

## BD+ 100-300

### ATLAS COPCO QUALITY AIR SOLUTIONS

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#### General Description

Clean and dry air is an essential part of a modern production process. Untreated compressed air contains moisture, aerosols and dirt particles which can damage the air system, tools and machines or even contaminate the end product.

Incorporating the best, robust components the market has to offer, Atlas Copco BD+ heated blower purge desiccant dryers provide **clean and dry air**, extending the lifetime of equipment and protecting final product integrity, even in difficult and challenging operating conditions.



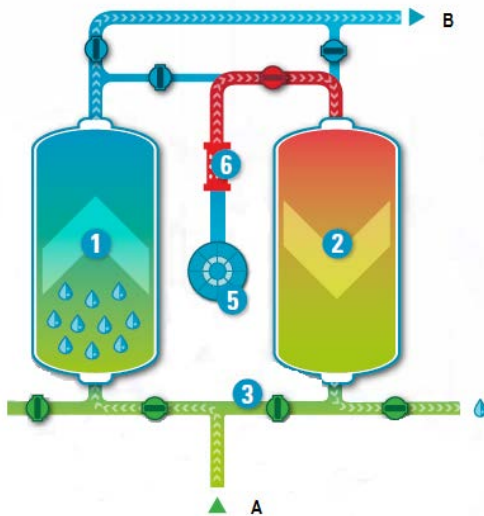
The BD+ 100-300 heated blower purge dryer range is built to ensure that every customer benefits from:

- Continuous dry air, even in difficult and demanding conditions
- Superior energy efficiency and lowest possible running costs
- Unrivalled mechanical and performance reliability
- Lowest overall maintenance costs with long maintenance intervals
- Total operational convenience, from installation to remote monitoring and control

In order to provide these key advantages, Atlas Copco spent years developing the BD+ design, verifying the performance over a broad range of conditions and qualifying each component for continuous use without unexpected failure. The resulting product is a truly industrial piece of equipment, designed without compromise, hand built by artisan and ready for long term and continuous operation in even the most demanding environments.

## Working Principle

The general working principle of adsorption dryers is simple. Moist air flows (A) over hygroscopic material (typical materials are silica gel, molecular sieves, activated alumina) and is thereby dried. The exchange of the water vapor in the moist compressed air into the hygroscopic material or “desiccant” to gradually be saturated with adsorbed water. Therefore, the desiccant needs to be regenerated regularly to regain its drying capacity, Adsorption dryers are typically built with two drying vessels for that purpose. Each tower switches the tasks when the other one is completely regenerated. Typical Pressure Dew Point (PDP) on the outlet (B) that can be achieved is  $-40^{\circ}\text{C}$ , which makes these dryers, suitable for providing very dry air for more critical applications.



With BD dryer, the blower (5) takes ambient air and blows it over the external heater (6). The heated air is then sent through the saturated desiccant (2), forcing the absorbed moisture out, from top to bottom. Cooling, Zero Purge: After the heating, the hot tower desiccant is cooled. Cooling is done by sending air from the hot vessel (2) over a cooler and back into the hot tower, from bottom to top.

Cooling by purge: After the heating, the hot tower desiccant is cooled. Cooling is done by expanding dry compressed air from outlet of the adsorbing vessel (1) over the hot reactivated vessel (2), from bottom to top. After regeneration, the functions of both towers are switched. (3)

## Scope of Supply

Extra-large diameter vessels, which reduce air speed in the desiccant bed thereby increasing the contact time between the air and desiccant. Longer contact times give the moisture in air more opportunity to transfer to the desiccant, resulting in a lower and more reliable pressure dew point.

A significant overfill of desiccant which is clearly stated on the datasheet. Using extra desiccant increases the water removal capacity of the dryer, resulting in better performance, especially in hot conditions and when the desiccant is older than 3 years.

Real purge control, based on the pressure dew point (PDP) at the outlet of the dryer, is the only way to optimize purge savings without jeopardizing outlet air quality. Many inexpensive purge saving solutions exist but often these will either save money at the expense of performance, or not capture the full saving opportunity available. By precisely measuring the delivered air quality from the dryer, with a real PDP sensor, the microprocessor control system can ensure the towers only switch when the full capacity of the desiccant towers is fully consumed. It has been estimated that accurate purge control reduces average purge air consumption from 2% to less than 1.8%.

Dynamic heater control is standard on all BD<sup>+</sup> dryers. By accurately measuring the temperature of the regenerating air before and after entering the tower, the Elektronikon Graphic controller can regulate how many heating rods are being used at any time, and how long the heat cycle actually lasts. By keeping the regeneration temperature constant, at the right level, and stopping the heating cycle as soon as the water in the bed is fully removed, prevents energy being wasted. Dynamically controlling the heaters in this way can reduce direct power consumption by 20%

Stainless steel butterfly valves and check valves, resulting in reduced wear and zero risk of breakdown due to corrosion.

The BD<sup>+</sup> range includes seven different sensors which feed back to the control system. If any of the measured conditions fall beyond the expected limits of operation, a warning message is displayed on the control panel and a set of contacts are activated to enable remote monitoring. In this way it is possible to have an early warning of future problems, providing an opportunity solve an issue before it become an emergency breakdown, which is typically much more expensive.



Plus, skid frame base with everything mounted and ready to run. Forklift slots and lifting eyes to facilitate easy placement. Standard two-stage pre filters and single after filter. Purge control based on measured PDP.

## **Features & Benefits**

### **Energy Savings**

- Pressure drop below 0.2bar/ 2.9psi
  - Drives down energy cost
- Dew point sensing and control
  - Adapts the energy consumption to real load of the dryer
- Zero or minimal purge
  - Use minimal power requirement for desiccant regeneration process

### **Reliable operation**

- Proven durable Valves
  - Self-cleaning shuttle valve and purge nozzle
- Guaranteed dew point
  - Robust and accurate pressure dew point sensors.

### **Easy set-up and use**

- Ease of installation, small foot print
  - Single point installation
  - Modular design
- Low maintenance
  - All internal components are easily accessible
  - Excellent control and monitoring system
  - High grade desiccants and
  - Durable valve