

Atlas Copco



Desiccant air dryers

BD⁺ ZP - BD⁺ - CD⁺ - CD

Air treatment, a crucial investment

Why you need quality air

Compressed air contains oil, solid particles and water vapors. Together, they form an abrasive, often acidic, oily sludge. Without air treatment, this murky mix will enter your compressed air system, corroding pipe work, damaging pneumatic tools and potentially compromising final products.



Meet your specific requirements

Atlas Copco desiccant dryers offer the right air quality for your application with pressure dew points as low as -70°C/-100°F or ISO Class [-:1:-].

Compressed air purity classification ISO 8573-1:2010

Purity class	Solid particles			Water		Total oil*
	Number of particles per m ³			Pressure dew point		Concentration
	0.1 < d ≤ 0.5 μm**	0.5 < d ≤ 1.0 μm**	1.0 < d ≤ 5.0 μm**	°C	°F	mg/m ³
0	As specified by the equipment user or supplier and more stringent than Class 1.					
1	≤ 20000	≤ 400	≤ 10	≤ -70	≤ -94	≤ 0.01
2	≤ 400000	≤ 6000	≤ 100	≤ -40	≤ -40	≤ 0.1
3	-	≤ 90000	≤ 1000	≤ -20	≤ -4	≤ 1
4	-	-	≤ 10000	≤ 3	≤ 37.4	≤ 5
5	-	-	≤ 100000	≤ 7	≤ 44.6	-
6	-	≤ 5 mg/m ³	-	≤ 10	≤ 50	-

* Liquid, aerosol and vapor.
** d = diameter of the particle.

Atlas Copco desiccant dryers, quality you can trust



Safeguard your production and your reputation

Atlas Copco desiccant dryers protect the reliability of your production and the quality of your products. The high-performance dryers remove the moisture from your compressed air with a standard pressure dew point of -20°C/-5°F, -40°C/-40°F and -70°C/-100°F. For complete peace of mind, you can even set your dew point to meet the specific needs of your application.

Set new quality standards

Tested according to ISO 7183:2007, Atlas Copco desiccant dryers meet and often exceed international standards for compressed air purity. Naturally, all our dryers provide full protection of electrical components, controls and displays.

Drive down energy costs

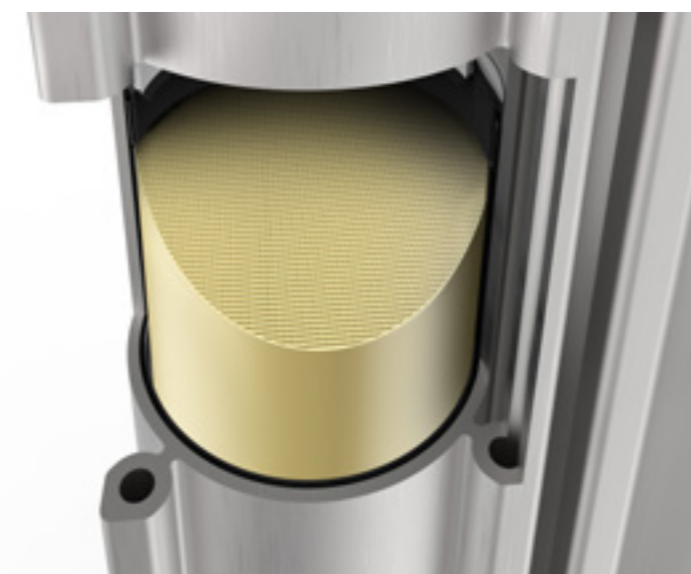
Atlas Copco desiccant dryers come with a range of energy-saving features that cut your carbon footprint.

- A pressure drop below 0.2 bar/2.9 psi drives down energy costs.
- Dew point sensing and control adjust energy consumption to the real load of the dryer.
- An adjustable dew point enables you to adapt the dryer to your actual needs.

Enjoy easy installation and long maintenance intervals

Thanks to their compact all-in-one design, the dryers are an unobtrusive presence on your production floor. Delivered ready for use, their installation is quick and easy. All internal components are readily accessible to facilitate maintenance. The high-grade desiccant and durable valves extend maintenance intervals beyond the standard three years.

CERADES™



Cerades™: a desiccant revolution by Atlas Copco

Some innovations change everything. Take Cerades™, the first ever solid desiccant. Developed and patented by Atlas Copco, Cerades™ revolutionizes desiccant dryer design, efficiency and performance. And that makes all the difference for you as you enjoy better air quality, lower energy and service costs, and health and environmental benefits. The new CD 20⁺-335⁺ is the first dryer to feature Cerades™. Find out all about the CD 20⁺-335⁺ and Cerades™ on page 8-9.

