

# Hybrid compressor solutions

ZD 800-4000 & ZD 1200-4100 VSD (25-45 bar)

# Maximizing your efficiency and reliability

The ZD family is the perfect set up when you're looking for improved quality, reliability and efficiency in applications requiring operating pressures between 25 to 45 bar.

## Safeguard your reputation

Product contamination can ruin your reputation. You therefore can't afford to compromise on clean, dry, oil free air for your critical processes. At Atlas Copco, we are a pioneer in air compression and air treatment technologies. We were the world's first manufacturer to receive certification for air purity: ISO 8573-1 CLASS 0. CLASS 0 compressors feed your processes with pure air that safeguards your production processes and protects your hard-won reputation.

## Designed to boost your productivity

Completely designed and developed in-house, our ZD family combines a screw compressor and a booster operating with extremely high efficiency for high pressure applications. Thanks to our dryer technology located at the screw outlet, the booster is condensate-free, thus preserving the internal components for increased reliability.

## Reduce your energy consumption

**1.** Our unique ZD hybrid solution uses 4 stage configuration, which is on average 10% more efficient than a 3 stage conventional piston compressor.
**2.** Our entire package includes the option of an MD dryer which consumes almost no energy to further increase efficiency compared to solutions offering either refrigerant or twin tower desiccant solutions.
**3.** The optional VSD technology can lead to further energy savings of approximately 35%.
**4.** You can also choose to implement energy recovery systems, which can recover on average 95% of the energy.

## Global presence in more than 180 countries

Our products are thoroughly tested but even the best car in the world can fail. Through our global reach we now support customers in more than 180 countries. Quite simply, local presence means minimum down-time and maximum time producing PET bottles, with an even bigger impact on your profitability.



*2 - ZD (Vintage)*

# Innovative solutions for high pressure applications

All around the world, companies rely on our expertise and innovations to contribute to their business growth. We help our customers cut costs and boost productivity while delivering sustainable solutions.








## PET – Unique offering with the lowest possible cost of ownership

### CAPEX reduction

**How our silent ZD compressor can save you money and space**

Do you want a new production line? You can reduce your capital costs by choosing our silent ZD compressor. Unlike open frame piston compressors, it does not need special foundations, anti-vibration mounts, or a separate room with acoustic insulation. It also improves your productivity and creates a healthier environment for your employees.

### OPEX reduction

**Discover the endless advantages of our technologies**

Over a 10 year period, electrical energy account for approximately 80% of the life cycle cost of compressed air generation, therefore getting the most energy-efficient compressed air solution can significantly reduce your operating costs. Our ZD solution is flexible, dynamic, and energy-efficient, reducing OPEX by lowering compressed air generation costs. Our local team can help you choose the right combination of technologies.

### Risk reduction / elimination

In the PET blowing market, air supply interruptions cause losses, delays, and costly restarts. Of course, you don't want to worry about compressed air, it just has to be there, around the clock, in the right flow, pressure and quality. We have built upon our expertise and expanded our product portfolio. Our ZD family, based on our expertise in compression technology and high-pressure acquisitions, meets your industry's needs and challenges with the latest technology through R&D investments.





## Decades of experience in food and beverage

We have set a standard concerning our air purity. This is how we became the world's first compressor manufacturer to receive multiple international certifications. We have received certifications for:

- **ISO 22000** on our manufacturing process in Airpower, Belgium
- **ISO 8573-1 CLASS 0** on the level of air purity

Additionally, we comply to the Good Manufacturing Practice paragraph D10 and in part 210 where it states that compressed air must be of appropriate purity, in our eyes this level of air purity can only be delivered by CLASS 0 machines.



## Satisfactory to pharmaceutical air standards

After having serviced clients in the pharmaceutical sector all over the world, we have accumulated the experience and knowledge to help you find the ideal solution and bring you peace of mind concerning your compressed air needs.



