered system pressure with VSD dramatically minimizes energy use across your production.



42% = Energy
35% = Energy savings with VSD
12% = Investment
11% = Maintenance



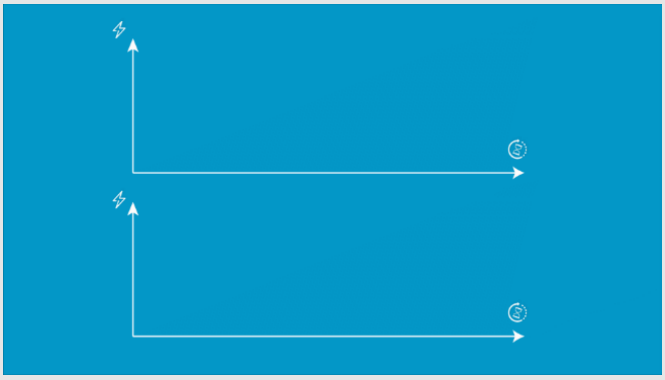
A = Losses
B = Speed
1 = Total losses traditional element
2 = Total losses Atlas Copco element

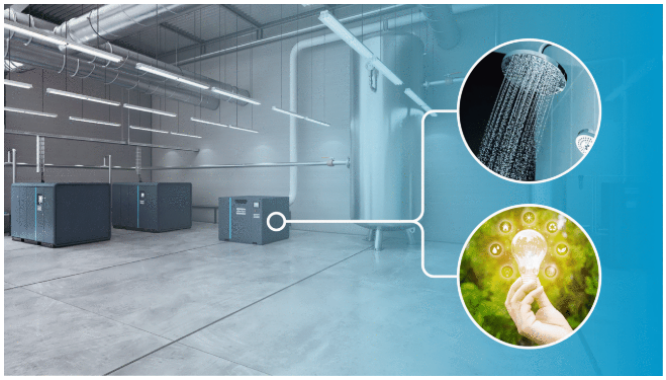
Elektronikon® with advanced control algorithms for more energy savings

Delayed Second Stop (DSS): in traditional fixed speed machines (load/unload), when a compressor reaches the unload pressure, the machine will be kept running in unload for a fixed time, to prevent too frequent starting and causing the electrical motor to overheat. Our sophisticated Delayed Second Stop (DSS) will take the running conditions of the machine into account and will allow the machine to stop if no frequent motor starts preceded. This will generate major savings compared to traditional load/unload compressors.

Timer functions: often, machines are kept running overnight and during weekends, even if there is no need for compressed air during these times. This is avoided with timer functions that stop your compressors when no air is needed.

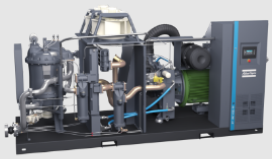
Dual pressure band: even if compressed air is needed during nights and weekends, the required pressure is often lower in these periods. By implementing a dual pressure band with lower settings during nights and weekends, you can create considerable energy savings.





Energy Recovery: turn your compressor into an energy source

Compressed air is a vital utility for many industries. It is also one of the largest consumers of energy. Our ZR compressors equipped with Energy Recovery can help you reduce energy bills and your carbon footprint. In a typical process, up to 94% of the electrical energy is converted into compression heat, which is lost into the atmosphere via the cooling system and radiation. With Energy Recovery, you can recuperate this energy as hot water for sanitary purposes, space heating or, even more effectively, process applications. By using the hot water as boiler pre-feed or directly in processes requiring temperatures of 70 to 90°C, you will reduce your consumption of more costly, carbon-based energy sources such as natural gas and heating oil.



SMARTLINK for expert monitoring

Knowing the status of your compressed air equipment at all times is the key to efficiency and availability. SMARTLINK provides customized reports on your compressor room's energy performance as well as early warnings, and timely component replacement alerts to increase uptime and prevent production loss.

Dual set-point and automatic stop

Most production processes create fluctuating levels of demand which can lead to energy waste in low use periods. Using the Elektronikon® unit controller, you can switch manually or automatically between two different setpoints to optimize energy use and reduce costs at low use times. In addition, the sophisticated algorithm runs the drive motor only when needed. As the desired setpoint is maintained while the drive motor's run time is minimized, energy consumption is kept to a minimum.

Components designed for efficiency

Our engineers took every opportunity to reduce energy consumption in the ZT and ZR compressors. The element has a superior coating for increased efficiency. High-performing intake filtration ensures minimum losses and low pressure drop. The coolers are also designed for efficient operation with low air approach temperature and low pressure drop. The water separator efficiently separates the condensate from the compressed air.

