Atlas Copco

High-pressure oil-free air compressors ZD 800-4000 & ZD 1200-4100 VSD / 25-40 bar







Sustainable Productivity



Total capability, total responsibility

Right at the heart of your business, Atlas Copco delivers quality compressed air for superior operational capacity. From compressed air generation to point of use, you can choose from our wide range of products to create a complete compressed air system tailored to your specific needs. All Atlas Copco products are engineered to integrate seamlessly, ensuring the highest level of reliability and energy efficiency. As a result, Atlas Copco can take full responsibility for your compressed air infrastructure with a guarantee of best-in-class quality. With a global presence in over 170 countries, we can provide an unrivaled service to maintain and continually improve your compressed air system performance.

Backed by 100 years at the forefront of compressed air, Atlas Copco products offer the finest quality and efficiency. Our goal is to be First in Mind—First in Choice[®]. That is why Atlas Copco's pursuit of innovation never ceases, driven by the dedication to meet and exceed your demands. Always working with you, we are committed to providing the customized air solution that is the driving force behind your business.

We are committed to your superior productivity through interaction and innovation.

ZD: an alliance of talents

A high-quality air supply is a critical resource in high-pressure applications such as PET blowing or aeronautics. Completely developed in-house, Atlas Copco's ZD high-pressure air compressor is a unique combination of oil-free screw and piston technologies. It can be installed close to the point of use, improves the overall quality of your process and saves costs on every level, making it the most advanced compressor in its field.



A SOLUTION YOU CAN RELY ON

Stopping your production lines is very costly and troublesome. Therefore, you need your process to be a continuous and stable flow. Through the combination of two tested and proven technologies, the ZD brings you superior technical quality that ensures the continuity of your processes and drastically reduces the risk of downtime.

Thanks to our worldwide service network, we can offer you our highly qualified backup to keep your production running at the lowest possible operating costs. Our aftermarket product portfolio is designed to add maximum value by ensuring the optimum availability and reliability of your compressed air equipment. Choose from a wide range of Atlas Copco after sales products and services that will have your ZD performing at its best for years to come.



TRUE ENERGY-SAVING FLEXIBILITY

You may have a fluctuating air demand, but you don't want it to have an impact on your costs. The ZD with VSD (Variable Speed Drive) provides the right answer. With VSD technology you obtain energy savings that will greatly downsize your electricity bill. By automatically tuning the compressor's capacity to the precise air demand, only a minimum amount of energy is required. The resulting energy savings benefit you as well as the environment, safeguarding a healthy future for the generations to come.



NO COMPROMISES!

You can't afford to compromise on clean, oil-free air for your critical processes. Atlas Copco, a pioneer in oil-free air compression technologies, is known for its range of compressors designed specially for applications that require oil-free air. We are also the world's first manufacturer to receive certification for a new standard of air purity: ISO 8573-1 CLASS 0. CLASS 0 compressors feed your processes with pure air that safeguards your production processes and blow molding machines and protects your hard-won reputation.



A reliable production of quality air

The ZD compressor offers you the best of two industry standards. While the world-renowned ZR screw compressor delivers quality dry air at medium pressure, the D-booster efficiently brings the air to 40 bar. Designed as a complete, integrated package from one single supplier, the ZD is a true plug-and-run solution.



ZR 160 VSD-FF

AIR PURITY

100% oil-free air delivery proven by TÜV and certified Class 0 by ISO 8573-1.



Air supplied to the booster downstream is dry thanks to built-in MD dryer.



SUPERB EFFICIENCY

The unique Z seal design guarantees 100% oil-free air. The compressor operates at safe running speeds and there is no contact between the rotors. A high overall efficiency is ensured thanks to the superior rotor coating, the element cooling jacket and hassle-free cleaning.



Totally enclosed, high-efficiency motor with IP55 TEFC protection against dust and humidity.



COST SAVINGS

An adsorption dryer is integrated inside the ZR canopy on models up to ZD 2750 and up to ZD 2800 VSD. On all other models, the dryer will be placed outside the canopy. Using heat of compression to operate, it has negligible power consumption.



The water separator with its labyrinth design efficiently separates the condensate from the compressed air. Low moisture carry-over protects downstream equipment, resulting in long High Pressure element lifetime and better dryer performance.



ULTIMATE RELIABILITY

The stainless steel bundles in the water cooler are highly corrosion-resistant. They allow for easy cleaning and have long service intervals. The aluminium star profile improves heat transfer and resistance to polluted water.