## Other high pressure applications (up to 100 bar)

**Metallurgical plant**
Compressed air is required for middle sized air separation unit

**Desalination plant**
To maintain surge vessels under pressure and protect the pumping stations from water hammer damage

**Steel plant**
Nickel processing (autoclave)

**Hydro power plant**
Blow down system

**Separation station**
To produce oxygen

Additional applications can be added on request

# Tested & certified air quality

With us, you eliminate the risk of oil contamination from the compressor. Why risk damaged or unsafe products, losses from operational downtime or jeopardizing your company's well-earned reputation? When tested across a range of temperatures and pressures, no traces of oil were found in the output air stream from our products, our compressors.




## Why using our Atlas Copco dryers?

**Cost-effective dry air for your application**

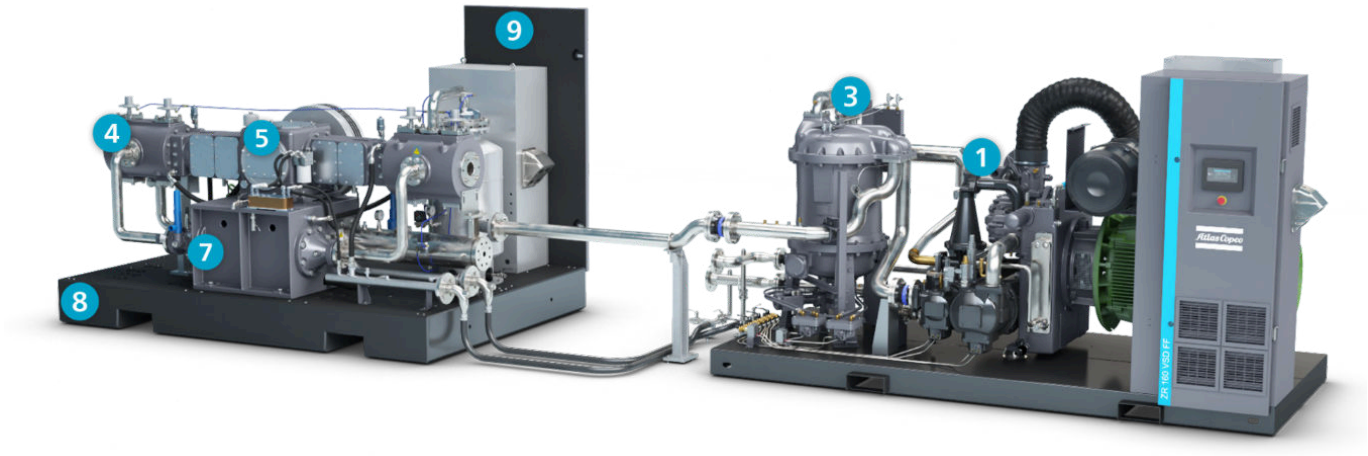
Our ZD optimized solution with the dryer in between the compressor and booster extend the service life of the booster and increase air quality at lower pressures. Conventional high pressure drying methods limit the scope of pressure reductions and energy savings. When using a high pressure refrigeration type air dryer, as the system pressure is lowered the pressure dew point rises increasing system contamination and production downtime. With the Atlas Copco ZD solution, air quality increases reducing maintenance costs while increasing production efficiency.



