

## *Oil-free centrifugal compressors*



ZH+ & ZH 355-900 (355-900 kW/500-1200 hp)  
ZH+ & ZH 630-1600 (630-1600 kW/900-2250 hp)  
ZH 1000-3150 (1000-3150 kW/1400-4350 hp)

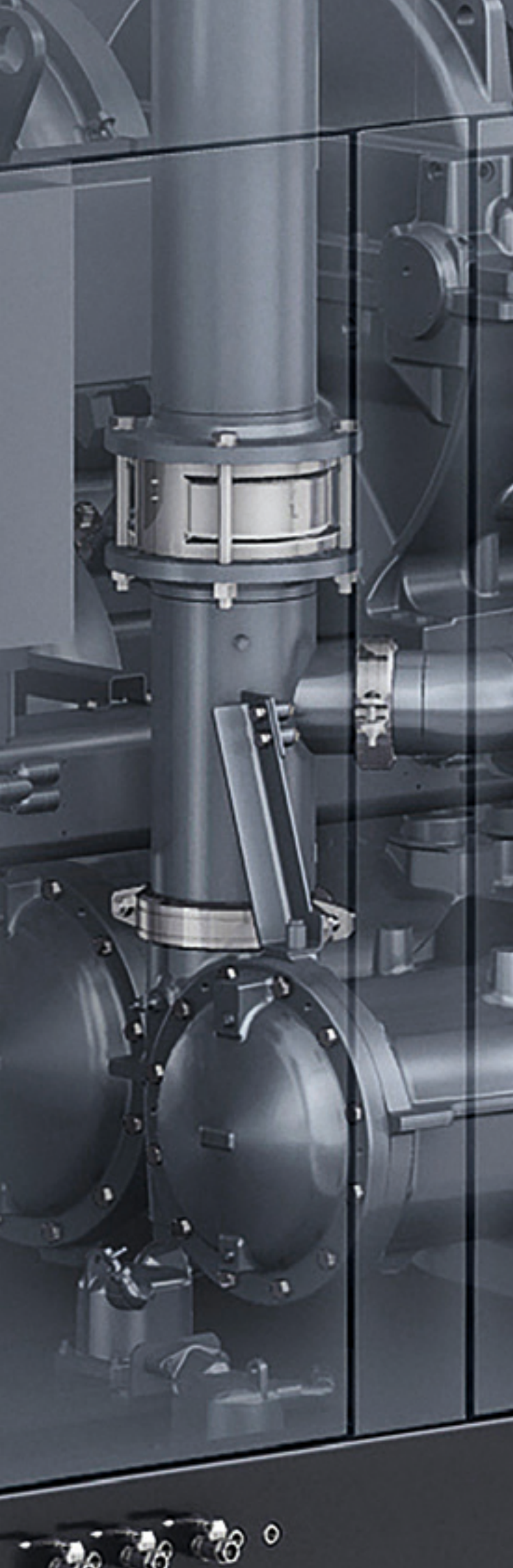
*Atlas Copco*





## ***ZH<sup>+</sup> & ZH range: high efficiency & reliability***

Engineered using innovative in-house technology, the ZH<sup>+</sup> and ZH range captures years of experience in advanced compressed air solutions to save energy and guarantee reliability of oil-free air supply in multiple environments.



## **Driving down energy costs**

Superior oil-free turbo air ends provide the optimum combination of a high flow with low energy consumption. Ample sized cooling, low pressure drops and an efficient drive train result in high compressor package efficiency. Further energy savings are possible with Atlas Copco's heat of compression MD, ND and XD dryers.

## **Assuring your peace of mind**

From the factory to the field, Atlas Copco has the expertise and products, service and support to meet customer demands. Through interaction and dedicated service during all stages of the process, Atlas Copco has accomplished a broad customer base around the world. Hundreds of thousands of unflinching running hours give proof of our long-term local and global service and support commitment to engineering companies and contractors as well as end customers.

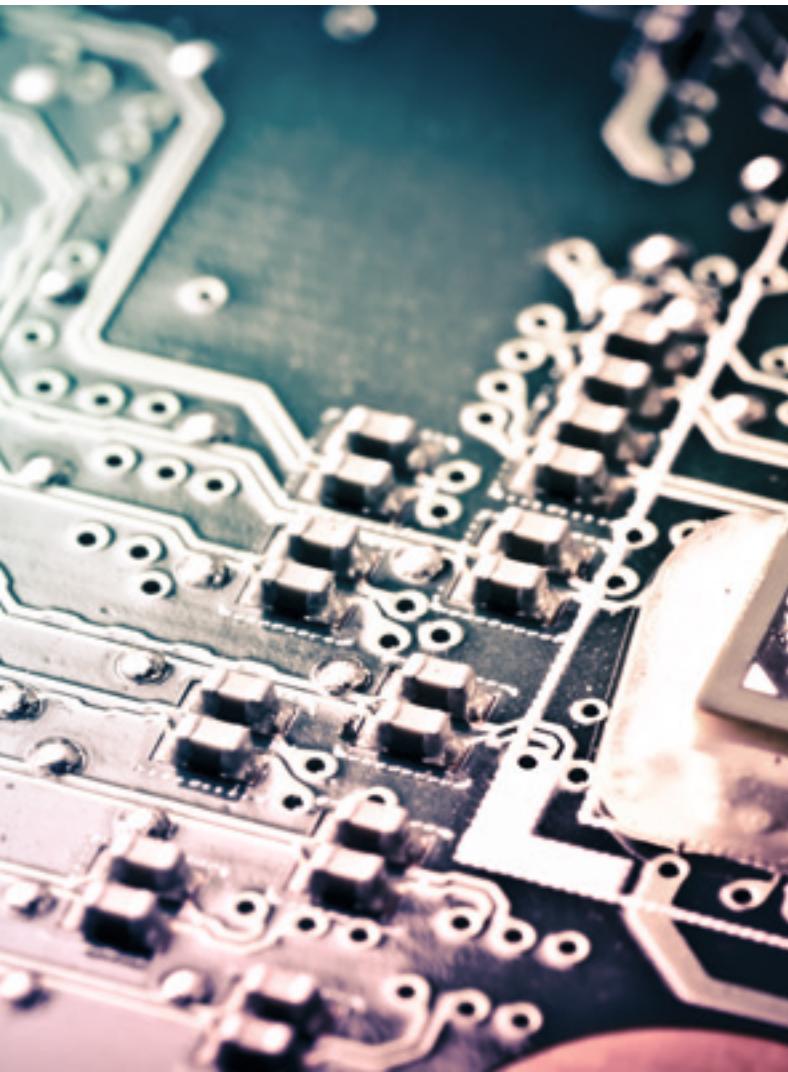
## **Keeping your production up and running**

ZH<sup>+</sup> & ZH compressors are built using strict codes of Quality Control, and are designed, manufactured and tested in ISO 9001 accredited production facilities. They use Atlas Copco's proven, superior turbo technology and over-sized cooling for the highest efficiency and reliability, AGMA class A4/ISO 1328 class 4 gears for low noise and vibrations, high-grade stainless steel coolers for very long lifetime, and an integrated lubrication system. The result is the highest reliability you need.



## *Proven turbo power*

Your application deserves a reliable supply of oil-free compressed air at the lowest energy cost. Atlas Copco has been building oil-free centrifugal compressors for process and plant air applications for decades.



### **Electronics**

- Clean, dry, high-quality air (Class 0) is essential, produced with optimal energy efficiency.
- Applications include the removal of microscopic debris from the surfaces of computer chips and computer boards.

### **Textiles**

- Class 0 certified air quality for the highly sensitive production processes in the textile industry.
- Applications include spinning, weaving, dyeing, texturizing, winding and coning.

### **Metal manufacturing**

- Reliable compressors are essential for your demanding metal manufacturing applications.
- Atlas Copco provides a complete, ready-to-use solution including all components and options with low service cost.

### **Food & beverage**

- Your reputation is at stake so you can't afford to compromise on product quality.
- Applications: Instrument air, cleaning air, food storage, cooling and spraying, filling and capping.

# 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 <sup>3</sup>             |
|-------|--|
| 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).



# ZH+ & ZH 355-900

1

## Completely packaged solution

- All-in-one standard package incorporating the latest technology in a built-to-last design.
- Includes internal piping, coolers, motor, lubrication, inlet guide vanes and control system.
- Installation is fault-free, and commissioning is quick.
- Optional features for customization to a specific production environment.

