OIL-FREE ROTARY TOOTH COMPRESSORS

Atlas Copco

ZT 15-22, ZR/ZT 30-45, ZT 22 VSD, ZR/ZT 37-55 VSD

جهان کمپرسور
Jahan Compressor

ECONOMICAL, HIGH QUALITY OIL-FREE AIR

Clean, oil-free compressed air is a prerequisite for the continuity and quality of many manufacturing processes. Over the past decades, Atlas Copco has pioneered the development of oil-free rotary tooth technology, resulting in a full range of highly reliable compressors delivering 100% oil-free, clean air. With the protection of your application in mind, the ZR/ZT series gives you all of this experience in a class leading package and meets your every need for pure oil-free air.

100% oil-free air

Your activities in pharmaceutical production, food processing, critical electronics or in a similarly exacting industry demand the best air quality for a guaranteed end product and production process. Designed with your specific applications in mind, our rotary tooth compressors eliminate the risks of oil contamination and the accompanying product spoilage, brand damage and delays that represent extra costs. Preventing oil from entering the compression process is a necessity for the generation of consistent 100% oil-free air. Certified ISO 8573-1 CLASS 0 by the renowned TÜV institute, the ZR/ZT ensure the safety of your application and at the same time allow you to enjoy lower operating and maintenance costs.

Reduced energy costs

As energy accounts for more than 70% of a compressor's lifecycle costs (LCC), its importance is obvious. The most cost-effective compressed air solution optimizes the pressure, volume and air treatment equipment for each production process. Our ZR/ZT compressors provide you with the ultimate all-in-one package to decrease your electricity bill by an average of 35%. To help you save energy, regardless of whether you require a low or high-capacity compressor, our VSD range has been expanded with the ZT 22 VSD and the ZR/ZT 55 VSD.

Proven peace of mind

For sixty years, Atlas Copco has been leading the industry in oil-free compressed air technology, drawing on vast experience and continuous technological innovations. You can rest assured at all times: severe certification and testing procedures are conducted to ensure air is supplied to the highest standards of quality control. Backed by extensive know-how in the field of developing the most reliable quality air solutions, we are the only manufacturer that offers such a vast range of different technologies to match your exact needs. This ensures that you can always find the perfect solution for your specific application.

100% CERTIFIED OIL-FREE AIR

Atlas Copco is renowned for designing and manufacturing the most durable oil-free tooth compressors. The ZR/ZT rotary tooth compressor comes out of this strong tradition. Ideal for industries where high-quality oil-free air is key, the ZR/ZT offers the highest reliability and safety in combination with low energy costs.

Pharmaceuticals

- 100% oil-free air is vital to prevent contamination of processes (e.g. fermentation, aeration, tablet coating, packing and bottling, automated production lines).
- CLASS 0 eliminates risks and maintains high product quality and professional brand reputation.

Food & beverage

- 100% pure, clean, oil-free air for all kinds of applications (e.g. fermentation, packaging, aeration, transportation, filling & capping, cleaning, instrument air).
- ISO 8573-1 CLASS 0 (2010) certification to avoid compromising the purity of your end product and ensure zero risk of contamination.

Electronics

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

Health care

- Ideal for hospitals, dental practices, veterinary labs or clinical work environments where maximum reliability is the main priority.
- Ultra-clean air to successfully perform clinical work and make sure your equipment functions effectively.

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, chemical and petrochemical processing, fermentation, wastewater treatment, pneumatic conveying, non-woven textile manufacturing and many more.

First in oil-free air technology

Over the past sixty years we have 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 CLASS 0 certification.