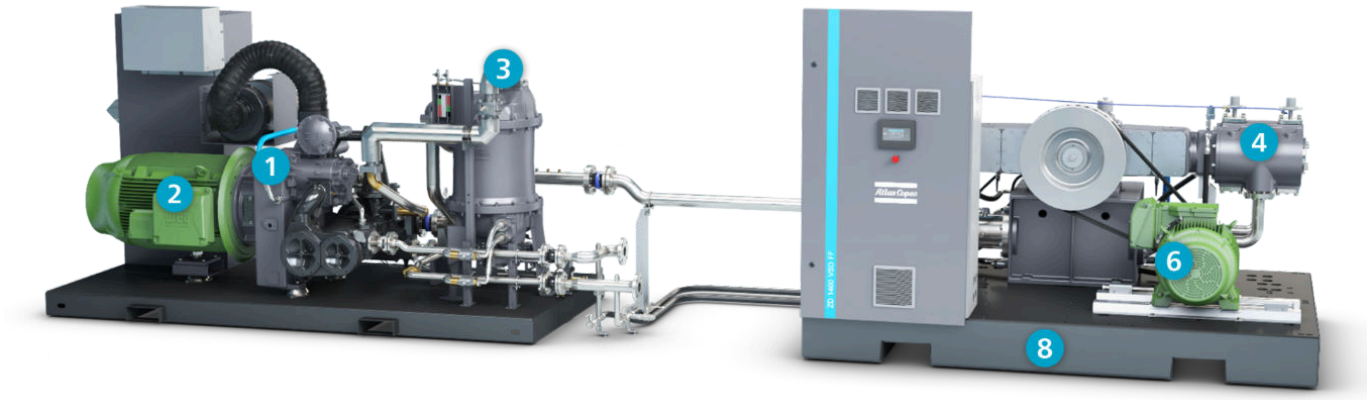
# For a smooth production process

## ZD

**RIGHT VIEW**

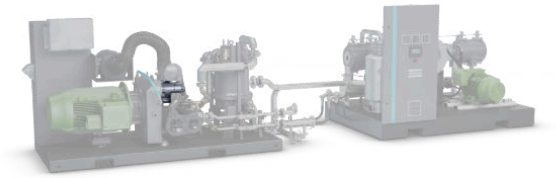



**LEFT VIEW**



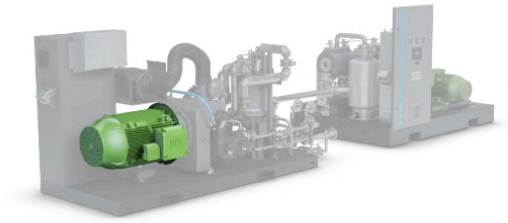
## 1 Oil-free air (Class 0)

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



## 2 High efficiency motor

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



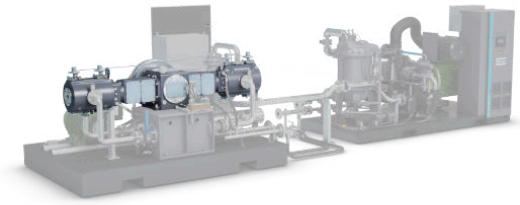
## 3 Maximum reliable process continuity

- No loose desiccant, compared to solutions offering either refrigerant or twin tower desiccant dryers.
- No switching valves preventing failure.



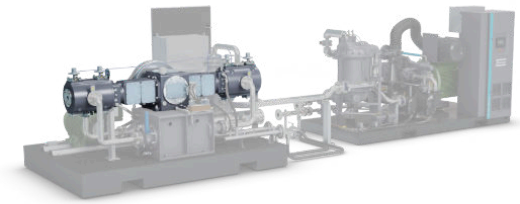
## 4 Piston oil-free technology (Class 0)

- Unique oil-free piston technology combining high resistance to dry air with Class 0 certification, the highest quality of air according to ISO 8573-1.
- PTFE piston rings and long-distance pieces ensure that the compression chambers are perfectly oil-free to support a smooth and reliable supply of air.



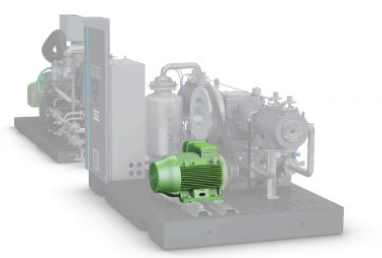
## 5 Balance opposite piston technology

- Lowest vibration level thanks the horizontal design (balanced forces).
- The balance opposite technology makes this machine very compact and easy to transport.



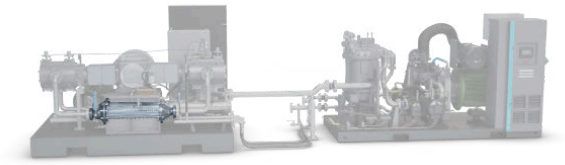
## 6 High efficiency motor

- IP 54/55 motor protects against dust, chemicals and humidity.
- Food-mounted motor with strong ankering.