2

## Efficient inlet silencer and filter

- Inlet filter is combined with a silencer to reduce noise level and protect the compression stage.
- Handy pressure drop indication on the control panel.

3

## Integrated blow-off valve and silencer

- No external air, no additional piping and no additional mounting required.
- Auto-dual and Constant Pressure Control modes for cost-efficient response to variable air demands.

4

## Mounted cooling water manifold

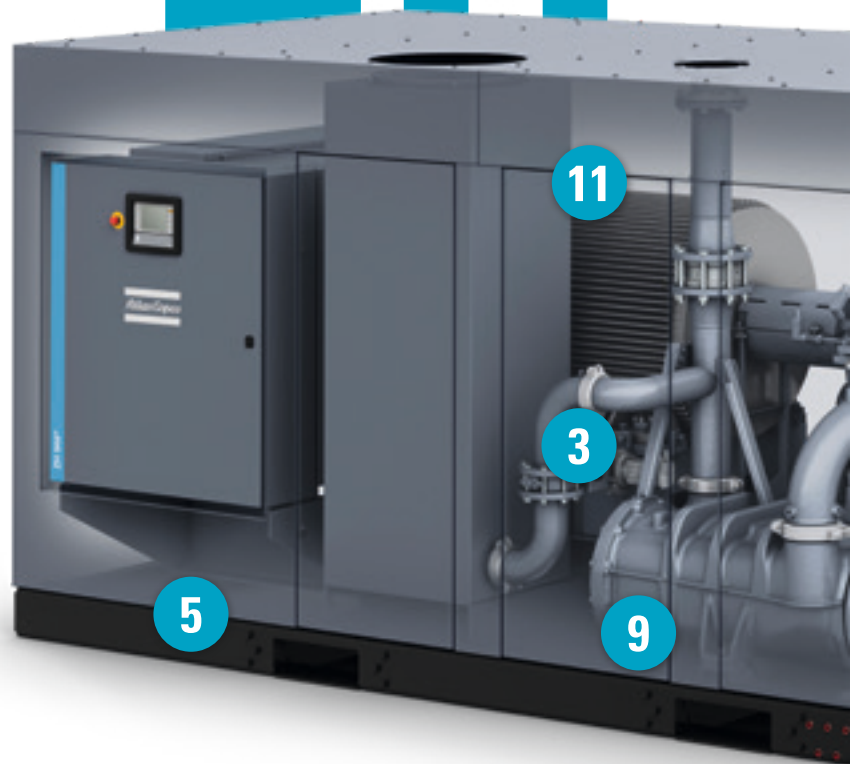
- Cooling water distribution to intercoolers, aftercooler and oil cooler.
- Individual adjustment of flow through intercoolers and aftercooler.

5

## Small footprint

- Lowest footprint on the market in their range.
- Saves valuable and often expensive floor space in a facility.

# ZH+



6

## Sound attenuating enclosure

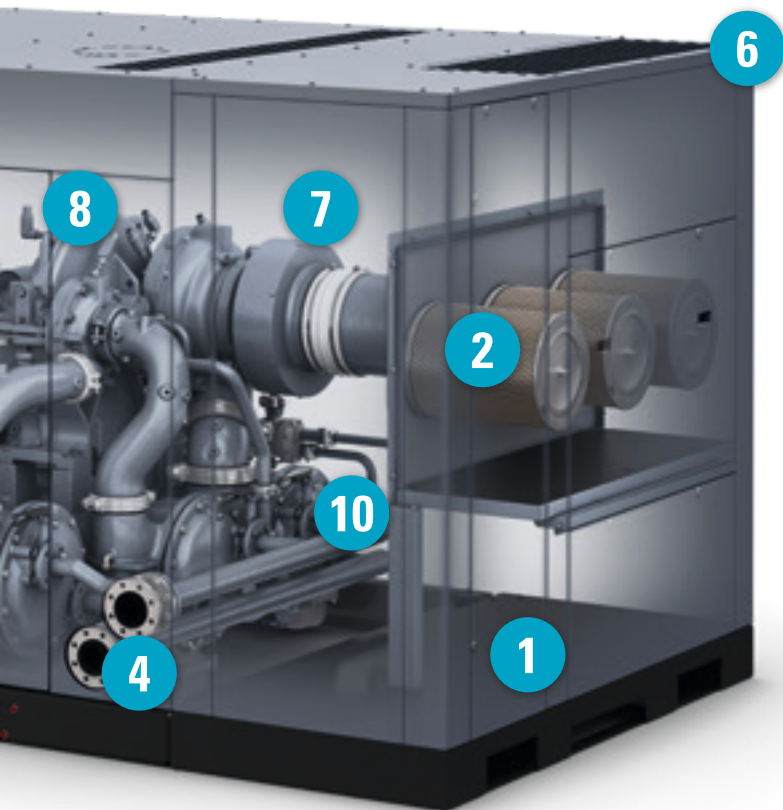
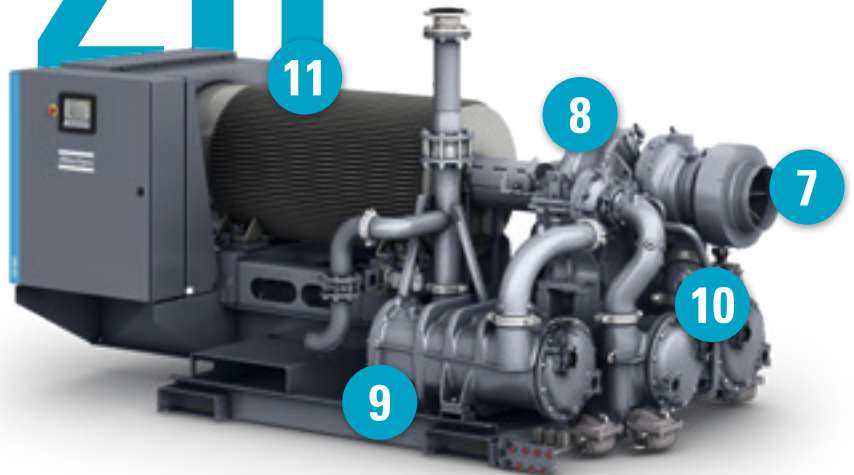
Ensures optimal working conditions for everyone in the immediate environment

# ZH

7

## Energy saving inlet guide vanes

- Smart and efficient capacity control.
- Adjustable inlet guide vanes save up to 9% energy at reduced air demand.
- Reliable servo-motor based actuator for accurate alignment with the variable air demand.



8

## Easily accessible gearbox

- Horizontally-split, easing access to gears and high/low speed bearings.
- Short inspection and maintenance times.

9

## High efficiency intercoolers and aftercoolers

- Low air approach temperature and pressure drop.
- For higher reliability and easier maintenance, the coolers are separated from the compressor core unit.
- Stainless steel tubes and full epoxy coating inside cooler shells increase corrosion resistance.

10

## Complete oil system with oil reservoir, breathing system and auxiliary oil pump

- Fully equipped oil reservoir with temperature sensor and level sight glass.
- Main shaft driven oil pump, supported by auxiliary oil pump during start-up and coast-down.
- Flexible connections to maximize leak tightness.

11

## Motor

- High-efficiency main motor.
- Available in IP23 & IP55 versions.

# ZH+ & ZH 630-1600



1

## Plug-and-play packaged solution

- All-in-one solution: fault-free installation, easy commissioning and quick start-up.
- Includes core compressor and integrated air inlet system, coolers, blow-off valve and silencer, drive motor, complete lub oil system and control system.

2

## Efficient inlet filter and silencer

- Protects the compression stages and reduces the noise level.
- Pressure drop indication on the control panel to monitor best performance.

3

## On skid blow-off valve and silencer

- No additional piping or mounting, no external air required.
- Auto-dual and Constant Pressure Control modes for cost-efficient variable compressed air demands.

4

## Easy to connect cooling water manifold

- One connection serves intercoolers, aftercooler, oil cooler and main motor.
- Individual flow adjustment for intercoolers and aftercooler.