Eliminating any risk

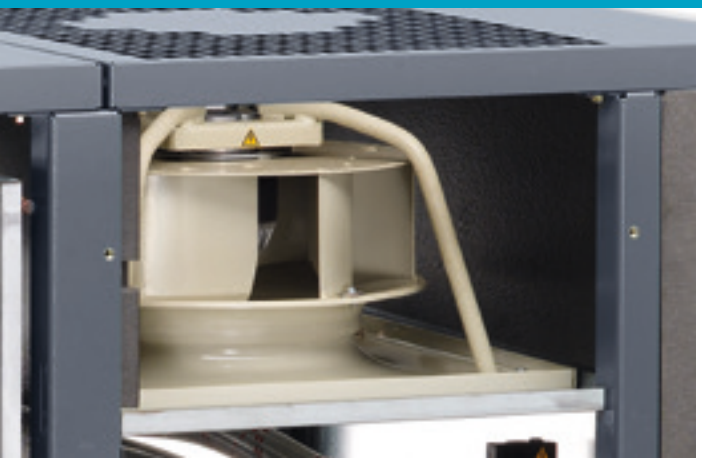
As the industry leader committed to meeting the needs of the most demanding customers, we requested the renowned TÜV institute to type-test its range of oil-free compressors and blowers. Using the most rigorous testing methodologies available, all possible oil forms were measured across a range of temperatures and pressures. The TÜV found no traces of oil at all in the output air stream.

CLASS	Concentration total oil (aerosol, liquid, vapor) mg/m^3
0	**As specified by the equipment user or supplier and more stringent than class 1**
1	< 0.01
2	< 0.1
3	< 1
4	< 5

Current ISO 8573-1 (2010) classes (the five main classes and the associated maximum concentration in total oil content).

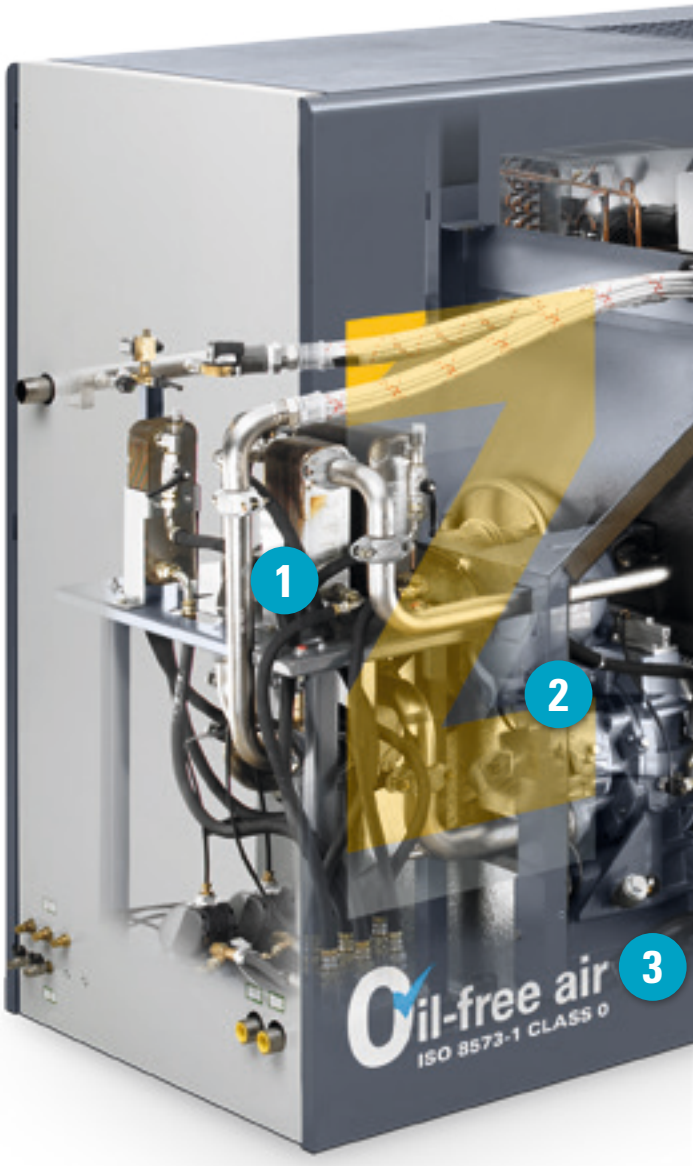
A VARIETY OF BENEFITS

Set to meet your specific demands and tackle your daily challenges, we offer you the ZR/ZT rotary tooth compressors. Immediately ready to supply high quality oil-free air, this powerful solution provides you with the exceptional reliability, efficiency and integration you are looking for.