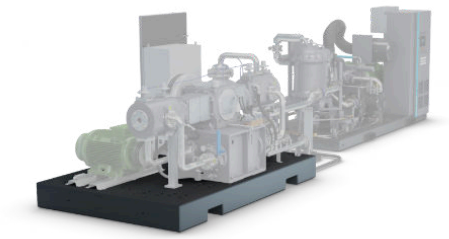
## 7 High efficiency coolers

The stainless steel bundles in the water cooler are highly corrosion-resistant. This allows easy cleaning and delivers a long lifetime.



## 8 Noise absorbing frame

- Lowest vibrations level thanks to the vibration absorbing frame, the concrete base plate.
- With the reduced floor space requirement, and the all-inclusive package, the installation costs are considerably reduced.



## 9 Sound proof design

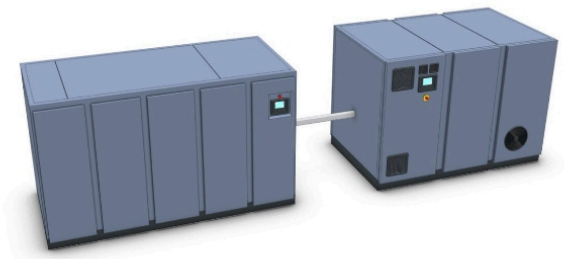
- Silenced canopy ensures optimal working conditions for everyone in the immediate environment.
- Optimized internal ducting and integrated pulsation damper to reduce the noise level.



# The flexibility the ZD family has to offer

Are you interested in a high pressure compressor or a complete compressed air solution? The ZD family not only provides you high pressure air but also offers you low/medium pressure smart air solutions while driving down investment and operational costs.





## ZD Premium – Dedicated to high pressure applications

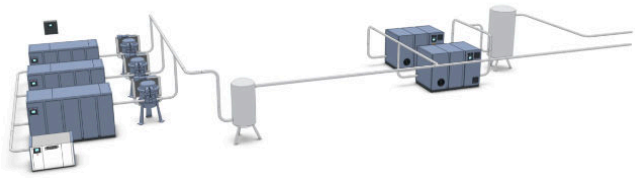
- Maximum efficiency with 4 stage oil-free air compression
- Integrated dryer option extending service intervals of the booster
- Variable Speed Drive available
- Easy installation, no foundations required
- Lowest cost of ownership
- Low noise and vibrations protecting employees
- SMARTLINK included

## ZD Xtend – No need for a standalone medium compressor

Thanks to our ZD Xtend, you are able to handle medium pressure in your production line. This solution saves substantially over extra standalone compressors.

- Medium pressure air available thanks to a larger model screw compressor
- Medium pressure vessel
- Medium pressure regulation valve





## ZD Flex – Designed to handle multiple pressures

Does your factory only need high pressure air? In case your factory production process needs lower pressure air requirements as well, have you ever considered consolidating them? By consolidating the existing medium pressure and high pressure air requirements, we are able to create the most appropriate solution for your needs, whether they are investment costs, operational costs or both? The new ZD Flex is the answer to all your needs. Inspired by many customers we have been working with, this modern version of the ZD Flex gives you the possibility to fully optimize your compressed air process.