CONTROL AND SAFETY COMPLIANCE

The advanced Elektronikon[®] control and monitoring system keeps you up-to-date on the overall system performance status with proactive service indications, alarms and safety shutdowns.



FULL INTEGRATION

All electrical and electronic components and modules are integrated in the electric cubicle. In addition, all connections are pre-wired.



A quantum leap in innovation

Over the years, the 40 bar reciprocating world has concentrated on small gradual improvements rather than on a complete rethinking of the fundamental technological offering. With the ZD, Atlas Copco decided to leave the trodden paths and design a complete system that meets these requirements like no other equipment has ever done. Not by little improvements, but by true, result-driven innovation.



THE RIGHT COMPLEMENT TO SUIT YOUR REQUIREMENTS

STANDARD OPTIONS ARE AVAILABLE FOR:

 HAT (high ambient air temperatures between 40 and 50°C)
dew point indicator (40 bar) (except ZD 800)

UPON REQUEST. To better meet your individual requirements, numerous specific versions are available:

- winterization
- weatherproof
- ✓ discharge pressure of 45 bar
- nitrogen compression

- special canopiesheat recovery
- v other installation lay-outs
- Modbus, Profibus, Ethernet/IP interfaces

- STANDARD ACCESSORIES:
- ✓ 40 bar pressure vessels
- cooling systems

✓ submicronic & carbon filters

AIR PURITY

100% oil-free: the D-booster is certified Class 0 by TÜV authorities, safeguarding your end products.



Dry air: the D-booster is condensate-free, safeguarding the integrity of your end products. The system is protected by dew point control.

ULTIMATE RELIABILITY

Robust design with superior elements in the compression chambers and crankcase.



Highly efficient cooling.

Low vibration level thanks to the D-booster's horizontal design, low centre of gravity and innovative concrete baseplate which absorbs vibrations. This ensures a long lifetime of the components and ensures increased reliability.

Condensate-free operation in the high pressure stages, prolonging service intervals.



ADVANCED CONTROL AND MONITORING SYSTEM

The advanced Elektronikon[®] control and monitoring system keeps you up-to-date on the overall system performance status with proactive service indications, alarms and safety shutdowns.



COST SAVINGS

By nature: thermodynamic rules make the ZD highly energyefficient. A 4-stage configuration is 7% more energy-efficient than a 3-stage configuration. Compression ratio is better and interstage temperatures are lower.



By smart control: you can adapt the pressure to your needs (change of bottle design) by adjusting the pressure at the required value between 25 and 40 bar(e) via the Elektronikon[®].

By design: the ZD is a plug-and-play solution, leading to substantial energy and installation cost savings:

The integrated pulsation dampers in the cylinders are close to the compression chambers. As there are no intermediary pipes, there is less pressure drop, helping you save energy.

The coolers and dampers are integrated in the casting, and no pressure approval is required (no costs and no production stop).

In the electric cubicle, all electrical, electronic components and modules are integrated. All connections are pre-wired.

LOW NOISE

The canopy is supplied as standard equipment, so the noise level is kept at a minimum.

ISO 8573-1 CLASS 0 Atlas Copco sets a new industry standard



When it comes to clean, oil-free compressed air for your critical processes, you can't afford to compromise. Atlas Copco, a pioneer in oil-free air screw technology, is known for its range of compressors designed especially for applications that require oil-free air. Now Atlas Copco has achieved a new milestone: setting the standard for air purity as the first manufacturer to be certified ISO 8573-1 CLASS 0.

Atlas Copco's ZD compressor is TÜV-certified as "oil-free" (ISO 8573 CLASS 0).

WHY A NEW CLASS?

Industries such as pharmaceuticals, food and beverages, electronics and textiles must exclude any risk of contamination. Otherwise severe consequences could follow: spoiled or unsafe products, production downtime and damage to both brand and reputation. To address the needs of critical applications where air purity is essential, the ISO 8573-1 compressed air standard was revised in 2001. Along with a more comprehensive measuring methodology, a new and more stringent class was added to the five existing purity classes: ISO 8573-1 CLASS 0.

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

THE MOST STRINGENT AIR PURITY TESTING AVAILABLE



Most manufacturers prefer "partial flow" testing, which targets only the center of the air flow. The Atlas Copco ZD range of oil-free high-pressure compressors was tested using the more stringent "full flow" method. This examines the entire air flow to measure aerosols, vapors and wall flow. Even with such rigorous testing, no traces of oil were found in the output air stream.