Radial fan (only for ZT air-cooled)

- Ensures the unit is cooled effectively.
- Low noise.



1

Intercooler and aftercooler

Thanks to the vertical layout of the coolers, the noise levels from the fan, motor and element have been drastically reduced.

2

Two stage tooth element

- Lower energy consumption compared to single stage compression systems as no venting of the pressure is required.
- Minimum power consumption of the unloaded state is reached rapidly.

3

Sound insulated canopy

- No separate compressor room required.
- Only available in WorkPlace Air System™ versions.

4

Induction motor

- Flange-mounted for perfect alignment.
- Available in two versions: IP54 for VSD models and IE 3/NEMA Premium for fixed speed models.
- The dry motor coupling requires no lubrication, eliminating service requirements.

Electronic water drains

- Mounted vibration-free on the frame.
- Constant removal of condensate for improved water separation and extended lifetime of the compressor.

5

Air filter

- SAE fine 99.5%; SAE coarse 99.9%.
- Long lifetime and high reliability for long service intervals.
- Combined air filter and silencer to ensure sound insulation.

6

Integrated VSD converter

- High energy efficiency thanks to no load operation and oil vessel blow-off losses.
- Operation in a narrow pressure band setting reduces the overall system working pressure.

7

Elektronikon®

Advanced Elektronikon® control and monitoring system, designed for integration in a (remote) process control system.

Integrated dryer

- Saver cycle technology reduces the energy consumption of the integrated air treatment in light load conditions.
- As the condensate separation is integrated, water separation is improved and the Pressure Dew Point (PDP) becomes more stable.

PROVEN TECHNOLOGY, MAXIMIZED EFFICIENCY

To provide you with top-quality, 100% oil-free air, our ZR/ZT series incorporate a range of advanced technologies. The unique rotary tooth element increases efficiency thanks to two-stage compression. As no venting of the pressure element is required, the energy consumption is considerably lower compared to single stage compression systems. With its symmetrical and dynamically balanced design, the double tooth element ensures an increased free air delivery and delivers consistent performance over time.

Rotors

Stainless steel symmetrical rotors ensure perfect dynamic balancing and minimum bearing load to guarantee a long life span.

Axial in- and outlet port

The straight rotor design and the opposing axial in- and outlet port avoid axial load on element components, increasing element lifetime.

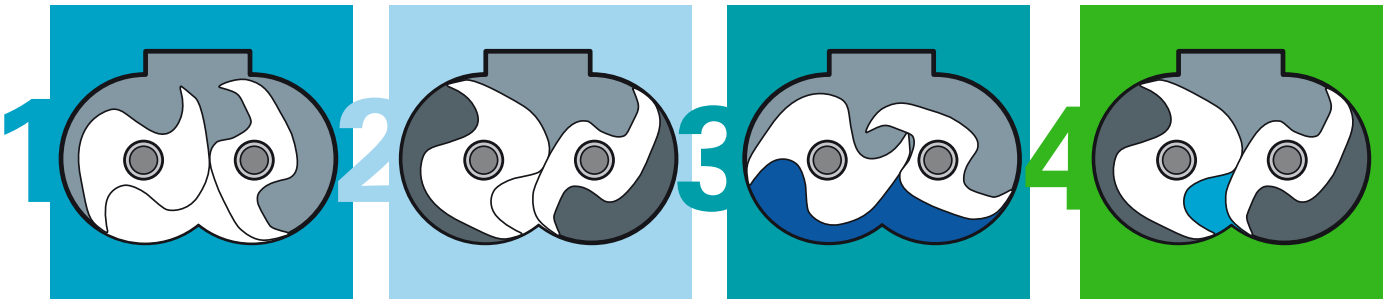
Air-cooled design

Cast teeth allow for efficient heat dissipation, eliminating the need for a complex cooling water system and ensuring greater reliability.

Seals

Two independent floating oil and air seals, separated by a neutral buffer area, safeguard the compression chamber from oil penetration.

The rotary tooth working principle



1 Atmospheric air is drawn through the inlet port into the compressor chamber as a result of the rotational action of the tooth rotors.