11

10

5

5

## Small footprint

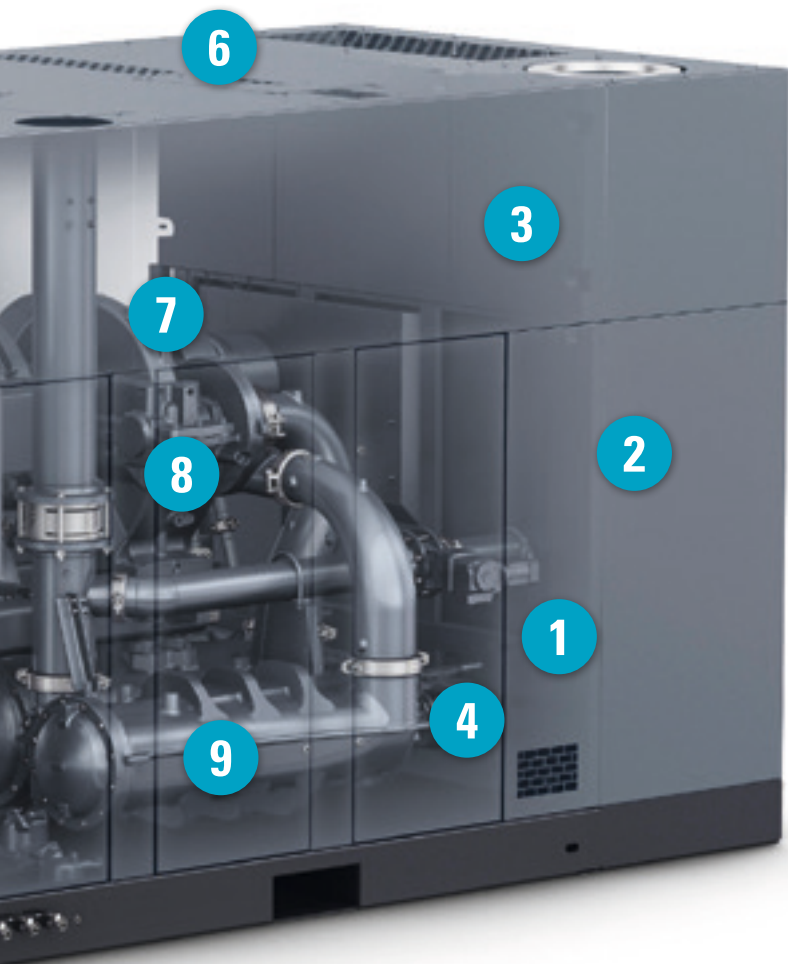
- Highest ratio flow/footprint on the market.
- Saves valuable space in a facility.
- Easy upgrade of existing installations.



6

## Sound attenuating enclosure

Reduces noise related stress on anyone working in the immediate environment



7

## Intelligent Inlet Guide Vanes controls

- Accurate servo-motor-driven positioning ensures stable behavior even under agile compressed air demands and large turndowns.
- Reliable, smart and efficient capacity control saving up to 9% energy at reduced compressed air demand.

8

## Easy preventive maintenance access

- Horizontally-split gearbox, with quick access to major rotating components.
- Short inspection and maintenance times.

9

## Compact state-of-the-art coolers

- Separately mounted for increased reliability and easier maintenance.
- Epoxy coated air path for increased corrosion resistance.
- Stainless steel tubing for straightforward cleaning.
- Compact and efficient design with low approach temperature and pressure drop.

10

## On board full oil lubrication system

- Includes oil reservoir with heater, temperature monitoring and level sight glass.
- Main shaft driven oil pump, supported by auxiliary oil pump during start-up and coast-down.
- Breather system preventing oil fumes.
- Flexible leak free connections.



11

## Silent care-free high efficiency main motor

- Air and water-cooled (IP55) variant.
- Simplifies on-site installation (no need for cooling air ducts).
- Low noise emission.

# ZH 1000-3150

1

## Standardized solution

- All-in-one solution: fault-free installation, easy commissioning, and quick start-up.
- Includes internal piping, core, coolers, inlet guide vanes, complete lubrication oil system and control system.

2

## Blow-off valve

- Reliable servo-motor or pneumatic actuator.
- Auto-dual and Constant Pressure Control modes for cost-efficient variable compressed air demands.

3

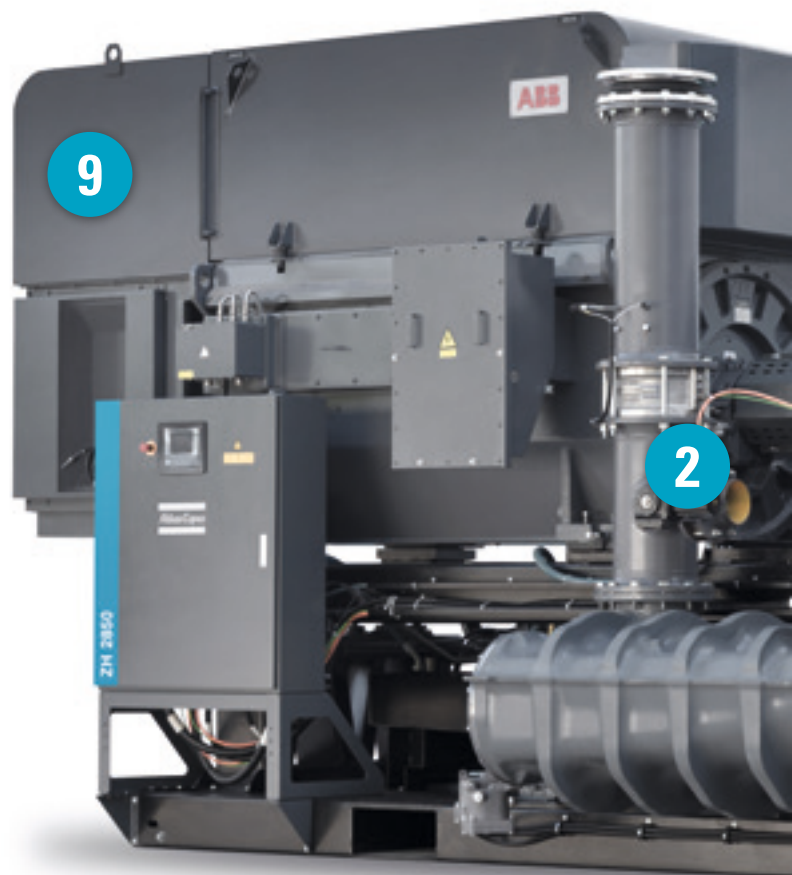
## Easy to connect cooling water manifold (optional)

- One connection distributes water to intercoolers, aftercooler, oil cooler.
- Individual adjustment of flow through intercoolers and aftercooler.

4

## Small footprint

- Lowest footprint on the market in this range.
- Saves valuable space in a facility.



5

### Energy saving inlet guide vanes with intelligent controls

- Reliable, smart and efficient capacity control saving up to 9% energy at reduced compressed air demand.
- Reliable servo-motor actuator for accurate alignment with the variable air demand and large turndowns.



6

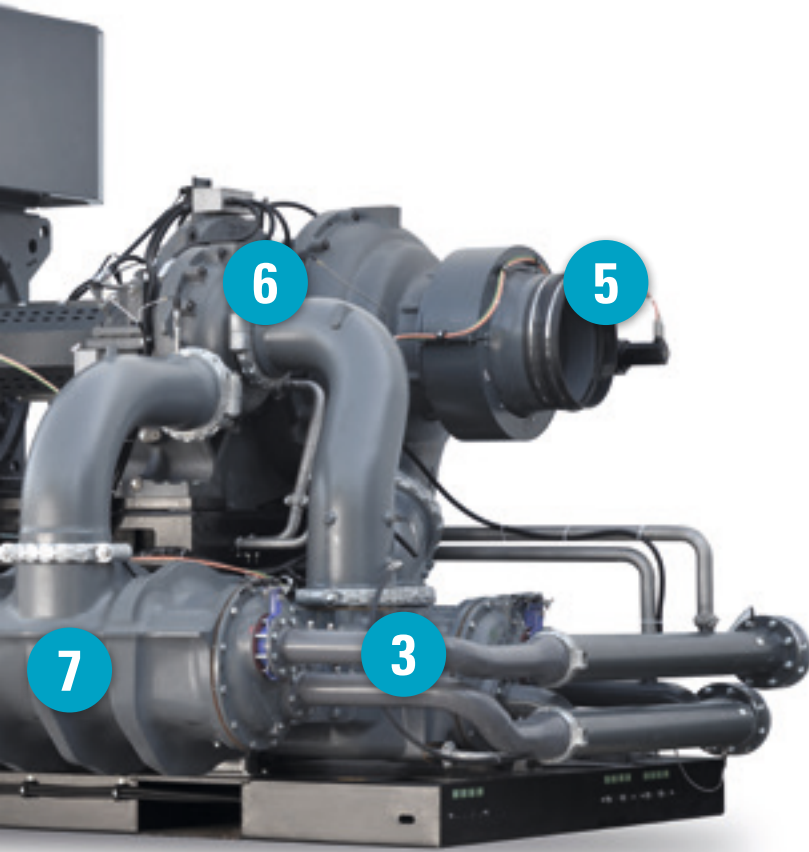
### Easily accessible gearbox

- For easier removable and maintenance, the compressor core is separated from cooler and subframe.
- Horizontally-split gearbox with quick access to gears, bearings, air/oil seals.
- Short inspection and maintenance times.