How do desiccant dryers work?

Desiccant dryers consist of two towers filled with desiccant. Wet compressed air passes directly through the substance, which adsorbs the moisture. The desiccant has a finite adsorption capacity before it must be dried out. Hence the twin tower design. While one tower is drying air, the other is being regenerated.

Atlas Copco offers two types of desiccant dryers, the BD⁺ range of blower (zero) purge dryers and the CD⁽⁺⁾ series of heatless desiccant dryers. The difference lies in their regeneration process.

1. Drying

Wet compressed air flows upward through the adsorbent desiccant from bottom to top (1).

2. Regeneration

Heatless desiccant dryers – CD⁽⁺⁾:

Dry air from the drying tower outlet is expanded to atmospheric pressure and sent through the saturated desiccant, forcing the adsorbed moisture out (2 and 4).

After desorption, the blow-off valve is closed and the vessel is re-pressurized.

Blower (zero) purge desiccant dryers – BD⁺:

The blower (5) takes ambient air and blows it across the external heater (6). The heated air is then sent through the saturated desiccant (2), forcing the adsorbed moisture out.

3. Cooling (BD⁺)

BD⁺ with purge:

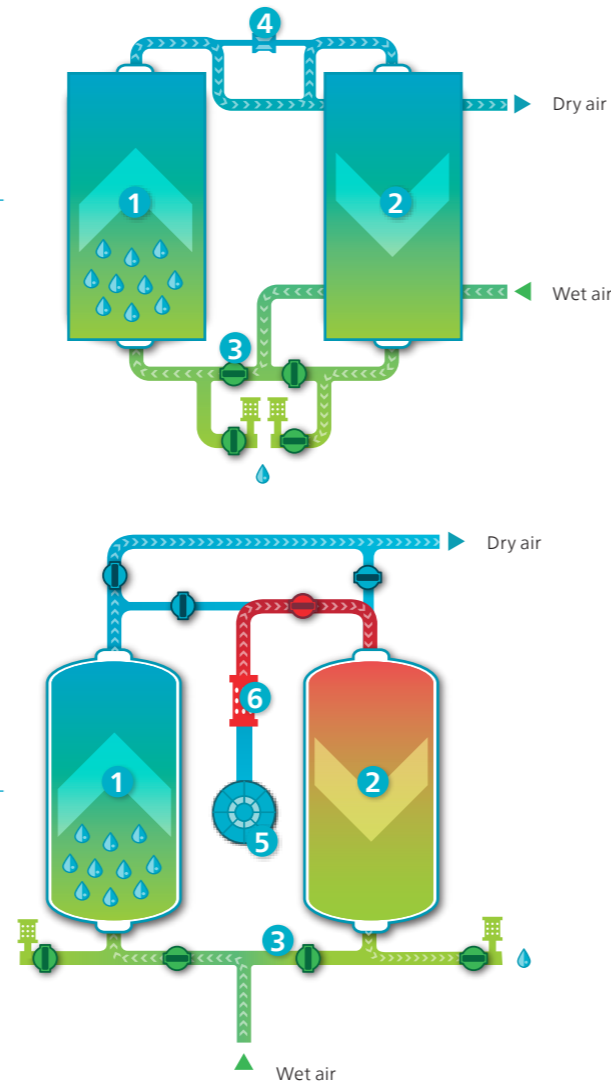
After the heating phase, the desiccant is cooled by expanding dry compressed air from the outlet of the adsorbing vessel over the hot reactivated tower.

BD⁺ with zero purge:

After the heating phase, the blower takes in ambient air and sends it through the reactivated tower from bottom to top.