2 Air is trapped between the teeth of the male and female rotors.

3 Compression takes place. The male and female rotor turn towards each other, decreasing the free space, resulting in an increase in pressure.

4 The female rotor exposes the outlet port and the compressed air is delivered to the system.

Intake *Transport* *Compression* *Delivery*

EXCEPTIONAL VERSATILITY

Contrary to traditional compressor installations, our ZR/ZT WorkPlace Air System™ compressors effortlessly fit onto your work floor. With their compact footprint and integration of air treatment equipment, ZR/ZT compressors ensure optimum efficiency and reliability. Thanks to the vertical layout of the coolers, the noise levels from the fan, motor and element have been drastically reduced. Designed to give the most versatile source of compressed air, they provide you with an all-in-one package that will have your production running smoothly for years to come.

Traditional compressor set-up

1. High pressure drop across the system.
2. External filtration equipment/dryer.
3. Elaborate and costly piping system.
4. Multiple connections and air leaks.
5. Multiple monitoring points.

High noise operation

→ Separate compressor room

→ Raised installation & energy costs as a result of high pressure drop

WorkPlace Air System™

1. Limited internal system pressure drop.
2. Integrated air and condensate treatment equipment.
3. Reduced piping costs.
4. Single point connections.
5. Single point monitoring.

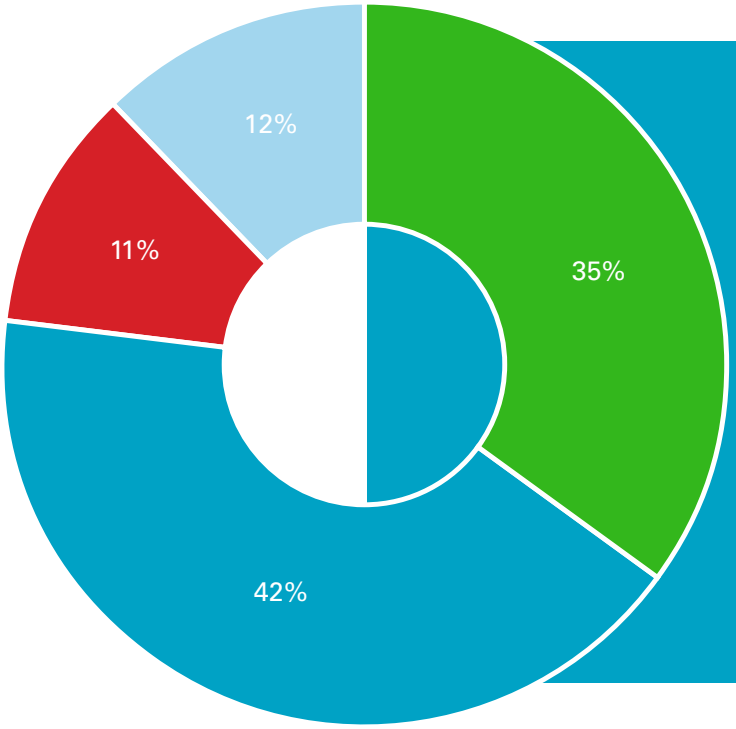
Low noise operation

→ No need for dedicated compressor room

→ Minimized installation costs

VSD: DRIVING DOWN ENERGY COSTS

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



Energy savings of up to 35%

Our VSD technology closely follows the air demand by automatically adjusting the motor speed. This results in large energy savings of up to 35%. The Life Cycle Cost of a compressor can be cut by an average of 22%. In addition, lowered system pressure with VSD minimizes energy use across your production dramatically.

Total compressor lifecycle cost

- *Energy*
- *Investment*
- *Energy savings with VSD*
- *Maintenance*

What is unique about the integrated Atlas Copco VSD?

1. The Elektronikon® controls both the compressor and the integrated converter, ensuring maximum machine safety within parameters.
2. Flexible pressure selection from 4 to 10 bar with VSD reduces electricity costs.
3. Specific converter and motor design (with protected bearings) for the highest efficiency across the speed range.
4. Electric motor specifically designed for low operating speeds with clear attention to motor cooling and compressor cooling requirements.
5. All our VSD compressors are EMC tested and certified. Compressor operation does not influence external sources and vice versa.
6. Mechanical enhancements ensure that all components operate below critical vibration levels throughout the entire compressor speed range.
7. A highly efficient frequency converter in a cubicle ensures stable operation in high ambient temperatures up to 50°C/122°F (standard up to 40°C/104°F).
8. No 'speed windows' that can jeopardize the energy savings and the stable net pressure. Turndown capability of the compressor is maximized to 70-75%.
9. Net pressure band is maintained within 0.10 bar, 1.5 psi.