7

### Compact state-of-the-art coolers

- Compact and efficient design with low approach temperature and pressure drop.
- Stainless steel tubes and full epoxy coating inside cooler shells increase corrosion resistance.
- For higher reliability and easier maintenance, the coolers are separated from the compressor core unit.



8

### On-board full oil lubrication system

- Includes oil reservoir with heater, temperature monitoring and level sight glass.
- Main shaft driven oil pump, supported by auxiliary oil pump during start-up and coast-down.
- Breather system preventing oil fumes.
- Flexible connection to maximize leak tightness.

9

### Broad selection of motors

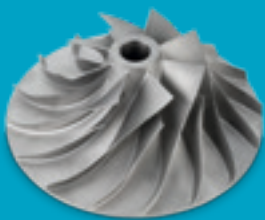
- Variety of motor choices (IP55, IP23, air or water-cooled).
- Highest level efficiency.





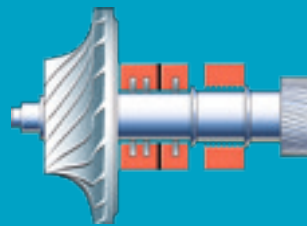
## Proven turbo technology

Easily accessible gearbox



### Individually designed impellers

- Dedicated impeller design for each power and pressure variant.
- Backward leaning impeller design for greater operating flexibility and maximized turndown ratio.



### Oil and air seals

- Reliable long service life.
- Minimized compressed air leakage to atmosphere.
- No external instrument air required for "Class 0" certification.



### Reliable horizontally split bearings

- Flexible pad bearings and combined radial bearing/thrust bearing for extended lifetime, high reliability and stability, easy inspection.



### Bull gear & high speed pinions

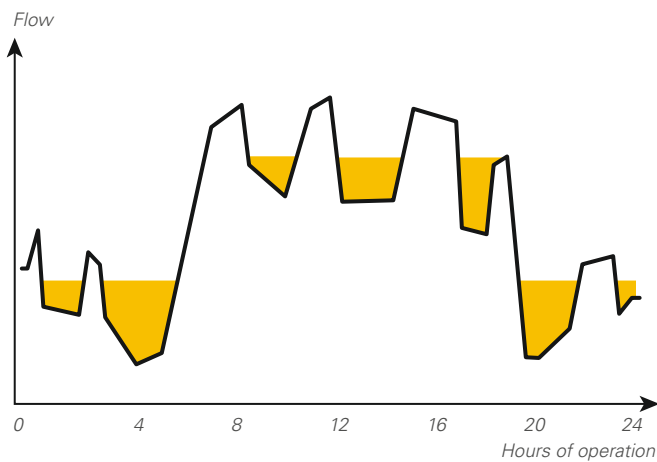
- AGMA Q-13/ISO 1328-2 grade 4 quality gears for longer lifetime, minimized mechanical losses and lower noise levels.
- Full interchangeability of individual components.

## The magic formula: turbo + screw

Obtain the most efficient compressor solution for your high capacity application in the market by combining the advanced turbo technology of the ZH<sup>+</sup> with the regulating capabilities of the ZR screw compressor with Variable Speed Drive (VSD). Eliminating costly blow-off in all operating conditions, this combination is ideal to achieve the highest return on investment while enjoying the benefits of the ZH<sup>+</sup> turbo and ZR screw technology.

### Reduced blow-off

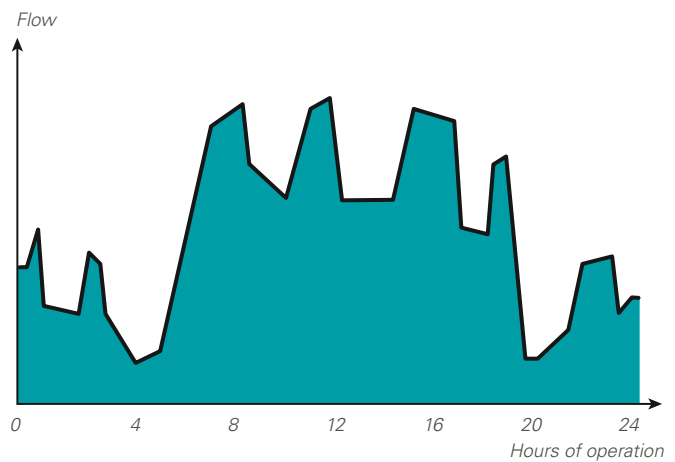
While turbo compressors are very efficient in turndown, a lot of energy is wasted during blow-off by expanding part of the compressed air into the blow-off valve and silencer. By combining two turbo compressors in an erratically varying air demand, the expensive blow-off is reduced but not completely eliminated.



● Operation with blow-off      ● Operation without blow-off

### Eliminated blow-off

Atlas Copco's unique Variable Speed Drive (VSD) technology closely follows the air demand by automatically adjusting the motor speed. When combining the ZH<sup>+</sup> turbo compressor and the ZR screw compressor with VSD, the highest efficiency is achieved by completely eliminating blow-off.



### Find out how much you can save

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

# 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.



## Intelligence is part of the package

- High resolution color display gives you an easy to understand readout of the equipment's running conditions.
- Clear icons and intuitive navigation provides you fast access to all of the important settings and data.
- Monitoring of the equipment running conditions and maintenance status; bringing this information to your attention when needed.
- Operation of the equipment to deliver specifically and reliably to your compressed air needs.
- Built in remote control and notifications functions provided as standard, including simple to use Ethernet based communication.
- Support for 31 different languages, including character based languages.



## Online & mobile monitoring

Monitor your compressors over the Ethernet with the Elektronikon® unit 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.



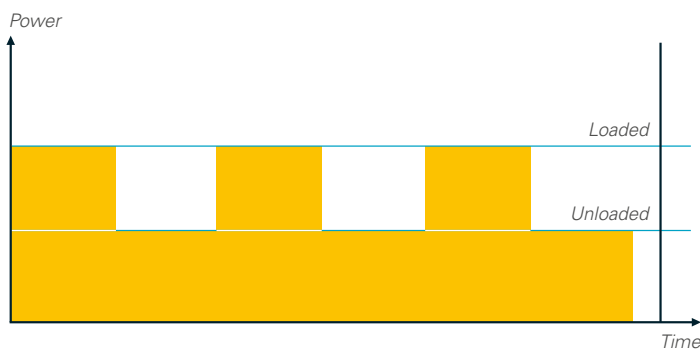
## Full optimization - ES system controller

Improve product quality every minute that your facility is in operation. Atlas Copco's ES system controllers offer a convenient way to achieve optimized performance from your low pressure equipment through a single centralized point of monitoring and control. With the ES system controller watching over your compressors and compressed air network, you will have a highly dependable and energy efficient solution working with your facility to manage operating costs.

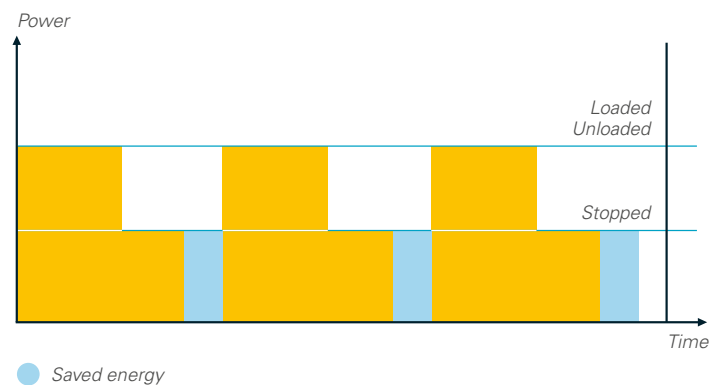
## Dual pressure set-point and Delayed Second Stop

Most production processes create fluctuating levels of demand which, in turn, can create energy waste in low use periods. Using the graphic Elektronikon® unit controller, you can manually or automatically create two different system pressure bands to optimize energy use and reduce costs at low use times. In addition, the sophisticated Delayed Second Stop (DSS) runs the drive motor only when needed. As the desired system pressure is maintained while the drive motor's run time is minimized, energy consumption is kept to a minimum.