4. Switching

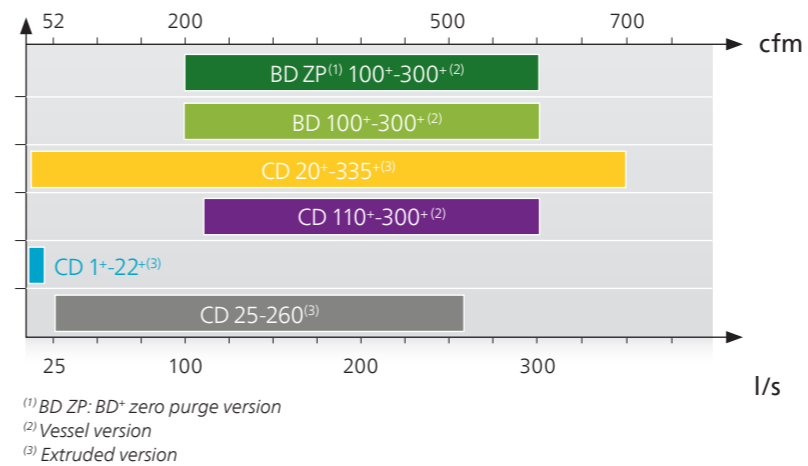
After regeneration, drying switches from the saturated tower to the regenerated tower (3).



Which Atlas Copco desiccant dryer is right for you?

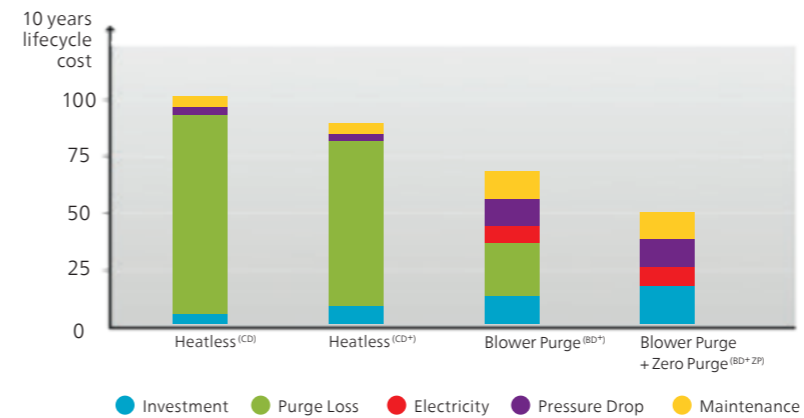
With the BD⁺ blower (zero) purge dryers and CD⁽⁺⁾ heatless desiccant dryer series, Atlas Copco offers a desiccant drying solution to meet your exact needs.

Atlas Copco desiccant dryer range



Lifecycle cost

A heatless desiccant dryer is more expensive to own because it uses a high amount of compressed air for purging during regeneration. Typically, purge air takes up 16% to 19% of the rated flow capacity of a heatless dryer. However, the heatless dryer remains a popular choice because of its simplicity, reliability and low investment cost.



Site conditions

Because of their simple design, heatless desiccant dryers are often preferred for extreme environments. This includes remote areas, hazardous sites with explosive gases and powders, and applications with a high inlet air temperature.

Superior energy efficiency

Reduced pressure drop below 0.2 bar/2.9 psi

A dryer's energy consumption is determined by its internal pressure drop and the efficiency of its regeneration process. If a desiccant dryer experiences a high pressure drop, the compressor discharge pressure must be set higher, which increases energy and operating costs. Atlas Copco BD⁺ and CD⁽⁺⁾ desiccant dryers offer a very low pressure drop – below 0.2 bar/2.9 psi for most models – as well as the most efficient regeneration process.

Dew Point Dependent Switching for energy savings up to 90%

Atlas Copco's BD⁺ and CD⁽⁺⁾ desiccant dryers incorporate state-of-the-art energy management control with built-in Dew Point Dependent Switching. The principle is simple. A dew point sensor will delay switching towers until dryer conditions require it. This cycle time extension can generate energy savings of up to 90%.



BD 100+ - 300+

Premium performance & cost-efficiency

① Quality desiccant

- High adsorption silica gel desiccant needs less reactivation energy than other drying agents.
- Dual-layer desiccant bed with a water-resistant bottom layer protects the high-performance top layer.
- Pressure dew point of -40°C/-40°F as standard (-70°C/-100°F optional).
- Up to 30% extra desiccant to deliver consistent performance even in harsh conditions such as high temperatures and temporary overloads.



② Stainless steel valves

High-performance stainless steel butterfly valves with actuators ensure a long lifetime.



③ Low wattage density heater

- Stainless steel design extends lifetime.
- Heater is installed in an insulated pipe for an energy-efficient set-up.
- Insulated vessels are available as an option to further reduce heat losses and increase overall efficiency (standard on the -70 °C/-100 °F model).



④ Galvanized piping with flanged connections

- Flanged piping simplifies maintenance and minimizes the risk of leaks.
- Pipe sizing is optimized to ensure a low pressure drop for maximum energy savings.