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 new Elektronikon® controller. Monitoring features include warning indications, compressor shut-down and maintenance scheduling. An Atlas Copco App is available for iPhone/Android phones as well as iPad and Android tablets. It allows fingertip monitoring of your compressed air system through your own secured network.

SMARTLINK*: Data monitoring program

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

**Please contact your local sales representative for more information.*

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 reactivated adsorption dryer

BD/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

+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.

Desiccant dryer

CD/CD+

-70°C / -40°C
-94°F / -40°F

- Use of desiccant such as activated alumina or silica gel.
- Robust design.
- Total reliability.
- A constant, stable dewpoint in full load conditions.

Rotary drum heat of compression dryers

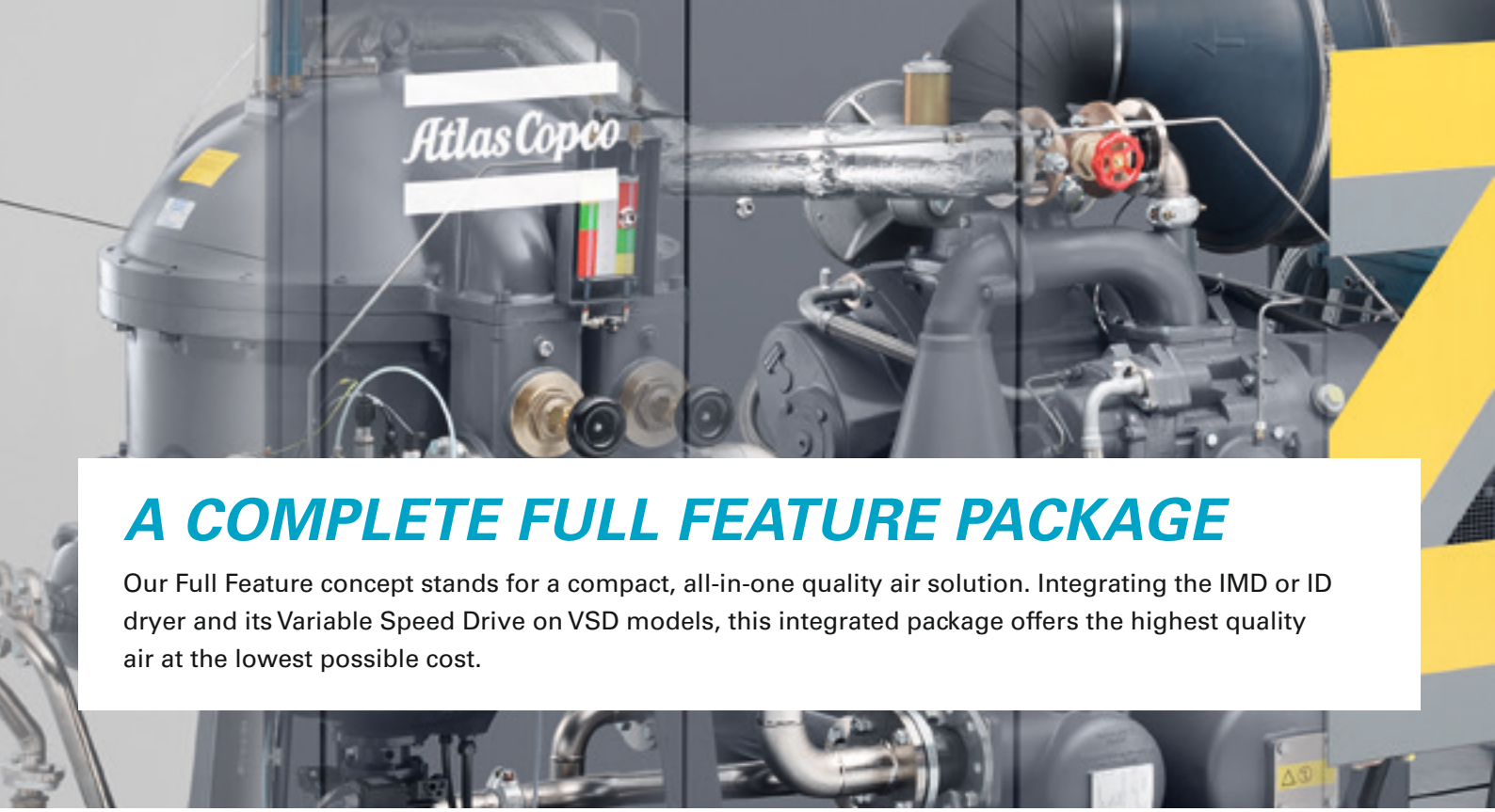
ND

-40°C/-20°C
-40°F/-4°F

MD

-30°C/+3°C
-22°F/+37°F

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



