

Atlas Copco Air Dryers

MD series
Adsorption air dryers



MOST ENERGY EFFICIENT
DRY QUALITY AIR SYSTEM

Atlas Copco

Why Quality Air?



When the air that surrounds us is compressed, its vapour and particle concentration increases dramatically. The compression process causes the water vapours to condense into droplets, and then mix with the high concentration of particles. The result is an abrasive mixture that in many cases is also acidic. Without quality air equipment, much of this corrosive mixture will enter the air net.

Effective air treatment equipment is an investment with a solid return: it efficiently reduces the contamination in the air that would otherwise produce corrosion in the pipework, lead to premature pneumatic equipment failure and cause product spoilage.



The high cost of low quality air

When it comes to tools, machines and instruments, poor air quality will cause more breakdowns, repairs and replacements. In addition to the remedial costs, the resulting downtime and production delays are often far more expensive than any repair.



The threat to an excellent reputation

Where the compressed air comes in contact with the product, the stability, scrap rate and final quality of the product can be significantly affected by contamination. Aside from the costs to correct the situation, the potential damage to your product's reputation cannot be underestimated.





Money disappearing into thin air

The pipe work that carries the compressed air is often forgotten when calculating the potential cost of poor quality air. Aggressive condensate will cause corrosion, leading to air leaks and a costly waste of energy. A leak of 3 mm is roughly equivalent to an energy waste of 3.7 kW. After one year, this can add up to € 1800.



Persistent pressure on the environment

The energy waste caused by leaks and the unsafe disposal of untreated condensate will adversely affect our environment. Apart from the stringent legislation that imposes heavy fines in case of non-compliance, every waste of energy negatively influences the bottom line. Caring for the environment can be smart business !

From products to total solutions

Based on years of experience, Atlas Copco has the know-how to determine the exact requirements and to offer the right equipment from an extensive range of quality air products. In addition to providing total solutions, Atlas Copco has built an aftermarket organisation to support your complete installation... from a local point of contact, around the globe.

From compressor to dryer and down to the last filter, Atlas Copco can be your single partner for total quality compressed air solutions.



The complete Quality Air solution

Particles / dust

Water

filtration

drying

adsorption dryers

MD
(for ZR/ZT/ZE/ZA Compressors)



2 3

adsorption dryers

XD



0 1 2 3

refrigerant dryers

FD/ID



4

draining

electronic water drain

EWD

oil/water separation

OSC



Quality Air process
=
End user satisfaction



Oil

filtration

air compression



0

oil-free compressors
ZH/ZR/ZT/ZE/ZA/LF/SF/LFX/H/
S/P/HX-HN/PETPACK®



BD



CD



filters
PD, DD & QD



oil-injected compressors
GA/GR/GX/LE/LT



0 1 2



OSD



Air quality classes ISO 8573-1	Dirt (solid particles)				Water		Oil
	Maximum number of particles per m ³ particle diameter (d) size, µm				Max. pressure dewpoint		Max. concentration
	≤0.10	0.1 < d ≤ 0.5	0.5 < d ≤ 1.0	1.0 < d ≤ 5.0	°C	°F	mg/m ³
0	As specified by the equipment user or supplier and more stringent than class 1						
1	*	100	1	0	-70	-94	0.01
2	*	100 000	1000	10	-40	-40	0.1
3	*	*	10000	500	-20	-4	1
4	*	*	*	1000	3	+37.4	5
5	*	*	*	20000	7	+44.6	> 5

* Not specified

A well designed compressed air system ensures that the air quality demands of the process are closely met. With the desired ISO class as a guide, the appropriate components can be selected. Atlas Copco offers a complete product range that never requires a customer to compromise.

MD - dry quality air at minimal operating cost



Moisture: an avoidable threat ?

Compressed air entering the air net is always 100 % saturated with water vapour. When cooling down, this moisture will condense, causing damage to your air system... and to your finished products. The amount of water is directly proportional to the flow and although an aftercooler will eliminate 2/3 of the moisture, the remaining third can still be very destructive.

MD eliminates moisture without capacity loss

Atlas Copco MD adsorption dryers eliminate the moisture before it can cause any damage. They ensure a reliable process and impeccable end products by offering quality dry air to your compressed air system, with a pressure dewpoint of -20 °C to -40 °C. Whereas other desiccant dryer types can consume up to 15 % of the compressed air, the MD dryer guarantees 100 % flow capacity at the output.