⑤ Filters

- A pre-filter prevents oil contamination to increase desiccant lifetime.
- An after-filter protects the airnet from desiccant dust and network contamination.
- Can be mounted directly on the inlet and outlet of the dryer for low pressure drop.
- Easy to assemble and maintain. No extra piping and filter connections are required.



⑥ Advanced control and monitoring system

- Fitted inside an IP54 cubicle for easy cabling and safety.
- Monitors all parameters to ensure maximum reliability.



⑦ Dew Point Dependent Switching

- Real pressure dew point monitoring (hygrometer).
- Pressure dew point (and alarm).
- The dryer will only switch to the next tower when the desiccant is saturated, as measured by the dew point sensor. During this cycle time extension, the dryer consumes no purge air, resulting in a significant reduction in energy use.



⑧ Robust and compact design

- Standard frame, including forklift slots and lifting eyes for easy handling.
- Wide vessels ensure a low air speed and a longer contact time.
- Flanges connecting the vessels are integrated into the top and bottom shells, lowering the total unit height.

Zero Purge, maximum energy savings

Looking for the desiccant dryer with the lowest operating costs? The BD+ Zero Purge is your best choice. With zero purge losses and minimal electricity use, the BD+ ZP offers the highest energy savings. Our lifecycle cost comparison on page 5 quantifies the differences.



CD 20⁺-335⁺

Cerades™ efficiency & continuous operation

① Cerades™

The CD 20⁺-335⁺ is the first dryer to use the revolutionary Cerades™ desiccant developed and patented by Atlas Copco. Compressed air is channeled straight through the solid desiccant, as opposed to pushing its way through loose desiccant beads. As a result, you enjoy:

- Lower energy costs and a minimal pressure drop thanks to the straight, no-resistance air flow.
- Better air quality and longer service intervals because Cerades™ lasts longer than loose desiccant, which decays significantly over time.
- Environmental and health protection, lower operational costs, and less downtime as Cerades™ eliminates desiccant dust and the need to filter it out to reach ISO 8573-1:2010 Class 2 for particles.
- Trouble-free installation and continuous operation as Cerades™ can be mounted horizontally.
- A smaller dryer size as Cerades™ can handle a higher air flow.

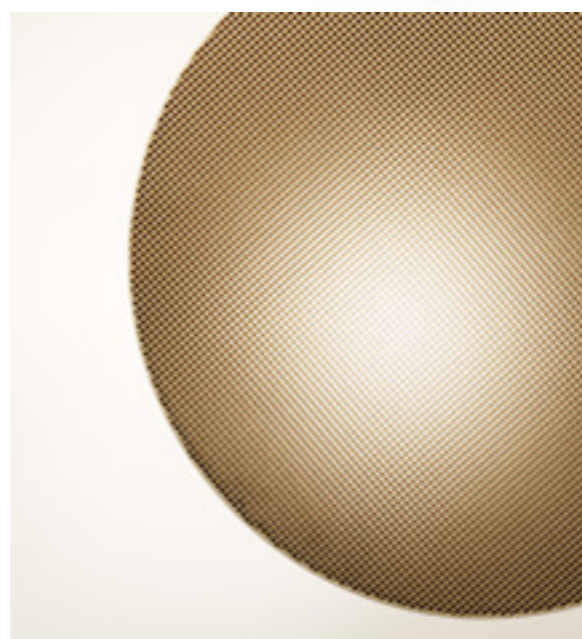
② High-efficiency operation

Designed to perform reliably at continuous operation of 100% airflow, whereas most dryers on the market are only built to work at 70% to 80%. This includes a constant pressure dew point of -20°C/-5°F, -40°C/-40°F, -70°C/-100°F* as standard. The pressure dew point can also be adjusted for seasonal or application changes.

*-70°C/100F uses molecular sieve desiccant

③ Advanced energy savings

- **Up to 70%** less pressure drop compared to previous model.
- **15%** purge air reduction compared to the standard CD model.
- Optional Dew Point Dependent Switching. The dryer will only switch to the next tower when the desiccant is saturated, as measured by the dew point sensor. During this cycle time extension, the dryer consumes no purge air, resulting in a significant reduction in energy use.
- Dew point can be set to the requirements of your application to reduce energy consumption.



④ Unique manifold/valve design

- Large pipe diameter minimizes pressure drop for advanced energy savings.
- Electronically operated 3/2 valve reduces risk of breakdowns and offers reliable control during airflow fluctuations. With this new design, vessel switching operates unfailingly even in rough conditions.
- Service openings ensure easy service of the moving parts of the valve system.