A COMPLETE FULL FEATURE PACKAGE

Our Full Feature concept stands for a compact, all-in-one quality air solution. Integrating the IMD or ID dryer and its Variable Speed Drive on VSD models, this integrated package offers the highest quality air at the lowest possible cost.

Protect your compressed air system

A dry compressed air system is essential to maintain the reliability of production processes and the quality of the end products. Untreated air can cause corrosion in the pipe work, premature failure of pneumatic equipment and product spoilage.

The IMD drying principle

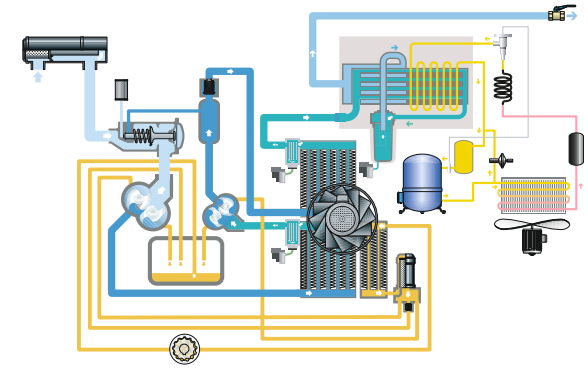
1. Hot unsaturated air
2. Hot saturated air
3. Cold saturated air
4. Dry air
5. Drying section

IMD adsorption dryer

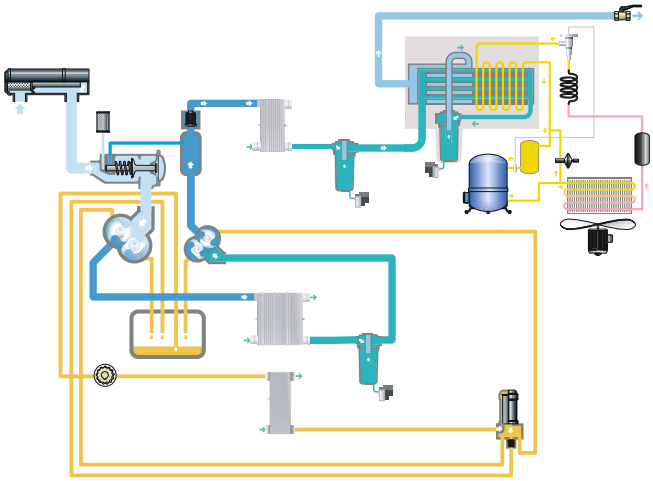
The IMD adsorption dryer eliminates the moisture before it enters the air net, ensuring a reliable process and an impeccable end product. As no external energy is needed to dry the air, large savings are obtained. The pressure drop through the dryer is minimal, which again cuts down the operating cost.