Aerosols

Minute droplets of oil suspended in the air stream

📀 Wall flow

Oil in liquid form, which creeps along the pipe wall

> Vapors or oil mist

Vaporized oil in a cloud form



Move up to a risk-free standard. Visit www.classzero.com.

A safe supply of dry air

Moisture in the compressed air can damage your compressed air system and contaminate your end product. The resulting maintenance costs can far exceed air treatment costs. The ZD comes with an integrated adsorption dryer at the second stage outlet. As a result, the D-booster receives nothing but perfectly dry air, which safeguards the compression in the two highpressure stages, ensuring higher reliability and lower maintenance costs. It also preserves the end product and increases the component life-time of the blow molding machine.

THE MD DRYING PRINCIPLE

The silicagel powder on the dryer's glass fiber-based paper drum removes all moisture from the compressed air. No air is wasted as part of the process. Additionally, the MD drying process requires no external energy, which results in large energy savings over time.



SUBSTANTIAL SAVINGS

- No energy is lost on the drying process.
- As there is no risk of moisture, a longer lifetime of the piston rings and valves in the high pressure stages is ensured, resulting in very substantial savings in maintenance.





A CORRECT DEW POINT: YOUR PROCESS IS PROTECTED

- The pressure dew point at the booster outlet is + 3°C. As a standard, the dew point is controlled at the booster interstage.
- The dew point at the booster outlet is always correct. As the dryer is integrated at the 2nd compression stage, the drying process is not influenced by atmospheric temperature and outlet pressure variations. This results in a number of benefits:
- It protects your end product: there is no risk of droplets being mixed into the bottle material during the blow molding process, which could cause immediate product deterioration, bottle scrapping and production stops.
- It saves on maintenance costs: less wear of components thanks to a condensate-free air sent to the blow molding machine.

Variable Speed Drive: maximizing efficiency, minimizing energy

Air demand fluctuates. This is particularly true in the PET bottling industry: change of bottle size or shape, cadencies, seasonal peaks, maintenance, stops... Considering that the generation of compressed air can account for more than 40% of a plant's total electricity bill, energy usage is crucial. With Atlas Copco's VSD (Variable Speed Drive) technology, we provide you with a partner on the road to unrivaled cost savings. By automatically tuning the compressor's capacity to the precise air demand, only a minimum amount of energy is required.



A COMPLETE PACKAGE

The ZD VSD is a homogenous VSD combination with the ZR VSD screw compressor, the MD VSD dryer and the VSD D-booster.

PROVEN TECHNOLOGY

As a result of thorough studies, Atlas Copco VSD technology is a superior solution when combining a motor/frequency convertor and a compressor. The ZD 1200-4100 VSD come fully equipped with:

- integrated frequency converters,
- anti-harmonics filters,
- a special motor with insulated bearings and reinforced ventilation.

DIRECT ENERGY SAVINGS UP TO 35%

- Perfect adaptation to air demand.
- · Savings over stops/starts and unload periods.

HIGHLY ADAPTED TO HIGH VARIATION PEAKS

With an exceptionally wide flow variation between 40 and 100% of the total air flow, the ZD can handle very high variation peaks. The ZD VSD is the right machine to maximize your energy savings.

CONSTANT OUTLET PRESSURE

The output pressure is virtually constant over a wide capacity range (narrow pressure band within 0.1 bar) or if your power supply is not steady. This optimizes energy consumption and ensures high process stability when the air demand fluctuates.



LOW STARTING CURRENT

With VSD technology, there is no current peak at start-up. The starting current is equal to the nominal current during the start-up phase. This eliminates the need to oversize your equipment to absorb peaks.



A HIGH AND STABLE POWER FACTOR

Regardless of the flow variation, the power factor remains constant at a high value (Cos Phi 0.99). This means that no additional investment needs to be made to correct the power factor, and penalties from the utility company can be avoided.



LCC OF A VSD COMPRESSOR



The long-term cost of owning and operating a high-pressure compressor is a combination of capital, installation, servicing and energy costs. Opt for a ZD VSD to obtain the highest return on investment.

LCC OF A STANDARD COMPRESSOR

Ultimate flexibility

EASY TRANSPORTATION



- Forklift slots.
- All models can be containerized.

EASY INSTALLATION



- The ZD can be installed either in-line or parallel, allowing you to adapt it to your available floor space.
- Plug-and-play: all equipment is enclosed within the canopies.