⑤ New silencing design

Innovative silencing system with large front silencer provides quiet performance with minimal pressure drop.

⑥ Advanced control and monitoring system

- State-of-the-art Elektronikon® Touch control and monitoring system with warning indications, dryer shutdown and maintenance scheduling.
- Standard SMARTLINK remote monitoring to maximize air system performance and energy savings.
- Pressure dew point sensor for Dew Point Dependent Switching standard with Elektronikon® Touch and optional with DC1 controller.

⑦ Service and maintenance-friendly

- Compact Cerades™ blocks allow for quick and easy maintenance.
- Loose desiccant decomposes over time, releasing a fine dust into the air system, which requires extra filtration and maintenance. This dust is also a health and environmental hazard, as it circulates in the ambient air during desiccant replacement. Cerades™ eliminates this dust problem.

⑧ Integrated inlet filter

- A highly efficient UD⁺ pre-filter prevents oil contamination to increase desiccant lifetime.
- For mounting directly on the inlet of the dryer for low pressure drop.
- Easy to assemble and maintain. No extra piping and filter connections are required.
- An after-filter is not required to reach ISO 8573-1:2010 Class 2 for particles. To reach Class 1, a PDP⁺ filter is recommended.

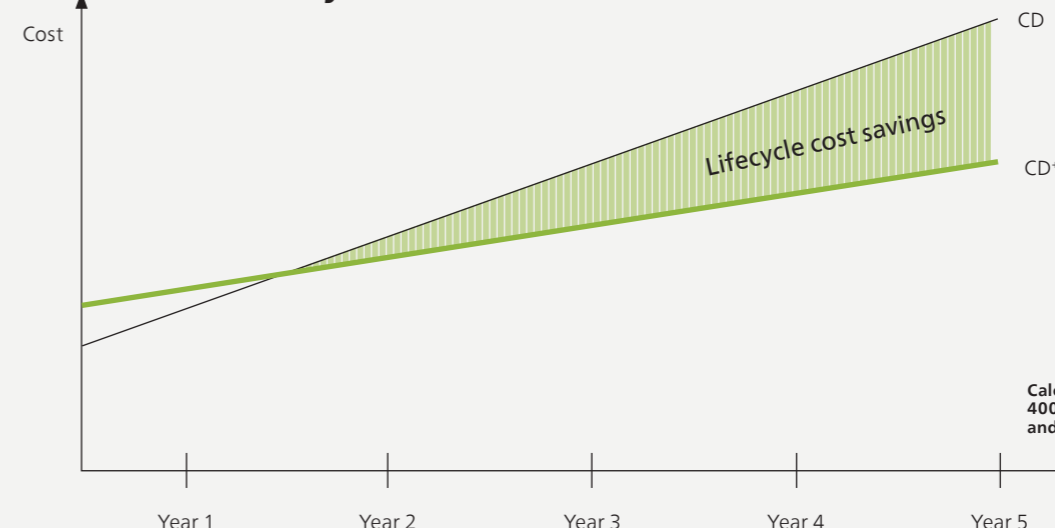
⑨ Nozzle purge set

Offers flexibility in optimizing regeneration pressure. Standard is 7 bar; 4-bar, 5.5-bar, 8.5-bar, 10-bar, 11.5-bar, 13-bar and 14-bar nozzles come as separate parts.

⑩ Advanced options

- Pressure dew point sensor for DC1 controller.
- Wall mounting kit.

CD⁺ efficiency delivers fast return on investment



CD 110⁺-300⁺

State-of-the art
& consistent performance

① Quality desiccant

- Pressure dew point of -40°C/-40°F as standard (-70°C/-100°F optional).
- Up to 30% extra desiccant to deliver consistent performance, even in harsh conditions such as high temperatures and temporary overloads.



② Stainless steel valves

High-performance stainless steel butterfly valves with actuators ensure a long lifetime.

③ Upsized silencers

State-of-the-art mufflers with integrated safety valves avoid back-pressure, increase purge efficiency, offer protection in case of clogging, and reduce noise levels during blow-off.



④ Galvanized piping with flanged connections

- Flanged piping simplifies maintenance and minimizes the risk of leaks.
- Pipe sizing is optimized to ensure a low pressure drop for maximum energy savings.