### Without DSS



### With DSS



## SMARTLINK\*: Data Monitoring Program

- A remote monitoring system that helps you optimize your compressed air system and saves 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.

# A dryer solution for every need

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.

## Heat of compression reactivated adsorption dryers

# XD-G

-70°C/-40°C/-20°C  
-94°F/-40°F/-4°F

# XD-S

-20°C/+3°C  
-4°F/+37°F

- Use of freely available heat of compression.
- Limited pressure drop.
- Variants for dew point suppression and guaranteed dew point.
- Variants without loss of compressed air.

## Rotary drum heat of compression dryers

# ND

-40°C/-20°C  
-40°F/-4°F

# MD

-20°C/+3°C  
-4°F/+37°F

- Use of freely available heat of compression.
- Negligible power consumption.
- Variants with extra heat augmentation for lower dew points.



## Heat reactivated adsorption dryer

# BD

-70°C/-40°C/-20°C  
-94°F/-40°F/-4°F

- Use of electrical heaters for regenerating the desiccant.
- Limited pressure drop.
- Variants without loss of compressed air.

## Refrigerant dryer

# FD/FD+(VSD)

+3°C/+20°C  
+37°F/+68°F

- Use of cooling circuit for cooling down compressed air.
- Guaranteed pressure dew points.
- Lowest energy consumption in all operating conditions.
- Air and water cooled variants.



## *Engineered solutions*

Atlas Copco recognizes the need to combine our serially produced compressors and dryers with the specifications and standards applied by major companies for equipment purchases. Strategically located departments within the Atlas Copco Group take care of the design and manufacturing of customized equipment to operate at extreme temperatures, often in remote locations.

### **Innovative technology**

As original manufacturer of the equipment, Atlas Copco understands all performance capabilities and ensures that the equipment operates within them. All equipment is covered by our manufacturer warranty. The reliability, longevity and performance of our equipment will not be compromised. A global aftermarket operation employing 360 field service engineers in 160 countries ensures reliable maintenance by Atlas Copco as part of a local service operation.

### **Innovative systems**

We are fully aware that project management can be complex. We have developed an Internet based application called IC<sup>3</sup> which is shared by all Atlas Copco sites worldwide, to give a transparent view of data and drawings and to easily contribute to the project if required.

### **Innovative engineering**

Each project is unique and by entering into partnership with our customers, we can appreciate the challenge at hand, ask the relevant questions and design the best engineered solution for all your needs.



# Optimize your system

With the ZH+ & ZH, we provide an all-in-one solution incorporating the latest technology in a built-to-last design. To further optimize your ZH+ or ZH's performance or to simply tailor it to your specific production environment, optional features are available.

## Standard scope of supply

|                 |                                     | ZH+  | ZH    |
|-----------------|-------------------------------------|------|-------|
| Air circuit     | Air inlet filter and silencer       | ✓    | •     |
|                 | Inlet Guide Vanes                   | ✓    | ✓     |
|                 | Fully coated air path               | ✓    | ✓     |
|                 | Check valve                         | ✓    | ✓     |
|                 | Air outlet compensator              | ✓    | ✓     |
|                 | Integrated blow-off valve           | ✓    | ✓     |
|                 | Integrated blow-off silencer        | ✓    | •     |
| Cooling circuit | Drain traps on all coolers          | ✓    | ✓     |
|                 | Cooling water manifold              | ✓    | • (1) |
|                 | Water in- and outlet compensator    | ✓    | • (1) |
| Oil circuit     | Fully integrated lubrication system | ✓    | ✓     |
| General         | Motor                               | IP55 | IP23  |
|                 | Elektronikon® control module        | ✓    | ✓     |
|                 | Canopy                              | ✓    | -     |
|                 | SMARTLink                           | ✓    | ✓     |

## Additional features & options

|  | ZH+ 355-1600 | ZH 355-1600 |
|--|--------------|-------------|
| EZ-install (inlet filter & silencer, blow-off silencer)  | -            | •           |
| Cooling water manifold   | -            | • (1)       |
| Hot air variant (no aftercooler)   | •            | •           |
| Electronic drains  | •            | -           |
| Dual oil filter  | •            | •           |
| Dual oil cooler  | •            | - (1)       |
| Stainless steel oil cooler   | •            | -           |
| Extended motor protection kit (anti-condensation heater + PT100's in windings and bearings)  | •            | •           |
| Oversized motor  | •            | -           |
| Full instrumentation package: full data package (extra temperature and pressure sensors on stage inlet) & full core monitoring (XYZ vibration sensors + PT1000's on high speed bearings) | •            | - (2)       |
| Material & core test certificates  | •            | •           |
| Prepared for heat of compression dryer   | •            | •           |
| Remote pressure set point  | •            | •           |

(1) Included on ZH 1000-3150 range.

(2) Optional on ZH 1000-3150 range.

✓: Standard

•: Optional

-: Not available

# Weight & dimensions

| TYPE    | Weight (kg) |         | Dimensions (mm) |      |      |
|---------|-------------|---------|-----------------|------|------|
|         | 2-stage     | 3-stage | L               | W    | H    |
| ZH 355* | 8050        | -       | 5268            | 2230 | 2230 |
| ZH 400* | 8350        | 8950    |                 |      |      |
| ZH 450* | 8450        | 9050    |                 |      |      |
| ZH 500* | 8600        | 9200    |                 |      |      |
| ZH 560* | 9200        | 9800    |                 |      |      |
| ZH 630* | -           | 9950    |                 |      |      |
| ZH 710* | -           | 10200   |                 |      |      |
| ZH 800* | -           | 11150   |                 |      |      |
| ZH 900* | -           | 11150   |                 |      |      |

| TYPE   | Weight (kg) |         | Dimensions (mm) |      |      |
|--------|-------------|---------|-----------------|------|------|
|        | 2-stage     | 3-stage | L               | W    | H    |
| ZH 355 | 6325        | -       | 3970            | 2230 | 2230 |
| ZH 400 | 6625        | 7225    |                 |      |      |
| ZH 450 | 6725        | 7325    |                 |      |      |
| ZH 500 | 6875        | 7475    |                 |      |      |
| ZH 560 | 7475        | 8075    |                 |      |      |
| ZH 630 | -           | 8225    |                 |      |      |
| ZH 710 | -           | 9475    |                 |      |      |
| ZH 800 | -           | 9425    |                 |      |      |
| ZH 900 | -           | 9425    |                 |      |      |

| TYPE     | Weight (kg) |         | Dimensions (mm) |      |      |
|----------|-------------|---------|-----------------|------|------|
|          | 2-stage     | 3-stage | L               | W    | H    |
| ZH 630*  | 9940        | -       | 5220            | 2350 | 2770 |
| ZH 710*  | 9940        | -       |                 |      |      |
| ZH 800*  | 9940        | -       |                 |      |      |
| ZH 900*  | 9940        | 10580   |                 |      |      |
| ZH 1000* | 9940        | 10580   |                 |      |      |
| ZH 1120* | -           | 10580   |                 |      |      |
| ZH 1250* | -           | 10580   |                 |      |      |
| ZH 1400* | -           | 11470   |                 |      |      |
| ZH 1600* | -           | 11470   |                 |      |      |

| TYPE    | Weight (kg) |         | Dimensions (mm) |      |      |
|---------|-------------|---------|-----------------|------|------|
|         | 2-stage     | 3-stage | L               | W    | H    |
| ZH 630  | 9220        | -       | 4320            | 2350 | 2680 |
| ZH 710  | 9220        | -       |                 |      |      |
| ZH 800  | 9220        | -       |                 |      |      |
| ZH 900  | 9220        | 9860    |                 |      |      |
| ZH 1000 | 9220        | 9860    |                 |      |      |
| ZH 1120 | -           | 9860    |                 |      |      |
| ZH 1250 | -           | 9860    |                 |      |      |
| ZH 1400 | -           | 10750   |                 |      |      |
| ZH 1600 | -           | 10750   |                 |      |      |

| TYPE    | Weight (kg) |         | Dimensions (mm) |   |      |
|---------|-------------|---------|-----------------|---|------|
|         | 2-stage     | 3-stage | L               | W   | H    |
| ZH 1000 | 18520       | -       | 6650            | 3290 (with aftercooler)<br>2880 (without aftercooler) | 3360 |
| ZH 1120 | 18520       | -       |                 |   |      |
| ZH 1250 | 18720       | -       |                 |   |      |
| ZH 1400 | 18720       | 21833   |                 |   |      |
| ZH 1600 | 20520       | 23433   |                 |   |      |
| ZH 1800 | 20520       | 23433   |                 |   |      |
| ZH 2000 | 20520       | 26633   |                 |   |      |
| ZH 2250 | 20520       | 26633   |                 |   |      |
| ZH 2550 | -           | 26633   |                 |   |      |
| ZH 2850 | -           | 26983   |                 |   |      |
| ZH 3150 | -           | 27483   |                 |   |      |