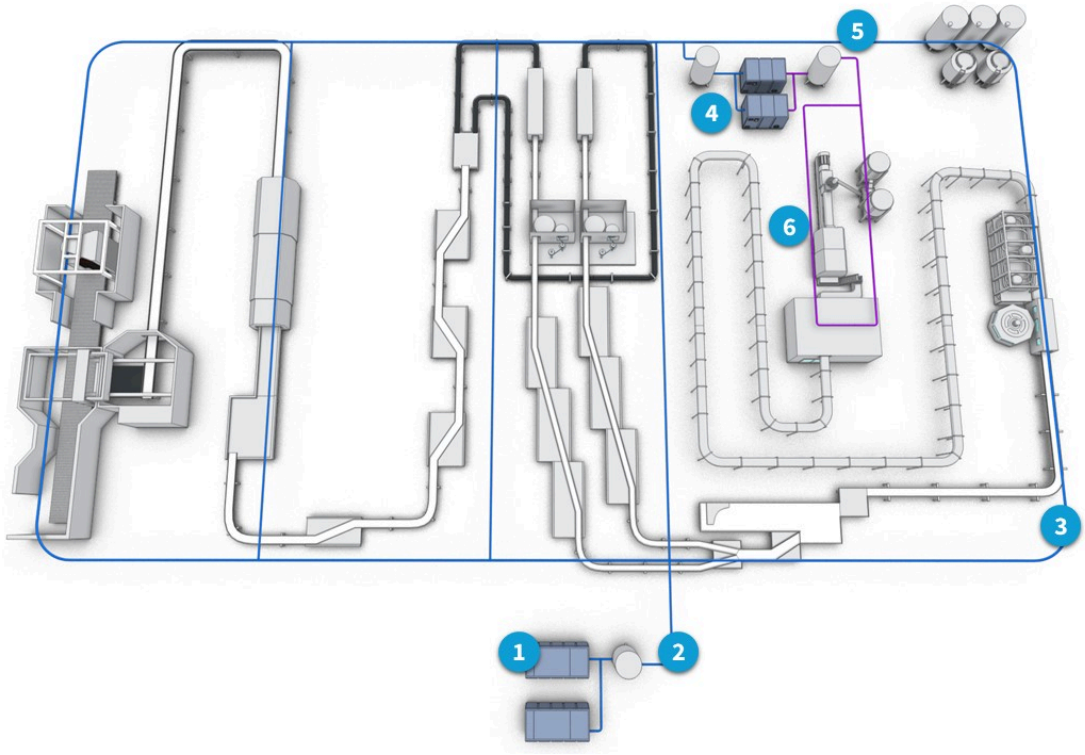
## Easy to transport, installation and relocation

A key reason why operators love the ZD is its silence. With an operating noise level up to 76.4 dBA, normal conversations can be held in its immediate vicinity.

- Fitted on a concrete base plate
- No special foundations are required
- No anti-vibration pads are needed
- Slots are integrated for easy transport and handling



# ZD technology maximizing your efficiency



## 1 Instrument air

- The first two stages are based around screw compression technology which is the most commonly used technology for up to 10 bars because it is energy efficient, cost effective and low in maintenance. This leads to 10% extra efficiency during operation.
- The **Z**(D) is equipped with a dryer at booster inlet to eliminate condensate.
- Precise pressure control allows a tighter pressure band and a lower average working pressure, resulting in reduced energy consumption.



## 2 Medium/low pressure air receiver

Compressed air demand typically fluctuates, during day and night, even minute to minute, second to second. Those fluctuations can cause switching losses in compressors. A properly sized compressed air receiver will deal with these short term fluctuations and will avoid potentially nervous switching of compressors. Thus it will contribute to the efficiency of your compressed air installation.



## 3 Medium pressure network

Piping is an essential part of your compressed air system, in order to make sure your compressed air is properly distributed, we recommend a ring network for an optimal performance and efficiency.

## 4 High pressure compressor/booster

Compared to traditional piston technology, our high pressure booster saves energy and increases the life-time of moving parts (rings, packings, valves).
(Z)**D** boosters are also available in Variable Speed Drive versions, allowing for on average 35% energy savings due to:

- Unload losses are reduced to a minimum.
- Load/no load transition losses are eliminated.
- Precise pressure control allows a tighter pressure band and a lower average working pressure, resulting in reduced energy consumption.



## 5 High pressure air receiver

Compressed air demand typically fluctuates, during day and night, even minute to minute, second to second. Those fluctuations can cause switching losses in compressors. A properly sized compressed air receiver will deal with these short term fluctuations and will avoid potentially nervous switching of compressors. Thus it will contribute to the efficiency of your compressed air installation.



## 6 High pressure network

High pressure piping is extremely expensive; keep it as short as possible by mounting our (Z)**D** booster right next to the user you don't only eliminate costs but also pressure drops.