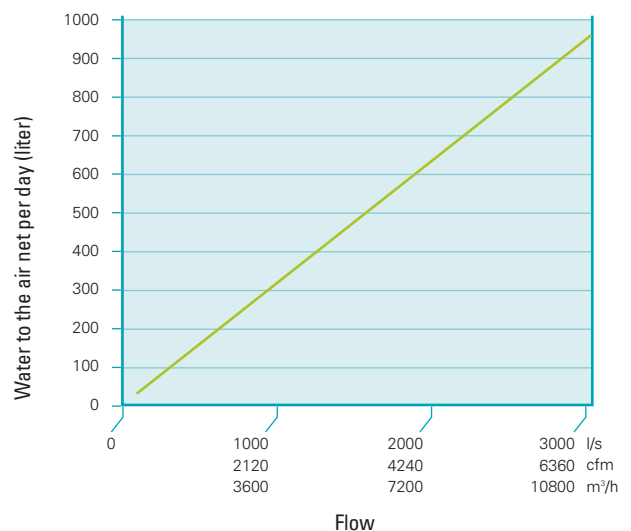
Energy efficient, environment friendly

Through the unique design of the MD dryer, only a small amount of desiccant is required - typically 5 % of conventional two-tower dryers.

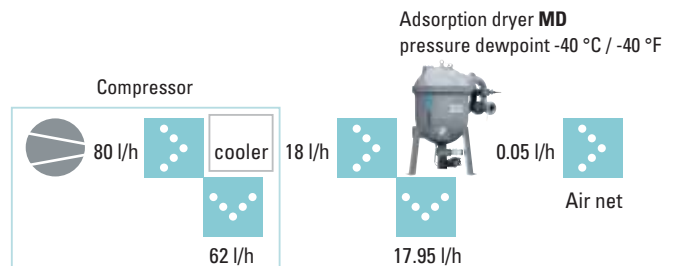
Since compression heat is used for regenerating the dryer rotor, the only energy needed is the power to rotate the drum, a mere 0.12 kW.

MD VSD dryers, equipped with a Variable Speed Drive, reduce this minimal power requirement even further.

WATER TO THE AIR NET IF NO DRYER INSTALLED



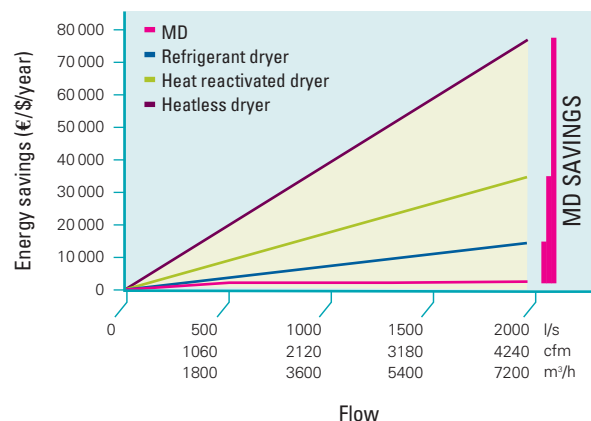
WATER ENTERING AND LEAVING THE COMPRESSOR & DRYER (EXAMPLE)



Reference conditions

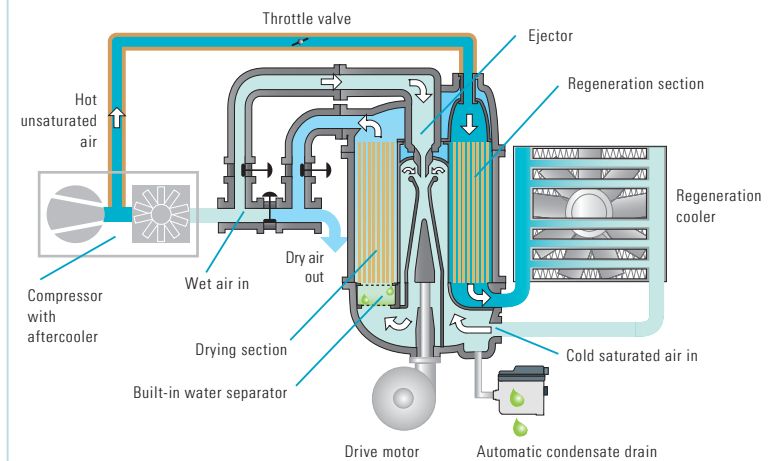
Compressor flow 1050 l/s - 2226 cfm - 3780 m³/h FAD - Compressed air temp. 13 °C
 Ambient air temp. 27 °C - Ambient relative humidity 80 % - Pressure: 9.9 bar(e)

SAVINGS WHEN SELECTING THE RIGHT DRYING METHOD



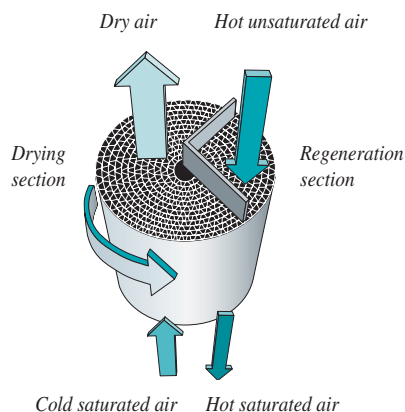
Continuous drying principle - no pressure or temperature peaks