RIGHT WHERE YOU NEED IT

- Can be installed on the work floor, close to the point of use.
- No need for a separate compressor room.
- Save on air pipes and the corresponding energy losses.
- Low noise levels: sound damping canopies and a concrete, anti-vibration base plate.

COST SAVINGS



• No specific civil engineering work required; only an industrial flat slab, able to support the weight of the machine.

• No need for anti-vibration blocks.

TOTAL CONTROL AND MONITORING: ELEKTRONIKON®



- One start/stop button for the ZD combination.
- Monitoring of the dryer.
- Interstage dew point indicator.
- System performance status (interactive service indications, alarms, shutdowns).
- Service indication history.
- Optional Modbus/Profibus interface.
- Ready for compressor room monitoring.



SIMPLE MAINTENANCE



- Canopy doors can be easily opened and/or removed.
- All maintenance operations can be performed at a comfortable height thanks to the ZD's horizontal design.
- Outstanding safety.
- Long service intervals (up to 8.000 hours).



ZD Xtend: a modular approach for additional savings

ZD Xtendplus and ZD Xtendplus VSD

In a typical PET blowing operation, the molding machines form the production center piece, but they are surrounded by equally vital peripheral equipment such as cappers, labelers and instrumentation. They too need a reliable quality air supply.

ZD Xtend*plus* compressors come with a larger model screw compressor, ready to handle medium pressure in your

production line, in addition to feeding the 40 bar booster. This approach saves substantially over extra standalone compressors.

ZD Xtend*plus* VSD compressors are available in a variable speed drive version, for added flexibility and energy savings.



ZD Xtend RI plus and ZD Xtend RI plus VSD

Saving energy is the driving argument behind all investments. Many blow molding machines are now equipped with air reinjection systems. The recovered air is used for both pre-blow and reinjection. ZD Xtend RI compressors, either in fixed speed or variable speed drive versions, are perfectly adapted to reinjection allowing you to save substantial amounts of energy.



Example of savings with reinjection

• 13 kW/h per 100 m3 re-injected at 10 bar with ZD VSD.

• 11 kW/h per 100 m3 re-injected at 10 bar with ZD Fixed Speed.

The Xtend range differs from the standard range with the insertion of a medium pressure vessel (10 bar) between the Z and D. This allows you to separately adapt the size of the Z and D depending on the flow you require.

Peace of mind



At Atlas Copco, our responsibility doesn't stop when the product is delivered. An extensive portfolio of exclusive Aftermarket products and services is designed to add maximum value for our customers – no hidden costs, no surprises and minimized risk to your processes. Guaranteed serviceability

within 24 hours ensures optimum availability and reliability of your compressed air systems with the lowest possible operating costs. We deliver this complete service guarantee through our extensive Aftermarket organization, maintaining our position as the leader in compressed air.

FULL RANGE OF AVAILABLE AFTERMARKET PRODUCTS AND ACTIVITIES

ACTIVITY	PRODUCT*
Genuine parts	Atlas Copco Service kits & oils
Extended warranties	AIRXtend
Service contracts	ServicePlan
System audits	AIR <i>Scan</i> ™
Remote monitoring	AIRConnect™
Energy saving	AIR <i>Optimizer</i> ™
Product improvements	Upgrade programs

* More information is available from your local Atlas Copco customer center.

Technical specifications

The below data are for a discharge pressure of 40 bar (e). For other pressures (25 to 45 bar), please consult your Atlas Copco representative.