## Optimum Compression technology

**4 stage compression: best of thermodynamics**

Four-stage compression with intercooling saves up to 10% energy when compressing air between 25 to 45 bar. It also lowers the operating cost (OPEX) significantly, despite the higher capital cost (CAPEX). Our ZD hybrid 4 stage solution is the best value for the PET industry.

## Variable Speed Drive technology

**Up to 35% additional savings**

Variable Speed Drive (VSD) compressors are a type of air compressor that can adjust the speed of the motor according to the air demand. This results in lower energy consumption, lower pressure fluctuations, and higher efficiency compared to fixed speed machines. VSD compressors are especially suitable for the PET industry, where different bottle sizes require different volumes of air.

## Heat recovery for sustainable energy management

**Use your energy twice**

Heat recovery forms part of a sustainable energy management strategy. With the adaptation of a heat recovery control unit, the energy recovered in the cooling water of your water cooled compressors can be used for several uses: boilers, warming of premises, showers, cleaning processes. This saves a lot of energy.






## Constant dry air at extreme low power consumption

**Save time and money**

Thanks to their pioneering technology, our dryers ensure the lowest pressure drop and lowest energy consumption for the highest possible efficiency saving you time and money throughout the production process. The uniqueness of the rotary drum dryers lies in the fact that the loss of compressed air is completely avoided. Due to the usage of the generated heat from the compression process, a minimal amount of power is required to achieve very low dewpoints.

## Monitoring and control

**How to get the most from the least**

The Elektronikon® unit controller is specially designed to maximize the performance of your compressors and air treatment equipment under a variety of conditions. Our solutions provide you with key benefits such as increased energy efficiency, lower energy consumption, reduced maintenance times and less stress… less stress for both you and your entire air system.

## Evolving towards compressed air management

**SMARTLINK Service**

A mouse-click reveals the online service log. Get quotes for parts and additional service quickly and easily.

**SMARTLINK Uptime**

Uptime additionally sends you an e-mail or text message whenever a warning requires your attention.

**SMARTLINK Energy**

Energy gives you customized reports on the energy efficiency of your compressor room, in compliance with ISO 50001.



# We value your investment

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.



## Genuine parts

The Parts Plan delivers genuine Atlas Copco parts at your doorstep. Parts that are designed and produced to the exact specifications of your compressor. Our experts draw up a maintenance schedule based on your equipment and site conditions. Each delivery of parts triggers your technicians to perform the associated maintenance step. Choose genuine parts to secure the performance of your air compressors. Let the Parts Plan structure your maintenance activities and put an end to ad-hoc budgeting.



## Preventive maintenance

A Preventive Maintenance Plan offers on-time servicing by factory-trained Atlas Copco technicians, combined with the unrivalled quality of our genuine parts. Tailored to your installation and site circumstances, the maintenance schedule always fits your needs, and gives you more uptime, better energy efficiency and increased reliability for a fixed periodic fee. Step up your air compressor maintenance and go for optimal performance with maximum cost savings.




## Responsibility plan

For an all-inclusive price, the Total Responsibility Plan is our commitment to take complete care of your compressor, with on-time maintenance by expert service engineers, genuine parts, proactive upgrades and improvements, and drive line overhauls. Best of all, it includes total risk coverage. This means we take care of all repairs, even breakdowns, without extra charges. Give yourself the benefit of being able to focus on your production, while Atlas Copco takes Total Responsibility for your compressors.

# Ancillary equipment to safeguard overall reliability



## 40 bar filters

- Active carbon filter: highly efficient dust filter up to 0.1 micron
- Oil vapor & odor removal filter: for filtration down to 0.005mg/m3/ oil carry-over
- Both filters to be installed side-to-side



## Medium and high pressure vessels for up to 45 bar

- Volume 500-3000 liters (132/792 gallons)
- Safe design for applications up to 45 bar (653 psi)
- Hot dipped galvanized metallic tank



## Cooling tower

- Efficient cooling of closed loop water circuit
- Water savings with drift eliminators
- Maximum inlet water temperature 75°C (167°F)



## Airblast cooling unit

- Efficient cooling of the closed loop water circuit
- Temperature approach: 5-15°C (41-59°F)
- Maximum water temperature: 70°C (158°F)



## Water pump skid

- Optimization of the flow in the compressor closed loop circuit
- Easy management: groups all the functions for operation of the cooling unit or tower



## Energy recovery

Electrical input is not the only source of energy entering the system. The suction air for the compressor contains water vapor. The heat stored in the vapor is released through condensation in the inter- and aftercooler of the compressor. Typically the condensation heat, contained in the suction air, is equivalent to 5-20% of the electrical input energy.