# Technical specifications 50 Hz

## 2 stage variant

| TYPE       | 2.5 barg |                    |       | 3.5 barg |                    |       | 3.9 barg |                    |       | 4.2 barg |                    |       | 4.6 barg |                    |       | 5 barg |                    |       | 5.5 barg |                    |       | Installed motor power |
|------------|----------|--------------------|-------|----------|--------------------|-------|----------|--------------------|-------|----------|--------------------|-------|----------|--------------------|-------|--------|--------------------|-------|----------|--------------------|-------|-----------------------|
|            | l/s      | m <sup>3</sup> /hr | cfm   | l/s      | m <sup>3</sup> /hr | cfm   | l/s      | m <sup>3</sup> /hr | cfm   | l/s      | m <sup>3</sup> /hr | cfm   | l/s      | m <sup>3</sup> /hr | cfm   | l/s    | m <sup>3</sup> /hr | cfm   | l/s      | m <sup>3</sup> /hr | cfm   | Kw                    |
| ZH 355(+)  | -        | -                  | -     | 1578     | 5681               | 3344  | 1452     | 5227               | 3077  | 1390     | 5004               | 2946  | 1321     | 4756               | 2799  | -      | -                  | -     | -        | -                  | -     | 355                   |
| ZH 400(+)  | -        | -                  | -     | 1814     | 6530               | 3844  | 1679     | 6044               | 3558  | 1593     | 5735               | 3376  | 1520     | 5472               | 3221  | -      | -                  | -     | 1376     | 4954               | 2916  | 400                   |
| ZH 450(+)  | -        | -                  | -     | 2052     | 7387               | 4348  | 1906     | 6862               | 4039  | 1813     | 6527               | 3842  | 1722     | 6199               | 3649  | -      | -                  | -     | 1570     | 5652               | 3327  | 450                   |
| ZH 500(+)  | -        | -                  | -     | 2280     | 8208               | 4832  | 2135     | 7686               | 4524  | 2036     | 7330               | 4315  | 1935     | 6966               | 4101  | -      | -                  | -     | 1761     | 6340               | 3732  | 500                   |
| ZH 560(+)  | -        | -                  | -     | 2548     | 9173               | 5400  | 2400     | 8640               | 5086  | 2297     | 8269               | 4868  | 2189     | 7880               | 4639  | -      | -                  | -     | 1986     | 7150               | 4209  | 560                   |
| ZH 630(+)  | 3241     | 11668              | 6868  | 2884     | 10382              | 6112  | 2720     | 9792               | 5764  | 2585     | 9306               | 5478  | 2440     | 8784               | 5171  | -      | -                  | -     | -        | -                  | -     | 630                   |
| ZH 710(+)  | 3671     | 13216              | 7779  | 3272     | 11779              | 6934  | 3087     | 11113              | 6542  | 2937     | 10573              | 6224  | 2775     | 9990               | 5881  | 2631   | 9472               | 5575  | 2484     | 8942               | 5264  | 710                   |
| ZH 800(+)  | 4140     | 14904              | 8773  | 3701     | 13324              | 7843  | 3503     | 12611              | 7423  | 3333     | 11999              | 7063  | 3148     | 11333              | 6671  | 2986   | 10750              | 6328  | 2828     | 10181              | 5993  | 800                   |
| ZH 900(+)  | 4655     | 16758              | 9865  | 4160     | 14976              | 8816  | 3951     | 14224              | 8373  | 3775     | 13590              | 8000  | 3571     | 12856              | 7567  | 3383   | 12179              | 7169  | 3204     | 11534              | 6790  | 900                   |
| ZH 1000(+) | 5193     | 18695              | 11003 | 4609     | 16592              | 9767  | 4381     | 15772              | 9284  | 4196     | 15106              | 8892  | 3983     | 14339              | 8441  | 3781   | 13612              | 8012  | 3582     | 12895              | 7591  | 1000                  |
| ZH 1120(+) | 5843     | 21035              | 12381 | 5135     | 18486              | 10880 | 4753     | 17111              | 10072 | 4690     | 16884              | 9939  | 4468     | 16085              | 9468  | 4252   | 15307              | 9011  | 4033     | 14519              | 8546  | 1120                  |
| ZH 1250    | 6543     | 23555              | 13864 | 5803     | 20891              | 12296 | 5470     | 19692              | 11590 | 5213     | 18767              | 11046 | 4922     | 17719              | 10429 | -      | -                  | -     | -        | -                  | -     | 1250                  |
| ZH 1400    | 7346     | 26446              | 15565 | 6522     | 23479              | 13819 | 6168     | 22205              | 13069 | 5871     | 21136              | 12440 | 5552     | 19987              | 11764 | 5218   | 18785              | 11056 | 4982     | 17935              | 10556 | 1400                  |
| ZH 1600    | 8409     | 30272              | 17818 | 7484     | 26942              | 15858 | 7084     | 25502              | 15010 | 6760     | 24336              | 14324 | 6391     | 23008              | 13542 | 6053   | 21791              | 12826 | 5735     | 20646              | 12152 | 1600                  |
| ZH 1800    | 9419     | 33908              | 19958 | 8408     | 30269              | 17815 | 7988     | 28757              | 16926 | 7638     | 27497              | 16184 | 7230     | 26028              | 15319 | 6856   | 24682              | 14527 | 6489     | 23360              | 13749 | 1800                  |
| ZH 2000    | -        | -                  | -     | 9323     | 33563              | 19754 | 8840     | 31824              | 18731 | 8474     | 30506              | 17955 | 8056     | 29002              | 17070 | 7640   | 27504              | 16188 | 7242     | 26071              | 15345 | 2000                  |
| ZH 2250    | -        | -                  | -     | -        | -                  | -     | 9783     | 35219              | 20729 | 9516     | 34258              | 20163 | 9071     | 32656              | 19220 | 8621   | 31036              | 18267 | 8185     | 29466              | 17343 | 2250                  |

Free Air Delivery according to ASME PTC10 and ISO 5389.