Z TOOTH + ID (REFRIGERANT DRYER)

Air-cooled ZT + ID



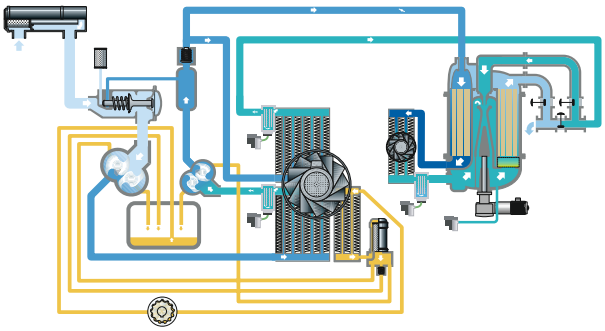
Water-cooled ZR + ID



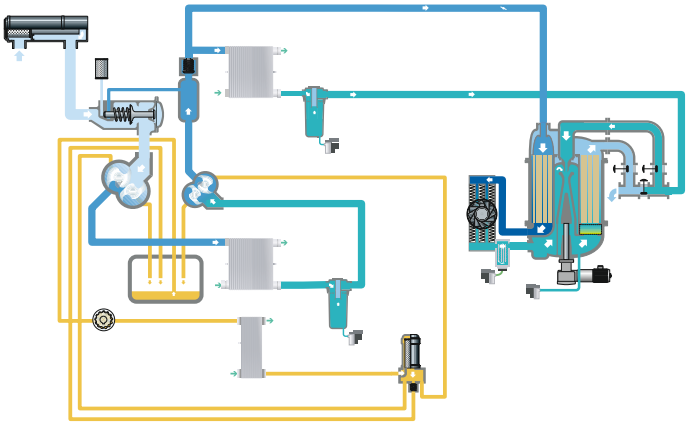
- Incoming air
- Hot unsaturated air
- Cooled saturated air
- Dry compressed air
- Oil
- Refrigerant gas
- Refrigerant liquid
- Insulation
- Insulation

Z TOOTH + IMD (ROTARY DRUM DRYER)

Air-cooled ZT FF



Water-cooled ZR FF



- Incoming air
- Hot unsaturated air
- Cooled saturated air
- Dry compressed air
- Oil
- Refrigerant gas
- Refrigerant liquid
- Insulation
- Insulation

OPTIMIZE YOUR SYSTEM

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

Options

Anchor pads	Integrated refrigerant dryer (ID)	Main power isolator switch	Anti condensation heaters and thermistors
ANSI flanges	Integrated MD dryer (IMD)	IT variant	**SMART**LINK
High ambient variant	Integrated dryer bypass	5% input chokes	Test certificate
Water shut-off valve	Silicone-free rotor for MD		

Please note the availability of the option depends on the chosen configuration.

TECHNICAL SPECIFICATIONS
ZT 15-22, ZR/ZT 30-45, ZT 22 VSD, ZR/ZT 37-55 VSD

Type	Free air delivery [1]			Installed motor		Noise level dB(a) [2]	Weight without dryer [3]		Integrated dryer available
	l/s	m³/min	cfm	kW	hp	Pack	kg	lbs	
Air-cooled									
ZT 15 - 7.5	38.1	2.3	80.7	15	20	72	975	2149	ID / IMD
ZT 15 - 8.6	35.5	2.1	75.2						
ZT 15 - 10	30.4	1.8	64.4						
ZT 18 - 7.5	48.6	2.9	103.0	18	24	72	995	2194	ID / IMD
ZT 18 - 8.6	46.4	2.8	98.3						
ZT 18 - 10	36.7	2.2	778						
ZT 22 - 7.5	59.6	3.6	126.3	22	30	72	1001	2207	ID / IMD
ZT 22 - 8.6	54.0	3.2	114.4						
ZT 22 - 10	45.6	2.7	96.6						
ZT 30 - 7.5	78.8	4.7	167.0	30	40	72	1201	2648	ID / IMD
ZT 30 - 8.6	73.9	4.4	156.6						
ZT 37 - 7.5	96.6	5.8	204.7	37	50	72	1251	2758	ID / IMD
ZT 37 - 8.6	92.3	5.5	195.6						
ZT 45 - 7.5	114.3	6.9	242.2	45	60	72	1289	2842	ID / IMD
ZT 45 - 8.6	108.9	6.5	230.7						
Water-cooled									
ZR 30 - 7.5	78.8	4.7	167.0	30	40	70	1150	2535	ID / IMD
ZR 30 - 8.6	73.9	4.4	156.6						
ZR 37 - 7.5	96.6	5.8	204.7	37	50	70	1200	2646	ID / IMD
ZR 37 - 8.6	92.3	5.5	195.6						
ZR 45 - 7.5	114.3	6.9	242.2	45	60	70	1222	2694	ID / IMD
ZR 45 - 8.6	108.9	6.5	230.7						