Smart AIR solutions: class-leading compressed air products

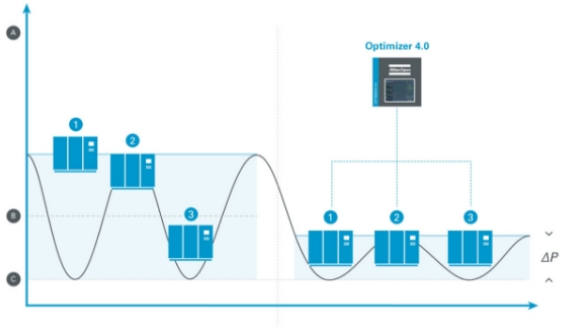
As a compressor is only one component in a compressed air system, true efficiency can only be achieved by looking at the bigger picture. Atlas Copco smart AIR solutions are complete systems optimized for energy performance, reliability, and output quality. Smart Air solutions are based on a range of class-leading compressed air products, fully optimized to work better together for the most efficient and reliable combination of a compressor with our air and gas equipment. These solutions can include dryers, filters, controllers, energy recovery systems, nitrogen or oxygen generators, air receivers, coolers, or boosters specified to your needs. If you have multiple compressors, the combination of machines is important for the efficiency of the complete system. And if you have three or more compressors, a central controller will allow smarter, more effective control than individual controllers.

1 Central controllers

Central control reduces both the average pressure band and the operating pressure of your machines. A pressure reduction of 1 bar (14.5 psi) lowers energy consumption by 7% and air leakages by 13%. Multiple functions are embedded in the Optimizer 4.0 which regulate pressure, capacity, and speed.

Legend

A = Net pressure
B = Average pressure
C = Min. system pressure



2 Reliable, energy-efficient compressors

All smart AIR solutions start with selection of the correct components in the correct combination. Choosing energy-efficient compressors and paying special attention to the mix of compressors are major factors. Our soundproof design contributes to a better working environment around the compressors. Low maintenance is also a priority to reduce machine downtime and improve the availability of compressed air.

3 Variable Speed Drive (VSD) compressors

In most applications, demand for compressed air varies widely. Adding one or multiple VSD compressors will significantly improve the energy efficiency of the total installation, the stability of compressed air pressure, and reliability, thanks to more the stable regime of each machine.

4 Ventilation

Compressors generate heat. Adequate evacuation of this heat will improve the performance of compressors and dryers alike.

5 Air receiver

Even with a VSD compressor, an appropriately sized buffer tank for compressed air will help smooth out variations in demand and stabilize operating conditions. This enhances both energy efficiency and reliability.

6 Compressed air dryers

Choosing the right dryer technology for the specific compressed air quality requirement is essential to ensure the reliability and energy efficiency of the entire set-up. Our Full Feature concept integrates the best dryer for the installation and process. The benefits include reduced installation cost, time, and complexity; integrated control of dryers and compressors; and a reduction in connecting pipes, which decreases the chance of leakages and extra pressure drops. Full Feature solutions also save significant space in the compressor room.

7 Compressed air filters

The correct filter grade to correspond with air quality requirements is an important part of a smart AIR solution. This goes hand-in-hand with correct filter maintenance to protect the reliability of the installation and increase energy efficiency.

Easy maintenance and low ownership costs

By taking proper care of your air compressor, you will reduce running costs and avoid the risk of unplanned breakdowns or production stops. Atlas Copco offers energy efficiency checks, service, repairs, spare parts, and maintenance plans for all air compressors to keep your business running smoothly.

Total Responsibility Plan

Complete compressor care
On-time maintenance by expert service engineers.

Total risk coverage
We take care of all your compressor maintenance, upgrades, repairs, and even breakdowns for an all-inclusive price.

Ultimate efficiency
Fitting the latest driveline components gives you as-new levels of compressor efficiency and reliability.

AIRnet

AIRnet is a piping solution that guarantees operational excellence for compressed air, vacuum, nitrogen, and other inert gas applications. It is available in aluminium and stainless steel.

Fast, easy, and reliable
AIRnet Aluminium is the most effective solution for your air or gas network. Its fast and easy installation gets your operations up and running in record time. AIRnet is leak-proof and corrosion-free. Its pipes and fittings come with a 10-year warranty.