- ▶ **Wet air inlet**
guides the main compressed air stream, coming from the compressor aftercooler, into the MD dryer
- ▶ **Ejector**
ensures full compressed air capacity by mixing the incoming saturated compressed air with the air used to regenerate the rotor
- ▶ **Water separator**
prevents water droplets in the air stream from entering the drying section
- ▶ **Drying section**
constitutes 75 % of the rotating glass fibre drum; impregnated with silicagel, the moisture is removed by the adsorption process
- ▶ **Dry air outlet**
guides the dry air out of the MD, via a bypass/isolation valve, into the air net
- ▶ **Regeneration air inlet**
guides hot unsaturated air, taken from before the aftercooler of the compressor, into the regeneration section of the MD dryer



- ▶ **Regeneration section**
constitutes 25 % of the rotating drum; the hot unsaturated air stream regenerates the drum by evaporating the moisture collected in the drying section
- ▶ **Regeneration cooler**
cools down the moisture saturated regeneration air before sending it into the ejector to mix with the main compressed air stream
- ▶ **Electronic drain**
an automatic drain with built-in safety drain evacuates the oil-free condensate
- ▶ **Motor**
drives the rotating drum, consuming minimal power (Variable Speed Drive optional on selected models)

MD drying principle





MD - Unique, low cost drying system

Minimal energy consumption

- ▶ *no extra energy required for drying - compression heat is used for regenerating the dryer rotor*
- ▶ *negligible energy requirement for drum rotation*
- ▶ *no loss of compressed air - 100 % flow capacity at output*

First class performance, first class air quality

- ▶ *low pressure dewpoint of -20 °C to -40 °C*
- ▶ *100 % oil-free process*
- ▶ *continuous operation, no switching or cycling*
- ▶ *no pressure or temperature peaks*
- ▶ *designed for use with oil-free Z-compressors*

Fully automatic operation

- ▶ *simple but efficient control system with dewpoint indicator*
- ▶ *intelligent electronic water drains with alarm function*
- ▶ *on VSD models, motor controlled by compressor regulator*

Minimal maintenance downtime

- ▶ *long service intervals*
- ▶ *no depletion of materials, no consumables*
- ▶ *heavy-duty internal protective coatings*
- ▶ *easy to service, compact vessel*

Easy installation

- ▶ *direct flange-to-flange mounting*
- ▶ *all piping and connections included as standard*
- ▶ *no pre-filter required because of built-in separator*
- ▶ *no dust generation, hence no need for after-filter*
- ▶ *integrated design, small footprint*



Environment friendly

- ▶ *minimal amount of desiccant*
- ▶ *100 % oil-free condensate; no further treatment required*
- ▶ *silent operation*
- ▶ *total absence of CFC's*



Excellence by design



*Rotating drum
(drying medium)*

*Regeneration
air cooler*



- ❖ No loss of compressed air
- ❖ Extremely low energy consumption; only 0.12 kW
- ❖ First rate, clean, dry oil-free air
- ❖ Low and stable pressure dewpoint: -20 °C to -40 °C
- ❖ Continuous drying; regeneration using compression heat
- ❖ Fully automatic operation
- ❖ Compact unit with small footprint
- ❖ Complete internal corrosion protection
- ❖ Complete range to meet all application requirements; air and water cooled versions
- ❖ Variable Speed Drive (VSD) version further reduces energy consumption
- ❖ Perfect match to oil-free Z-compressor
- ❖ Design, manufacturing and service from one single source





All-in-one Full Feature IMD design

The Full Feature concept is a total installation, providing dry compressed air out of the box. Integrating the IMD dryer and its Variable Speed Drive on VSD models, this compact package offers high quality air at the lowest cost with the highest reliability.

- ▶ The IMD adsorption dryer eliminates the moisture before it enters the air net, ensuring a reliable process and an impeccable end product. No external energy is needed for the IMD to dry the air, resulting in large savings over the lifetime of the compressor.
- ▶ Reduced floor space thanks to the efficient integration of the dryer into the compressor canopy.
- ▶ The Full Feature compressor is a pre-wired and pre-piped solution, ready to use.



Air cooled ZT 22 FF



Water cooled ZR 90 VSD-FF



Integrated IMD adsorption dryer range

IMD	Compressor
IMD 50	ZT/ZR 18-37
IMD 50 VSD	ZT/ZR 50 VSD
IMD 100	ZT/ZR 45
IMD 100 VSD	ZT/ZR 50 VSD
IMD 260	ZT/ZR 55-90
IMD 260 VSD	ZT/ZR 90 VSD
IMD 300	ZT/ZR 110-145
IMD 400 VSD	ZT/ZR 132/160 VSD
IMD 400	ZT/ZR 160, ZT/ZR 200 ⁽¹⁾
IMD 600	ZT/ZR 200 ⁽¹⁾ , ZT/ZR 250-275
IMD 800 VSD	ZT/ZR 250/315 VSD

⁽¹⁾ for 7/ 8.6 bar(e) versions

⁽²⁾ for 10/10.4/12/13 bar(e) versions

ZT: air cooled
 ZR: water cooled
 VSD: Variable Speed Drive

For more technical data, see separate ZT/ZR brochures.