⑤ Filters

- A pre-filter prevents oil contamination to increase desiccant lifetime.
- An after-filter protects the airnet from desiccant dust and network contamination.
- Can be mounted directly on the inlet and outlet of the dryer for a low pressure drop.
- Easy to assemble and maintain. No extra piping and filter connections are required.



⑥ Advanced control and monitoring system

- Fitted inside a real IP54 cubicle for easy cabling and safety.
- Monitors all parameters to ensure maximum reliability of the installation.

⑦ Dew Point Dependent Switching

- Real pressure dew point monitoring (hygrometer).
- Pressure dew point (and alarm).
- The dryer will only switch to the next tower when the desiccant is saturated, as measured by the dew point sensor. During this cycle time extension, the dryer consumes no purge air, resulting in a significant reduction in energy use.



⑧ Robust and compact design

- Standard frame, including forklift slots and lifting eyes for easy handling.
- Wide vessels ensure a low air speed and a longer contact time.
- Flanges connecting vessels are integrated into the top and bottom shells, lowering the total unit height.
- Different vessel certificates available upon request.

CD 25-260

Competitive investment & superb reliability

① Reliable operation

Designed to perform reliably at continuous operation of 100% airflow, whereas most dryers on the market are only built to work at 70% to 80%. This includes a constant pressure dew point of -20°C/-5°F or -40°C/-40°F as standard. The pressure dew point can also be adjusted for seasonal or application changes.

② Unique manifold/valve design

- Large pipe diameter minimizes pressure drop for advanced energy savings.
- Electronically operated 3/2 valve reduces risk of breakdowns and offers reliable control during airflow fluctuations. With this new design, vessel switching operates unfailingly even in rough conditions.
- Service openings ensure easy service of the moving parts of the valve system.
- Clever strainer design minimizes pressure drop, regeneration times and energy consumption. Its "swirl" technology ensures optimal distribution of the airflow and decreases wear of the desiccant.



③ Advanced control and monitoring system

- 4-line display in 23 languages.
- Service alarms and general alarm relay.
- Monitors all parameters to ensure maximum reliability.
- Allows for synchronization with the compressor, turning on/off when the compressor does.
- Service indications (4,000, 8,000 and 40,000 hours) and warnings.
- Optional pressure dew point sensor for Dew Point Dependent Switching.



④ Service and maintenance-friendly

- Desiccant bags allow for quick replacement without spilling adsorbent material.
- A spring covers the bags to prevent damage by desiccant moving due to pressure pulsations.

⑤ Attached filters

- A durable PD pre-filter prevents oil contamination to increase desiccant lifetime and is included for installation in the air piping.
- A DDp after-filter protects the airnet from desiccant dust and network contamination and is included for installation in the air piping.
- To be installed in the air piping.
- Easy to assemble and maintain.

⑥ Nozzle purge set

Offers flexibility in optimizing regeneration pressure for lowest purge air consumption. Standard is 7 bar; 4 and 10-bar nozzles come as separate parts.

⑦ Advanced options

- Pressure dew point sensor required for Dew Point Dependent Switching.
- Wall mounting kit.

CD 1+-22+

The compact solution

- 1 High-quality components designed for low pressure drop and increased reliability provide fail-safe operation.
- 2 Filled with high-performance molecular sieves to allow for various pressure dew points (-40°C/-40°F and -70°C/-100°F). Overfilled cartridges protect against desiccant aging and overflow peaks. Integrated after-filters ensure fast and clean maintenance.
- 3 Multi-port inlet and outlet provide easy connection to the air system. The dryer can be installed vertically or horizontally.
- 4 Integrated silencers minimize noise.
- 5 Full electronic controller with purge saver function. The sophisticated electrical panel is IP65-protected against water and dust.



Features and benefits

Enduring performance

- Non-return valves and purge cavities are built into the polycarbonate cartridges.
- Each desiccant cartridge includes an integrated after-filter to save space, simplify installation and decrease the risk of leaks.
- The dryer can perform in working pressures up to 16 bar(g)/232 psig and temperatures up to 50°C/122°F.

Energy efficiency and savings

- Low pressure drop across the whole range.
- Purge saver function is included as standard.
- Adjustable purge, available as an option, matches purge air consumption to the actual working conditions.

Easy operation

- Controller shows the dryer/cycle status and automatic fault diagnosis.
- No need to disconnect the dryer from the compressed air network for servicing.
- The inlet and outlet can be reversed. The dryer can be operated remotely.



ISO 9001 • ISO 14001
OHSAS 18001

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