Safe, solid, and clean
An **AIRnet Stainless Steel** piping system ensures 100% oil free air delivery from generation to the point of use, in compliance with the highest quality standards.

AIRScan

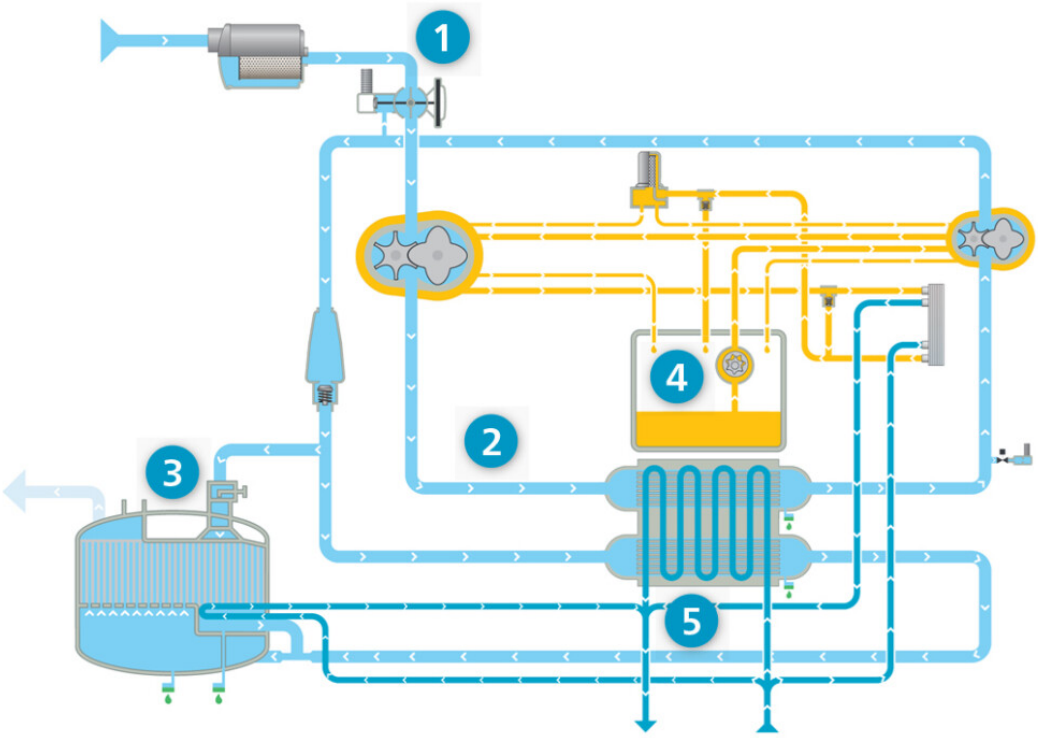
Audit your compressed air installation
AIRScan offers a reliable analysis and well-founded recommendations to improve your energy efficiency.

Go for energy efficiency
AIRScan offers actionable insights for energy efficiency improvements, based on analysis of your system.

Save energy: up to 30 % of your costs
Our unique compressor audit software simulates various configurations of your compressed air installation. This allows us to provide realistic projections on potential energy savings.

Clear report
An AIRScan report provides a summary for decision makers, as well as an in-depth evaluation of problems and solutions for your technicians.

Oil and air flows: water-cooled (ZR)


1
2
3
4
5

1 Filtration & first compression

The light blue flow represents the air. Air is drawn into the compressor through the inlet filter, where the air is cleaned. It then passes through the throttle valve with integrated blow off valve, which takes care of the load/unload regulation.
In the first compression stage the air pressure is raised to the intermediate pressure, after which the air is cooled down in the intercooler.

2 Cooling & second compression

After the intercooler, the air passes through a moisture separation system before entering the high pressure stage. In the high pressure stage the pressure is brought to the final pressure.

3 Cooling & drying

The air at the outlet of the high pressure stage is split into two parts. One part goes via the pulsation damper with integrated check valve to the aftercooler, where it is cooled down and moisture is separated and evacuated. A second part goes directly to the regeneration area of the heat compression MD dryer.
In the regeneration area of the dryer, the hot air regenerates the adsorption drum before passing through the regeneration cooler where it is cooled down and moisture is separated and evacuated. The cold air coming from the regeneration section is then mixed with the cold air from the aftercooler in the nozzle ejector system before passing through the drying section of the adsorption drum where the moisture is removed. Dry air leaves the compressor through the outlet connection flanges.