Reference conditions:

- Inlet pressure 1 bar(a)
- Inlet temperature 35°C (95°F)
- Humidity 60%
- Cooling water temperature 26.7°C (80°F)



# Technical specifications 50 Hz

## 3 stage variant

| TYPE       | 6 barg |       |       | 7 barg |       |       | 8 barg |       |       | 9 barg |       |       | 10.4 barg |       |       | 13 barg |       |       | Installed motor power |
|------------|--------|-------|-------|--------|-------|-------|--------|-------|-------|--------|-------|-------|-----------|-------|-------|---------|-------|-------|-----------------------|
|            | l/s    | m³/hr | cfm   | l/s    | m³/hr | cfm   | l/s    | m³/hr | cfm   | l/s    | m³/hr | cfm   | l/s       | m³/hr | cfm   | l/s     | m³/hr | cfm   | Kw                    |
| ZH 400(+)  | -      | -     | -     | 1272   | 4579  | 2696  | 1234   | 4442  | 2615  | -      | -     | -     | -         | -     | -     | -       | -     | -     | 400                   |
| ZH 450(+)  | -      | -     | -     | 1444   | 5198  | 3060  | 1404   | 5054  | 2975  | 1284   | 4622  | 2721  | -         | -     | -     | -       | -     | -     | 450                   |
| ZH 500(+)  | -      | -     | -     | 1615   | 5814  | 3422  | 1572   | 5659  | 3331  | 1447   | 5209  | 3066  | 1341      | 4828  | 2842  | -       | -     | -     | 500                   |
| ZH 560(+)  | -      | -     | -     | 1824   | 6566  | 3865  | 1777   | 6397  | 3765  | 1641   | 5908  | 3478  | 1521      | 5476  | 3223  | 1351    | 4864  | 2863  | 560                   |
| ZH 630(+)  | -      | -     | -     | 2063   | 7427  | 4372  | 2013   | 7247  | 4265  | 1919   | 6908  | 4067  | 1763      | 6347  | 3736  | 1541    | 5548  | 3266  | 630                   |
| ZH 710(+)  | -      | -     | -     | 2331   | 8392  | 4940  | 2274   | 8186  | 4818  | 2176   | 7834  | 4611  | 2005      | 7218  | 4249  | 1757    | 6325  | 3723  | 710                   |
| ZH 800(+)  | 2824   | 10166 | 5984  | 2620   | 9432  | 5552  | 2556   | 9202  | 5416  | 2451   | 8824  | 5194  | 2283      | 8219  | 4838  | 1995    | 7182  | 4228  | 800                   |
| ZH 900(+)  | 3197   | 11509 | 6775  | 3009   | 10832 | 6376  | 2868   | 10325 | 6078  | 2590   | 9324  | 5489  | 2523      | 9083  | 5347  | -       | -     | -     | 900                   |
| ZH 1000(+) | 3568   | 12845 | 7561  | 3360   | 12096 | 7120  | 3198   | 11513 | 6777  | 3056   | 11002 | 6476  | 2822      | 10159 | 5980  | 2518    | 9065  | 5336  | 1000                  |
| ZH 1120(+) | 4003   | 14411 | 8483  | 3774   | 13586 | 7998  | 3603   | 12971 | 7635  | 3443   | 12395 | 7296  | 3189      | 11480 | 6758  | 2845    | 10242 | 6029  | 1120                  |
| ZH 1250(+) | 4464   | 16070 | 9460  | 4214   | 15170 | 8930  | 4026   | 14494 | 8531  | 3855   | 13878 | 8169  | 3578      | 12881 | 7582  | 3197    | 11509 | 6775  | 1250                  |
| ZH 1400(+) | 4994   | 17978 | 10582 | 4717   | 16981 | 9996  | 4503   | 16211 | 9542  | 4318   | 15545 | 9150  | 4016      | 14458 | 8510  | 3596    | 12946 | 7620  | 1400                  |
| ZH 1600(+) | 5748   | 20693 | 12179 | 5411   | 19480 | 11465 | 4812   | 17323 | 10197 | 4704   | 16934 | 9968  | 4582      | 16495 | 9710  | 4128    | 14861 | 8748  | 1600                  |
| ZH 1800    | 6492   | 23371 | 13756 | 6122   | 22039 | 12972 | 5816   | 20938 | 12323 | 5557   | 20005 | 11775 | 5147      | 18529 | 10906 | -       | -     | -     | 1800                  |
| ZH 2000    | 7228   | 26021 | 15315 | 6812   | 24523 | 14434 | 6490   | 23364 | 13751 | 6201   | 22324 | 13139 | 5749      | 20696 | 12181 | 5137    | 18493 | 10885 | 2000                  |
| ZH 2250    | 8131   | 29272 | 17229 | 7675   | 27630 | 16262 | 7323   | 26363 | 15517 | 7005   | 25218 | 14843 | 6506      | 23422 | 13785 | 5812    | 20923 | 12315 | 2250                  |
| ZH 2550    | 9168   | 33005 | 19426 | 8688   | 31277 | 18409 | 8288   | 29837 | 17561 | 7944   | 28598 | 16832 | 7397      | 26629 | 15673 | 6621    | 23836 | 14029 | 2550                  |
| ZH 2850    | -      | -     | -     | 9678   | 34841 | 20506 | 9231   | 33232 | 19559 | 8856   | 31882 | 18765 | 8264      | 29750 | 17510 | 7418    | 26705 | 15718 | 2850                  |
| ZH 3150    | -      | -     | -     | -      | -     | -     | 9790   | 35244 | 20744 | 9763   | 35147 | 20687 | 9134      | 32882 | 19354 | 8219    | 29588 | 17415 | 3150                  |

Free Air Delivery according to ASME PTC10 and ISO 5389.

Reference conditions:

- Inlet pressure 1 bar(a)

- Inlet temperature 35°C (95°F)

- Humidity 60%

- Cooling water temperature 26.7°C (80°F)

# Technical specifications 60 Hz

## 2 stage variant

| TYPE       | 35 psig |                    |       | 50 psig |                    |       | 55 psig |                    |       | 60 psig |                    |       | 65 psig |                    |       | 70 psig |                    |       | 80 psig |                    |       | Installed motor power |
|------------|---------|--------------------|-------|---------|--------------------|-------|---------|--------------------|-------|---------|--------------------|-------|---------|--------------------|-------|---------|--------------------|-------|---------|--------------------|-------|-----------------------|
|            | l/s     | m <sup>3</sup> /hr | cfm   | l/s     | m <sup>3</sup> /hr | cfm   | l/s     | m <sup>3</sup> /hr | cfm   | l/s     | m <sup>3</sup> /hr | cfm   | l/s     | m <sup>3</sup> /hr | cfm   | l/s     | m <sup>3</sup> /hr | cfm   | l/s     | m <sup>3</sup> /hr | cfm   | Hp                    |
| ZH 355(+)  | -       | -                  | -     | 1545    | 5562               | 3274  | 1436    | 5170               | 3043  | 1364    | 4910               | 2891  | 1288    | 4637               | 2729  | -       | -                  | -     | -       | -                  | -     | 500                   |
| ZH 400(+)  | -       | -                  | -     | 1778    | 6401               | 3768  | 1656    | 5962               | 3509  | 1576    | 5674               | 3340  | 1493    | 5375               | 3164  | -       | -                  | -     | 1358    | 4889               | 2878  | 600                   |
| ZH 450(+)  | -       | -                  | -     | 2013    | 7247               | 4266  | 1876    | 6754               | 3976  | 1787    | 6433               | 3787  | 1698    | 6113               | 3598  | -       | -                  | -     | 1546    | 5566               | 3276  | 600                   |
| ZH 500(+)  | -       | -                  | -     | 2237    | 8053               | 4741  | 2097    | 7549               | 4444  | 2001    | 7204               | 4240  | 1901    | 6844               | 4028  | -       | -                  | -     | 1731    | 6232               | 3668  | 700                   |
| ZH 560(+)  | -       | -                  | -     | 2501    | 9004               | 5300  | 2353    | 8471               | 4986  | 2252    | 8107               | 4772  | 2143    | 7715               | 4541  | -       | -                  | -     | 1953    | 7031               | 4139  | 800                   |
| ZH 630(+)  | 3235    | 11646              | 6855  | 2871    | 10336              | 6084  | 2721    | 9796               | 5766  | 2571    | 9256               | 5448  | 2436    | 8770               | 5162  | -       | -                  | -     | -       | -                  | -     | 900                   |
| ZH 710(+)  | 3664    | 13190              | 7765  | 3259    | 11732              | 6906  | 3088    | 11117              | 6544  | 2923    | 10523              | 6194  | 2770    | 9972               | 5870  | 2637    | 9493               | 5588  | 2452    | 8827               | 5196  | 1000                  |
| ZH 800(+)  | 4133    | 14879              | 8758  | 3686    | 13270              | 7811  | 3504    | 12614              | 7425  | 3317    | 11941              | 7029  | 3143    | 11315              | 6660  | 2991    | 10768              | 6338  | 2793    | 10055              | 5919  | 1000                  |
| ZH 900(+)  | 4650    | 16740              | 9854  | 4144    | 14918              | 8782  | 3952    | 14227              | 8375  | 3758    | 13529              | 7964  | 3564    | 12830              | 7553  | 3387    | 12193              | 7178  | 3165    | 11394              | 6707  | 1250                  |
| ZH 1000(+) | 5193    | 18695              | 11003 | 4593    | 16535              | 9733  | 4383    | 15779              | 9288  | 4177    | 15037              | 8852  | 3976    | 14314              | 8426  | 3784    | 13622              | 8019  | 3541    | 12748              | 7504  | 1500                  |
| ZH 1120(+) | 5843    | 21035              | 12381 | 5135    | 18486              | 10880 | 4757    | 17125              | 10081 | 4671    | 16816              | 9898  | 4461    | 16060              | 9453  | 4253    | 15311              | 9013  | 3988    | 14357              | 8451  | 1500                  |
| ZH 1250    | 6543    | 23555              | 13864 | 5803    | 20891              | 12296 | 5470    | 19692              | 11590 | 5213    | 18767              | 11046 | 4922    | 17719              | 10429 | -       | -                  | -     | -       | -                  | -     | 1750                  |
| ZH 1400    | 7346    | 26446              | 15565 | 6522    | 23479              | 13819 | 6168    | 22205              | 13069 | 5871    | 21136              | 12440 | 5552    | 19987              | 11764 | 5218    | 18785              | 11056 | 4982    | 17935              | 10556 | 2000                  |
| ZH 1600    | 8409    | 30272              | 17818 | 7484    | 26942              | 15858 | 7084    | 25502              | 15010 | 6760    | 24336              | 14324 | 6391    | 23008              | 13542 | 6053    | 21791              | 12826 | 5735    | 20646              | 12152 | 2250                  |
| ZH 1800    | 9419    | 33908              | 19958 | 8408    | 30269              | 17815 | 7988    | 28757              | 16926 | 7638    | 27497              | 16184 | 7230    | 26028              | 15319 | 6856    | 24682              | 14527 | 6489    | 23360              | 13749 | 2500                  |
| ZH 2000    | -       | -                  | -     | 9323    | 33563              | 20507 | 8840    | 31824              | 18731 | 8474    | 30506              | 17955 | 8056    | 29002              | 17070 | 7640    | 27504              | 16188 | 7242    | 26071              | 15345 | 3000                  |
| ZH 2250    | -       | -                  | -     | -       | -                  | -     | 9783    | 35219              | 20729 | 9516    | 34258              | 20163 | 9071    | 32656              | 19220 | 8621    | 31036              | 18267 | 8185    | 29466              | 17343 | 3000                  |