Type	Working pressure		Free air delivery [1]			Installed motor		Noise level dB(A) [2]	Weight without dryer [3]		Integrated dryer available
		bar(e)	l/s	m³/min	cfm	kW	hp	Pack	kg	lbs	
Air-cooled											
ZT 22 VSD - 10 bar (e)	Minimum	4	21.5 - 57.3	1.3 - 3.4	45.6 - 121.4	22	30	72	1120	2469	ID / IMD
	Effective	7	20.6 - 56.4	1.2 - 3.4	43.7 - 119.5						
	Maximum	10	19.7 - 47.4	1.2 - 2.8	41.8 - 100.3						
ZT 37 VSD - 8.6 bar (e)	Minimum	4	42.4 - 102.3	2.5 - 6.1	89.9 - 216.9	37	50	72	1431	3155	ID / IMD
	Effective	7	41.3 - 101.2	2.5 - 6.1	87.4 - 214.4						
	Maximum	8.6	41.2 - 95.1	2.5 - 5.7	87.2 - 201.6						
ZT 55 VSD - 8.6 bar (e)	Minimum	4	42.4 - 143.7	2.5 - 8.6	89.9 - 304.5	55	75	72	1485	3274	ID / IMD
	Effective	7	41.3 - 142.5	2.5 - 8.6	87.4 - 302.0						
	Maximum	8.6	41.1 - 138.8	2.5 - 8.3	87.2 - 294.0						
Water-cooled											
ZR 37 VSD - 8.6 bar (e)	Minimum	4	42.0 - 102.3	2.5 - 6.1	89.0 - 216.9	37	50	70	1322	2914	ID / IMD
	Effective	7	40.8 - 101.2	2.4 - 6.1	86.5 - 214.4						
	Maximum	8.6	40.7 - 94.9	2.4 - 5.7	86.3 - 201.1						
ZR 55 VSD - 8.6 bar (e)	Minimum	4	42.4 - 140.6	2.5 - 8.4	89.9 - 297.8	55	75	70	1360	2998	ID / IMD
	Effective	7	41.3 - 139.4	2.5 - 8.4	87.4 - 295.4						
	Maximum	8.6	41.1 - 135.0	2.5 - 8.1	87.2 - 286.0						

(1) Unit performance measured according to ISO 1217, Annex C, Edition 4 (2009)
Reference conditions:
- Relative humidity 0%
- Absolute inlet pressure: 1 bar (14.5 psi).
- Intake air temperature: 20°C, 68°F.
FAD is measured at the following working pressures:
- 7.5 bar versions at 7 bar.
- 8.6 bar versions at 8 bar.
- 10 bar versions at 9,5 bar.
For VSD at 7 bar

(2) A-weighted emission sound pressure level at the work station (LpWSAd).
Measured according to ISO 2151: 2004 using ISO 9614/2 (sound intensity scanning method).
The added correction factor is the total uncertainty value (KpAd) conform with the test code.

(3) Integrated dryers will increase the weight.

DIMENSIONS

Type	A		B		C	
	Length		Width		Height	
	mm	inch	mm	inch	mm	inch
ZT 15-22	1760	69.3	1026	40.4	1621	63.8
ZR/ZT 30-45	2005	78.9	1026	40.4	1880	74.0
ZT 22 VSD	2195	86.4	1026	40.4	1621	63.8
ZR/ZT 37-55 VSD	2440	96.1	1026	40.4	1880	74.0

COMMITTED TO SUSTAINABLE PRODUCTIVITY

We stand by our responsibilities towards our customers, towards the environment and the people around us. We make performance stand the test of time. This is what we call – Sustainable Productivity.

LLOYD'S REGISTER • LRQA
ISO 9001 • ISO 14001
OHSAS 18001

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