# Technical specifications

**ZD fixed speed – 50 Hz**

| ZD Range | | | Performance | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Model** | **Frequency** | **Pressure variant** | **PDP** | **Pressure** | **FAD (m³/h)** | **Nm³/h** | **Motor/shaft power** | **Electric/package power** |
| ZD 820 – 50 FF | 50 | 42 | 3°C | 35 | 902 | 830 | 149 | 164 |
| ZD 1020 – 50 FF | | | | | 1000 | 919 | 166 | 183 |
| ZD 1250 – 50 FF | | | | | 1264 | 1162 | 214 | 232 |
| ZD 1450 – 50 FF | | | | | 1437 | 1321 | 246 | 267 |
| ZD 1600 – 50 FF | | | | | 1615 | 1485 | 273 | 293 |
| ZD 2100 – 50 FF | | | | | 2241 | 2062 | 368 | 395 |
| ZD 2500 – 50 FF | | | | | 2460 | 2264 | 406 | 436 |
| ZD 2750 – 50 FF | | | | | 2788 | 2563 | 475 | 512 |
| ZD 3050 – 50 FF | | | | | 3025 | 2781 | 501 | 538 |
| ZD 3350 – 50 FF | | | | | 2249 | 3080 | 560 | 600 |
| ZD 3750 – 50 FF | | | | | 3690 | 3394 | 627 | 674 |
| ZD 4000 – 50 FF | | | | | 4195 | 3858 | 699 | 750 |
| ZD 1020 – 50 FF – 100 | | 100 | 8°C | 100 | 1000 | 919 | 212 | 227 |
| ZD 1250 – 50 FF – 100 | | | | | 1263 | 1161 | 272 | 289 |
| ZD 1450 – 50 FF – 100 | | | | | 1437 | 1321 | 319 | 336 |
| ZD 1800 – 50 FF – 100 | | | | | 1824 | 1677 | 380 | 402 |
| ZD 2500 – 50 FF – 100 | | | | | 2461 | 2263 | 522 | 552 |

*At reference conditions and according to ISO 1217.*
*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: 35 bar*

**ZD fixed speed – 60 Hz**

| ZD Range | | | Performance | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Model** | **Frequency** | **Pressure variant** | **PDP** | **Pressure** | **FAD (m³/h)** | **Nm³/h** | **Motor/shaft power** | **Electric/package power** |
| ZD 820 – 60 FF | 60 | 42 | 3°C | 35 | 867 | 798 | 143 | 158 |
| ZD 1020 – 60 FF | | | | | 1108 | 1019 | 185 | 204 |
| ZD 1250 – 60 FF | | | | | 1178 | 1084 | 197 | 216 |
| ZD 1450 – 60 FF | | | | | 1421 | 1307 | 244 | 266 |
| ZD 1600 – 60 FF | | | | | 1654 | 1521 | 280 | 301 |
| ZD 1900 – 60 FF | | | | | 1969 | 1810 | 322 | 346 |
| ZD 2300 – 60 FF | | | | | 2304 | 2119 | 379 | 407 |
| ZD 2550 – 60 FF | | | | | 2611 | 2401 | 436 | 470 |
| ZD 3100 – 60 FF | | | | | 3071 | 2824 | 510 | 548 |
| ZD 3500 – 60 FF | | | | | 3396 | 3123 | 569 | 613 |
| ZD 4000 – 60 FF | | | | | 4004 | 3683 | 688 | 739 |
| ZD 820 – 60 FF – 100 | | 100 | 8°C | 100 | 868 | 798 | 187 | 202 |
| ZD 1020 – 60 FF – 100 | | | | | 1109 | 1020 | 238 | 254 |
| ZD 1450 – 60 FF – 100 | | | | | 1427 | 1312 | 314 | 334 |
| ZD 1600 – 60 FF – 100 | | | | | 1656 | 1523 | 346 | 367 |
| ZD 2300 – 60 FF – 100 | | | | | 2304 | 2118 | 482 | 511 |