Free Air Delivery according to ASME PTC10 and ISO 5389.

Reference conditions:

- Inlet pressure 1 bar(a)
- Inlet temperature 35°C (95°F)
- Humidity 60%
- Cooling water temperature 26.7°C (80°F)



# Technical specifications 60 Hz

## 3 stage variant

| TYPE       | 85 psig |                    |       | 100 psig |                    |       | 115 psig |                    |       | 130 psig |                    |       | 150 psig |                    |       | 190 psig |                    |       | Installed motor power |
|------------|---------|--------------------|-------|----------|--------------------|-------|----------|--------------------|-------|----------|--------------------|-------|----------|--------------------|-------|----------|--------------------|-------|-----------------------|
|            | l/s     | m <sup>3</sup> /hr | cfm   | l/s      | m <sup>3</sup> /hr | cfm   | l/s      | m <sup>3</sup> /hr | cfm   | l/s      | m <sup>3</sup> /hr | cfm   | l/s      | m <sup>3</sup> /hr | cfm   | l/s      | m <sup>3</sup> /hr | cfm   | Hp                    |
| ZH 400(+)  | -       | -                  | -     | 1252     | 4507               | 2653  | 1213     | 4367               | 2571  | -        | -                  | -     | -        | -                  | -     | -        | -                  | -     | 600                   |
| ZH 450(+)  | -       | -                  | -     | 1423     | 5123               | 3016  | 1381     | 4972               | 2927  | 1275     | 4590               | 2702  | -        | -                  | -     | -        | -                  | -     | 600                   |
| ZH 500(+)  | -       | -                  | -     | 1592     | 5731               | 3374  | 1547     | 5569               | 3278  | 1431     | 5152               | 3032  | 1325     | 4770               | 2808  | -        | -                  | -     | 700                   |
| ZH 560(+)  | -       | -                  | -     | 1798     | 6473               | 3810  | 1749     | 6296               | 3706  | 1619     | 5828               | 3431  | 1504     | 5414               | 3187  | 1344     | 4838               | 2848  | 800                   |
| ZH 630(+)  | -       | -                  | -     | 2035     | 7326               | 4312  | 1982     | 7135               | 4200  | 1889     | 6800               | 4003  | 1738     | 6257               | 3683  | 1529     | 5504               | 3240  | 900                   |
| ZH 710(+)  | -       | -                  | -     | 2299     | 8276               | 4872  | 2240     | 8064               | 4747  | 2142     | 7711               | 4539  | 1978     | 7121               | 4192  | 1740     | 6264               | 3687  | 1000                  |
| ZH 800(+)  | 2810    | 10116              | 5955  | 2586     | 9310               | 5480  | 2519     | 9068               | 5338  | 2549     | 9176               | 5402  | 2531     | 9112               | 5364  | 1979     | 7124               | 4194  | 1250                  |
| ZH 900(+)  | 3182    | 11455              | 6743  | 2990     | 10764              | 6336  | 2843     | 10235              | 6025  | 2549     | 9176               | 5402  | 2531     | 9112               | 5364  | -        | -                  | -     | 1250                  |
| ZH 1000(+) | 3552    | 12787              | 7527  | 3339     | 12020              | 7076  | 3172     | 11419              | 6722  | 3026     | 10894              | 6413  | 2795     | 10062              | 5923  | 2483     | 8939               | 5262  | 1500                  |
| ZH 1120(+) | 3985    | 14346              | 8445  | 3751     | 13504              | 7949  | 3574     | 12866              | 7574  | 3410     | 12276              | 7226  | 3159     | 11372              | 6694  | 2807     | 10105              | 5948  | 1500                  |
| ZH 1250(+) | 4444    | 15998              | 9417  | 4189     | 15080              | 8877  | 3995     | 14382              | 8466  | 3819     | 13748              | 8093  | 3546     | 12766              | 7514  | 3156     | 11362              | 6688  | 1750                  |
| ZH 1400(+) | 4994    | 17978              | 10582 | 4690     | 16884              | 9939  | 4469     | 16088              | 9470  | 4279     | 15404              | 9068  | 3982     | 14335              | 8438  | 3553     | 12791              | 7529  | 2000                  |
| ZH 1600(+) | 5748    | 20693              | 12179 | 5411     | 19480              | 11465 | 4777     | 17197              | 10123 | 4662     | 16783              | 9879  | 4544     | 16358              | 9629  | 4081     | 14692              | 8648  | 2250                  |
| ZH 1800    | 6492    | 23371              | 13756 | 6122     | 22039              | 12972 | 5816     | 20938              | 12323 | 5557     | 20005              | 11775 | 5147     | 18529              | 10906 | -        | -                  | -     | 2500                  |
| ZH 2000    | 7228    | 26021              | 15315 | 6812     | 24523              | 14434 | 6490     | 23364              | 13751 | 6201     | 22324              | 13139 | 5749     | 20696              | 12181 | 5137     | 18493              | 10885 | 3000                  |
| ZH 2250    | 8131    | 29272              | 17229 | 7675     | 27630              | 16262 | 7323     | 26363              | 15517 | 7005     | 25218              | 14843 | 6506     | 23422              | 13785 | 5812     | 20923              | 12315 | 3000                  |
| ZH 2550    | 9168    | 33005              | 19426 | 8688     | 31277              | 18409 | 8288     | 29837              | 17561 | 7944     | 28598              | 16832 | 7397     | 26629              | 15673 | 6621     | 23836              | 14029 | 3500                  |
| ZH 2850    | -       | -                  | -     | 9678     | 34841              | 20507 | 9231     | 33232              | 19559 | 8856     | 31882              | 18765 | 8264     | 29750              | 17510 | 7418     | 26705              | 15718 | 4000                  |
| ZH 3150    | -       | -                  | -     | -        | -                  | -     | 9790     | 35244              | 20744 | 9763     | 35147              | 20686 | 9134     | 32882              | 19354 | 8219     | 29588              | 17415 | 4000                  |

Free Air Delivery according to ASME PTC10 and ISO 5389.

Reference conditions:

- Inlet pressure 1 bar(a)
- Inlet temperature 35°C (95°F)
- Humidity 60%
- Cooling water temperature 26.7°C (80°F)

## ***COMMITTED TO SUSTAINABLE PRODUCTIVITY***

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