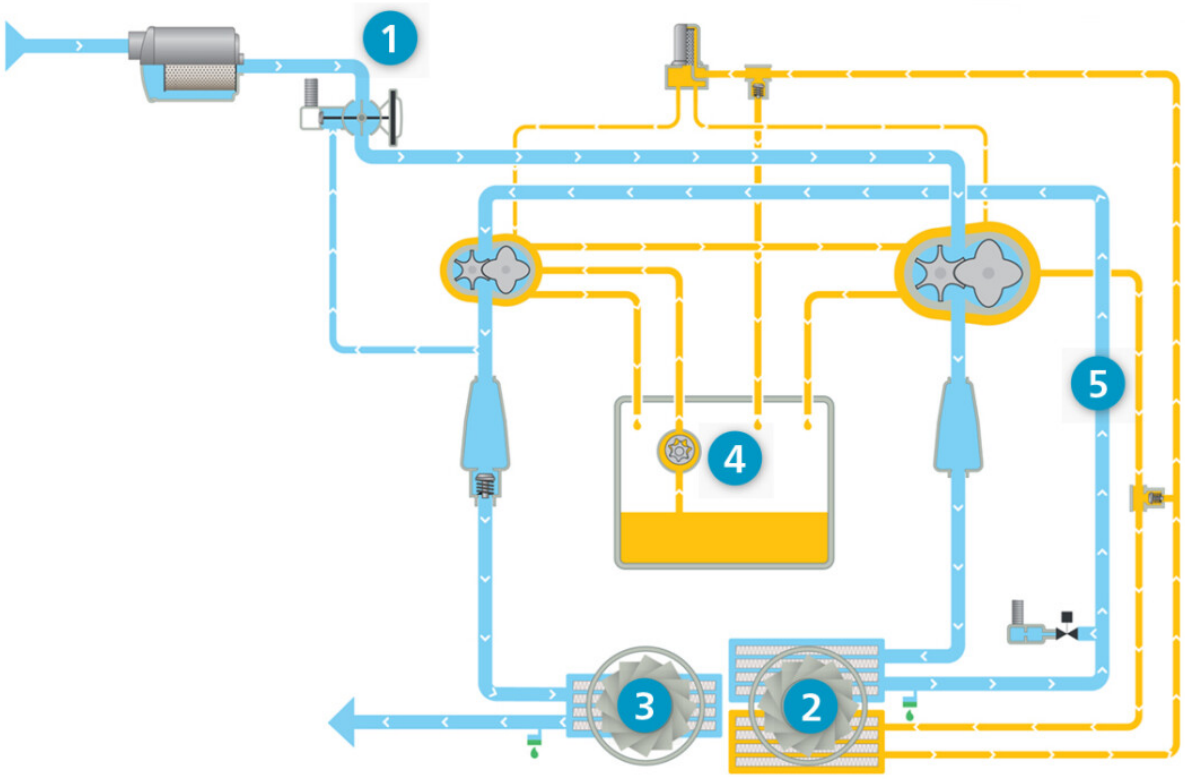
4 Oil flow

The yellow flow is the oil path within the compressor. The oil pump sucks oil from the oil sump and pumps it through the oil cooler and a high efficiency filter to deliver cool, clean oil to the bearings and the gears. The oil then flows back to the gear casing.

5 Water flow

The dark blue flow represents the water. Water is used in the oil cooler, the intercooler, and the aftercooler, as well as in the integrated dryer.

Oil and air flows: air-cooled (ZT)



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ZT 110-160

Metric

Type	Working pressure (1)	Free Air Delivery (2)		Installed motor power (3)	Noise level (4)
	bar(e)	l/s	m^3/min	kW	dB(A)
ZT 110 – 7.5	7.5	315	18.9	110	79
ZT 110 – 8.6	8.6	294	17.7		
ZT 110 – 10	10	274	16.5		
ZT 132 – 7.5	7.5	360	21.6	132	
ZT 132 – 8.6	8.6	335	20.1		
ZT 132 – 10	10	311	18.7		
ZT 145 – 7.5	7.5	390	23.4	145	
ZT 145 – 8.6	8.6	361	21.6		
ZT 145 – 10	10	348	20.9		
ZT 160 – 7.5	7.5	431	25.8	160	
ZT 160 – 8.6	8.6	415	24.9		
ZT 160 – 10	10	396	23.7		