*At reference conditions and according to ISO 1217.*
*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: 35 bar*

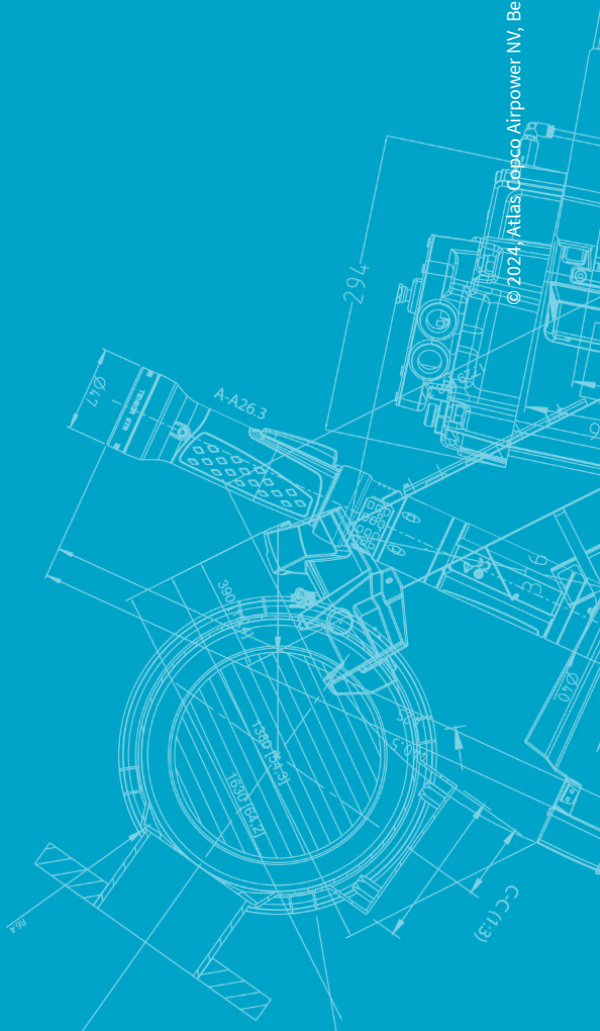
## ZD Variable Speed Drive – 50-60 Hz

| ZD Range | | | Performance | | MAX speed (VSD) | | | | MIN speed (VSD) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Model | Frequency | Pressure variant | PDP | Pressure | FAD ($m^3/h$) | $Nm^3/h$ | Motor/shaft power | Electric/package power | FAD ($m^3/h$) | $Nm^3/h$ | Motor/shaft power | Electric/package power |
| ZD 1220 VSD FF | 50 – 60 | 42 | 3°C | 35 | 1160 | 1067 | 197 | 223 | 633 | 582 | 107 | 125 |
| ZD 1450 VSD FF | | | | | 1322 | 1216 | 229 | 260 | | | | |
| ZD 2300 VSD FF | | | | | 2243 | 2063 | 377 | 418 | 994 | 914 | 173 | 196 |
| ZD 2800 VSD FF | | | | | 2603 | 2394 | 448 | 497 | | | | |
| ZD 3500 VSD FF | | | | | 3594 | 3305 | 596 | 657 | 1494 | 1374 | 243 | 278 |
| ZD 4100 VSD FF | | | | | 4240 | 3899 | 712 | 783 | 1551 | 1426 | 249 | 285 |
| ZD 1450 VSD FF – 100 | | 100 | 8°C | 100 | 1322 | 1216 | 284 | 317 | 815 | 750 | 174 | 195 |
| ZD 2300 VSD FF – 100 | | | | | 2603 | 2393 | 552 | 611 | 1840 | 1692 | 383 | 425 |

*At reference conditions and according to ISO 1217.*
*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: 35 bar*

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