DISCHARGE PRESSURE 40 BAR /580 PSIG	Availab	le with	FAD*		Shaft input at ref. cond.	Pressure dew point at 40 bar > to	Sound pressure level***	
50 Hz	LOW VOLTAGE MOTOR	MEDIUM Voltage Motor**	l/s	m³/h	cfm	kW	°C	dB(A)
ZD 800-50	•		220	792	466	143	3	73.7
ZD 1000-50	•		264	950	560	166	3	75.6
ZD 1200-50	•		334	1202	708	210	3	76.0
ZD 1400-50	•		401	1444	849	254	3	75.9
ZD 1600-50	•		445	1602	943	281	3	75.9
ZD 2100-50	•	•	627	2257	1329	384	3	81.2
ZD 2500-50		•	687	2473	1456	422	3	81.2
ZD 2750-50	•	•	779	2804	1651	488	3	82.2
ZD 3050-50	•	•	844	3038	1788	512	3	81.2
ZD 3350-50	•	•	937	3373	1986	571	3	81.2
ZD 3750-50	•	•	1074	3866	2276	678	3	83.1
ZD 4000-50	•	•	1114	4010	2360	712	3	84.0
60 Hz								
ZD 800-60	•		235	846	498	153	3	73.9
ZD 1000-60	•		287	1033	608	182	3	75.7
ZD 1200-60	•		317	1141	672	200	3	76.6
ZD 1400-60	•		398	1433	843	253	3	77.3
ZD 1600-60	•		457	1645	968	288	3	75.9
ZD 1900-60	•	•	547	1969	1159	389	3	80.7
ZD 2300-60	•	•	639	2300	1354	489	3	82.2
ZD 2500-60	•	•	725	2610	1536	441	3	81.7
ZD 3100-60	•	•	857	3085	1816	520	3	81.7
ZD 3500-60	•	•	951	3424	2016	585	3	83.8
ZD 4000-60	•	•	1141	4108	2418	722	3	84.0
VSD****								
ZD 1200 VSD	•		146/320	529/1152	311/678	94/208	3	77.3
ZD 1400 VSD	•		139/382	500/1375	294/809	94/255	3	77.3
ZD 2300 VSD	•		308/625	1109/2250	652/1324	193/397	3	83.9
ZD 2800 VSD	•		308/738	1109/2657	652/1564	193/481	3	83.9
ZD 3500 VSD	•		440/978	1584/3521	932/2072	270/607	3	83.9
ZD 4100 VSD	•		440/1099	1584/3957	932/2329	270/699	3	83.9

ZD MODELS	Overall dimensions (machines side by side)						
	А	В	С				
50 Hz	mm	mm	mm				
ZD 800-50	3460	4390	2185				
ZD 1000-50	3900	4590	2130				
ZD 1200-50	3900	4590	2130				
ZD 1400-50	4826	5003	2083				
ZD 1600-50	4826	5003	2083				
ZD 2100-50	4886	5345	2134				
ZD 2500-50	4886	5345	2134				
ZD 2750-50	4886	5345	2134				
ZD 3050-50	5980	5688	2400				
ZD 3350-50	5980	5688	2400				
ZD 3750-50	6843	5885	2578				
ZD 4000-50	6843	5885	2578				
60 Hz							
ZD 800-60	3460	4390	2185				
ZD 1000-60	3900	4590	2130				
ZD 1200-60	3900	4590	2130				
ZD 1400-60	3905	4920	2083				
ZD 1600-60	4826	5003	2083				
ZD 1900-60	4886	5345	2134				
ZD 2300-60	4886	5345	2134				
ZD 2500-60	4886	5345	2134				
ZD 3100-60	5980	5688	2400				
ZD 3500-60	5980	5688	2400				
ZD 4000-60	6843	5885	2578				
VSD****							
ZD 1200 VSD****	3900	4590	2130				
ZD 1400 VSD	3905	4920	2083				
ZD 2300 VSD	4886	5345	2134				
ZD 2800 VSD	4886	5345	2134				
ZD 3500 VSD	6843	5885	2578				
ZD 4100 VSD	6843	5885	2083				

* At reference conditions and according to ISO 1217 ** Medium voltage motors (3 KV, 3.3 KV, 6 KV, 6.6 KV) for Japan only *** a-weighted sound pressure level LpA, sound power level LwA, uncertainty + 3dB, reference 20 μ Pa, according to ISO 3746 (for low voltage motors) **** At minimum/maximum speeds ***** Please consult Atlas Copco

Reference conditions:

- Inlet pressure: 1 bar(a)
- Relative air humidity: 0%
- Air inlet temperature: 20°C -
- Cooling water inlet temperature: 20°C
- Nominal effective working pressure: 40 bar

ZD plus and ZD RI ranges offer numerous combinations. Please contact your local Atlas Copco Customer Centre at www.atlascopco.com for a customized selection.





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



Our commitment to you does not simply end when your Atlas Copco products have been delivered and installed. We have an extensive range of aftermarket services to offer you continued support, whenever you need it. With a presence in over 170 countries, we can deliver high-quality customer service anytime, anywhere. Our highly skilled technicians are available 24/7 to answer any queries you may have. And all of this is backed by an efficient logistics organization, ensuring fast delivery of genuine spare parts when you need them. With Atlas Copco you can rest assured that your superior productivity will always be our first concern!