Imperial

Type	Working pressure (1)	Free Air Delivery (2)		Installed motor power (3)	Noise level (4)
	psig	l/s	cfm	hp	dB(A)
ZT 110 – 7.5	100	315	667	150	79
ZT 110 – 8.6	125	294	623		
ZT 110 – 10	145	274	581		
ZT 132 – 7.5	100	360	762	175	
ZT 132 – 8.6	125	335	710		
ZT 132 – 10	145	311	659		
ZT 145 – 7.5	100	390	826	200	
ZT 145 – 8.6	125	361	765		
ZT 145 – 10	145	348	736		
ZT 160 – 7.5	100	431	912	215	
ZT 160 – 8.6	125	415	879		
ZT 160 – 10	145	396	838		

ZT 110-160 VSD

Metric

Type	Working pressure (1)		Free Air Delivery (2)		Installed motor power (3)	Noise level (4)
		bar(e)	l/s	m^3/min	kW	dB(A)
ZT 110 VSD – 8.6	Minimum	4	101-320	6.0-19.2	110	79
	Effective	7	100-320			
	Maximum	8.6	99-299	5.9-17.9		
ZT 110 VSD – 10.4	Minimum	6.5	166-292	10-17.5		
	Effective	9	165-267	9.9-17.5		
	Maximum	10.4	192-267	11.5-16.6		
ZT 132 VSD – 8.6	Minimum	4	125-358	7.5-21.5	132	
	Effective	7	125-357	7.5-21.4		
	Maximum	8.6	125-337	7.5-20.2		
ZT 132 VSD – 10.4	Minimum	6.5	165-331	9.9-19.9		
	Effective	9				
	Maximum	10.4	192-316	11.5-19.0		
ZT 160 VSD – 8.6	Minimum	4	144-410	8.7-24.6	160	
	Effective	7		8.6-24.6		
	Maximum	8.6	144-385	8.6-23.0		
ZT 160 VSD – 10.4	Minimum	6.5	165-378	9.9-22.7		
	Effective	9				
	Maximum	10.4	191-361	11.5-21.6		

Imperial

Type	Working pressure (1)		Free Air Delivery (2)		Installed motor power (3)	Noise level (4)
		psig	l/s	cfm	hp	dB(A)
ZT 110 VSD – 8.6	Minimum	60	101-320	214-678	150	79
	Effective	100	100-320	212-678		
	Maximum	125	99-299	210-634		
ZT 110 VSD – 10.4	Minimum	95	166-292	352-619		
	Effective	130	165-267	350-619		
	Maximum	150	192-267	407-585		
ZT 132 VSD – 8.6	Minimum	60	125-358	265-759	175	
	Effective	100	125-357	264-756		
	Maximum	125	125-337	264-714		
ZT 132 VSD – 10.4	Minimum	95	165-331	350-701		
	Effective	130				
	Maximum	150	192-316	407-670		
ZT 160 VSD – 8.6	Minimum	60	144-410	305-868	215	
	Effective	100				
	Maximum	125	144-385	305-815		
ZT 160 VSD – 10.4	Minimum	95	165-378	305-801		
	Effective	130				
	Maximum	150	191-361	406-765		

ZR 110-160 (FF)

Metric

Type	Working pressure (1)	Free Air Delivery (2)		Installed motor power (3)	Noise level (4)
	bar(e)	l/s	m³/min	kW	dB(A)
ZR 110 – 7.5	7.5	318	19.1	110	74
ZR 110 – 8.6	8.6	297	17.8		
ZR 110 – 10	10	278	16.7		
ZR 132 – 7.5	7.5	363	21.8	132	
ZR 132 – 8.6	8.6	339	20.3		
ZR 132 – 10	10	314	18.8		
ZR 145 – 7.5	7.5	393	23.6	145	
ZR 145 – 8.6	8.6	364	21.8		
ZR 145 – 10	10	351	21.1		
ZR 160 – 7.5	7.5	434	26.0	160	
ZR 160 – 8.6	8.6	418	25.1		
ZR 160 – 10	10	399	23.9		

Imperial

Type	Working pressure (1)	Free Air Delivery (2)		Installed motor power (3)	Noise level (4)
	psig	l/s	cfm	hp	dB(A)
ZR 110 – 7.5	100	318	674	150	74
ZR 110 – 8.6	125	297	629		
ZR 110 – 10	145	278	589		
ZR 132 – 7.5	100	363	769	175	
ZR 132 – 8.6	125	339	718		
ZR 132 – 10	145	314	665		
ZR 145 – 7.5	100	393	832	200	
ZR 145 – 8.6	125	364	771		
ZR 145 – 10	145	351	743		
ZR 160 – 7.5	100	434	919	215	
ZR 160 – 8.6	125	418	885		
ZR 160 – 10	145	399	845		