Water cooled ZR 160 VSD-FF



Free standing compressor/dryer installation

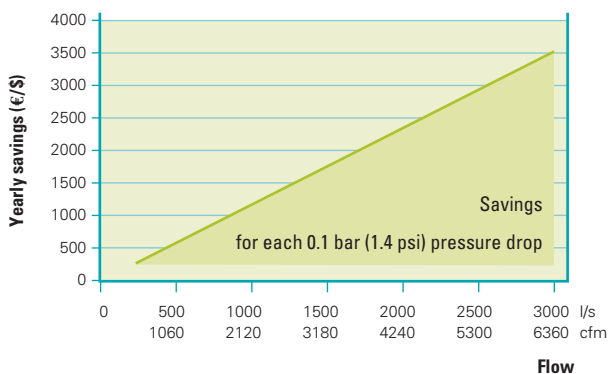


Advanced control and monitoring

- One integrated control system for compressor and dryer
- Monitoring of the IMD dryer includes:
 - ▶ Temperature readings of
 - IMD dryer inlet and outlet
 - regeneration air inlet and outlet
 - mix air inlet
 - ▶ Pressure dewpoint after the IMD (option)
 - ▶ Loading reporting of dryer

Indirect energy savings

Other than direct energy input, the pressure drop in dryers causes indirect energy consumption as well. IMD dryers have a very low pressure drop, which leads to a further reduction in energy cost.



The MD series is specially designed for use with the industry standard Z series of oil-free screw compressors. Together they form the optimal combination for top quality dry air at low running cost. The flange-to-flange hook-up design greatly facilitates installation, and all connection parts and bypass components are included in the package.



MD adsorption dryer range

MD	Compressor
MD 50	ZT/ZR 18-37
MD 50 VSD	ZT/ZR 50 VSD
MD 100	ZT/ZR 45
MD 100 VSD	ZT/ZR 50 VSD
MD 200	ZT/ZR 55-90, ZT/ZR 90 VSD
MD 300	ZT/ZR 110-145
MD 400 VSD	ZT/ZR 132/160 VSD
MD 400	ZT/ZR 160, ZT/ZR 200 ⁽²⁾
MD 600	ZT/ZR 200 ⁽¹⁾ , ZT/ZR 250-275
MD 800 VSD	ZT/ZR 250/315 VSD

Ambient temperature/
Cooling medium temperature
10 °C (50 °F)
30 °C (86 °F)
Pressure dewpoint at 7 bar(e)
-40 °C (-40 °F)
-20 °C (-4 °F)

⁽¹⁾ for 7/ 8.6 bar(e) versions

⁽²⁾ for 10/10.4/12/13 bar(e) versions

Dryer	Oil-free compressor	Dimensions (mm/in)		
		A	B	C
MD 1000 W	ZR 300-425	1809/71	1346/53	1163/46
MD 1300 W VSD	ZR 500 VSD	1879/74	1346/53	1163/46
MD 1800 W	ZR 450-750	2076/82	1699/67	1289/51
MD 2500 W VSD	ZR 900 VSD	2235/88	1699/67	1289/51

- ZT: air cooled
- ZR: water cooled
- W: water cooled
- VSD: Variable Speed Drive



For more technical data, see separate ZT/ZR brochures.



The face of innovation

What sets Atlas Copco apart as a company is our conviction that we can only excel in what we do, if we provide the best possible know-how and technology to really help our customers produce, grow and succeed.

There is a unique way of achieving that - we simply call it the Atlas Copco way. It builds on **interaction**, on long-term relationships and involvement in the customers' process, needs and objectives. It means having the flexibility to adapt to the diverse demands of the people we cater for.

It's the **commitment** to our customers' business that drives our effort towards increasing their productivity through better solutions. It starts with fully supporting existing products and continuously doing things better, but it goes much further, creating advances in technology through **innovation**. Not for the sake of technology, but for the sake of our customer's bottom line and peace-of-mind.

That is how Atlas Copco will strive to remain the first choice, to succeed in attracting new business and to maintain our position as the industry leader.



ISO 9001

A consistent quality earned us the industry's leadership and the customer's trust.



ISO 14001

Atlas Copco's Environmental Management System forms an integral part of each business process.

Never use compressed air as breathing air without prior purification in accordance with local legislation and standards.