ZR 110-160 VSD (FF)

Metric

Type	Working Pressure (1)		Free Air Delivery (2)		Installed motor power (3)	Noise lever (4)
		bar(e)	l/s	m³/min	kW	dB(A)
ZR 110 VSD – 8.6	Minimum	4	101-320	6.1-19.2	110	74
	Effective	7	101-319	6.0-19.2		
	Maximum	8.6	100-298	6.0-17.9		
ZR 110 VSD – 10.4	Minimum	6	168-292	10.1-17.5		
	Effective	9	167-292	10.0-17.5		
	Maximum	10.4	193-277	11.6-16.6		
ZR 132 VSD – 8.6	Minimum	4	108-357	6.5-21.4	132	
	Effective	7	107-357	6.4-21.4		
	Maximum	8.6	107-336	6.4-20.2		
ZR 132 VSD – 10.4	Minimum	6	167-331	10.0-19.9		
	Effective	9				
	Maximum	10.4	193-316	11.6-19.0		
ZR 160 VSD – 8.6	Minimum	4	124-412	7.4-24.7	160	
	Effective	7	123-411	7.4-24.6		
	Maximum	8.6	123-386	7.4-23.0		
ZR 160 VSD – 10.4	Minimum	6	167-378	10.0-22.6		
	Effective	9				
	Maximum	10.4	193-361	11.6-21.6		

Imperial

Type	Working Pressure (1)		Free Air Delivery (2)		Installed motor power (3)	Noise lever (4)
		psig	l/s	cfm	kW	dB(A)
ZR 110 VSD – 8.6	Minimum	60	101-320	214-677	150	74
	Effective	100	101-319	213-676		
	Maximum	125	100-298	212-632		
ZR 110 VSD – 10.4	Minimum	90	168-292	355-619		
	Effective	130	167-292	354-619		
	Maximum	150	193-277	409-586		
ZR 132 VSD – 8.6	Minimum	60	108-357	228-757	175	
	Effective	100	107-357	227-757		
	Maximum	125	107-336	226-713		
ZR 132 VSD – 10.4	Minimum	90	167-331	354-702		
	Effective	130		353-701		
	Maximum	150	193-316	409-670		
ZR 160 VSD – 8.6	Minimum	60	124-412	261-872	215	
	Effective	100	123-411	261-871		
	Maximum	125	123-386	261-817		
ZR 160 VSD – 10.4	Minimum	90	167-378	354-801		
	Effective	130		353-801		
	Maximum	150	193-361	409-765		

Dimensions

Metric

Type	L	W	H	Weight
	mm			kg
Air cooled	**Air cooled**	**Air cooled**	**Air cooled**	**Air cooled**
ZT 110-160 (VSD)	3400	1660	2150	3850
ZT 110-160 (VSD) FF iMD	4085			4250
Water cooled	**Water cooled**	**Water cooled**	**Water cooled**	**Water cooled**
ZR 110-160 (VSD)	2431	1660	2000	2920
ZR 110-160 (VSD) FF iMD	3400			3720

Imperial

Type	L	W	H	Weight
	inch			lb
Air cooled	**Air cooled**	**Air cooled**	**Air cooled**	**Air cooled**
ZT 110-160 (VSD)	134	65	85	8500
ZT 110-160 (VSD) FF iMD	160			9400
Water cooled	**Water cooled**	**Water cooled**	**Water cooled**	**Water cooled**
ZR 110-160 (VSD)	96	65	79	6440
ZR 110-160 (VSD) FF iMD	134			8200

(1) For the FF variant, please consult Atlas Copco.
(2) Unit performance measured according to ISO 1217, Annex C & E, Edition 4 (2009). Reference conditions: absolute inlet pressure 1 bar (14.5 psi) / intake air temperature 20°C (68°F). Free Air Delivery (FAD) is measured at maximum working pressure (or effective working pressure for VSD variants).
(3) The installed motor power might deviate depending on the options, voltages and pressure variants.
(4) A-weighted emission sound pressure level at the work station (LpWSAd). Measured according to ISO 2151: 2008 using ISO 9614-2 (sound intensity scanning method). ZT variants including ducting on the outlet grating of cooling air. The added correction factor (+/- 3 dB(A)) is the total uncertainty value (KpAd) conform with the test code.

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