

# Ingersoll Rand

Heatless and Heated Blower Desiccant Air Dryers  
160-14,900 m<sup>3</sup>/hr

*Innovation*

*Reliability*

*Efficiency*



Ingersoll Rand Industrial Technologies provides products, services and solutions that enhance our customers' energy efficiency, productivity and operations. Our diverse and innovative products range from complete compressed air systems, tools and pumps to material and fluid handling systems and environmentally friendly microturbines. We also enhance productivity through solutions created by Club Car®, the global leader in golf and utility vehicles for businesses and individuals.

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Product improvement is a continuing goal at Ingersoll Rand. Designs and specifications are subject to change without notice or obligation.

## Innovative Design is Now Within Reach

Ingersoll Rand heatless and heated blower desiccant dryers—are engineered for **easy access, maximum efficiency and long life**—are delivered in a state-of-the-art low profile package, making installation and operation a snap!



Our low profile design allows for upright shipping and transportation.

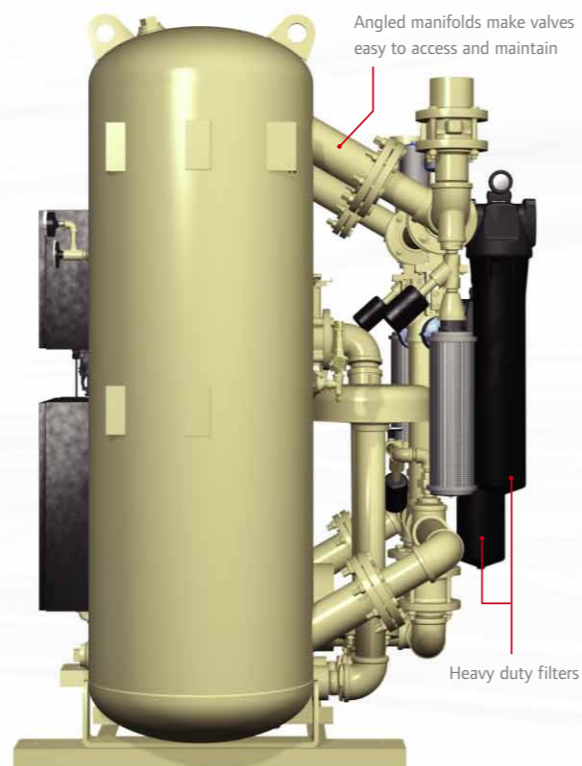
Low profile design

Traditional design

### Low Profile for Easy Maintenance

One look tells you that Ingersoll Rand desiccant dryers are like no others. Our low profile design provides easy access to key maintenance points at operator level for faster servicing and less downtime. The lower silhouette also allows upright shipment and facilitates simpler installation.

With manifolds angled toward the centre at operator level, the high performance valves are easily accessed for maintenance. For example, a typical diaphragm valve in a heatless dryer can be rebuilt in less than ten minutes, without removing the valve from the manifold.



Angled manifolds make valves easy to access and maintain

Heavy duty filters

### Innovative Controls and Design Lower Energy Costs

Our new dryers offer the state-of-the-art Energy Management System (EMS) that maximises energy efficiency while maintaining a constant dew point. By using a humidity sensor to continuously monitor the dew point, EMS minimises the compressed air used in regeneration, and optimises heater and blower operation.

Heated blower models are equipped with solid state soft starters that limit inrush current to ensure a smooth start and longer blower motor life.

The dryers are engineered for low pressure drop through valve selection, tower size and filter design.

On heated blower models, the heater and blower are controlled by the outlet regeneration temperature that shuts off to save electrical power once desiccant has been thoroughly regenerated.

Solid state relays provide precise heater control, reduced heating times and extended heater life.

### State-of-the-art Microprocessor Controller

Maintains dryer performance at optimum levels, constantly monitors functions and provides maintenance alerts and protection notification, minimising downtime.

Matches the dryer control to the load/unload state of the air compressor.

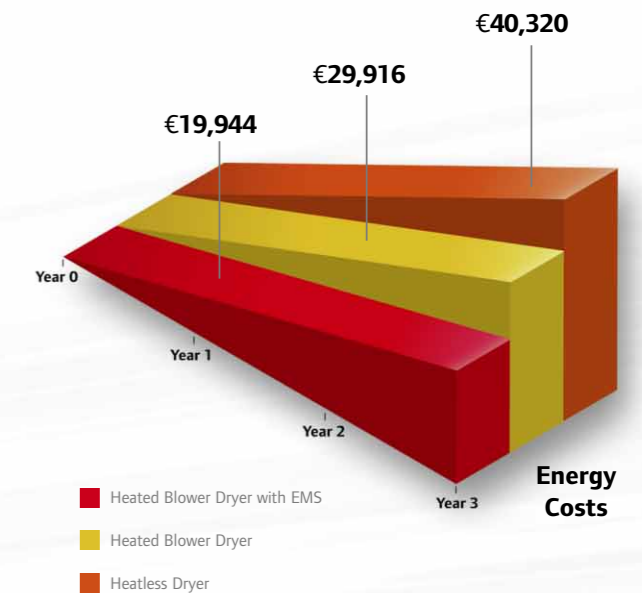
Modbus compatible.

LCD display for easy viewing.

### Heavy Duty Filters For Longevity

Standard heavy duty pre-filters and after-filters extend desiccant life and provide maximum particle protection of the downstream air.

A heated blower dryer with EMS can save you over €20,000 in just 3 years!



These calculations are approximations based on the following assumptions: Heatless model D3300IL, Heated model D3200IB, 55 m<sup>3</sup>/min, 1,800 CFM, 400 kW Compressor Motor, €0.07 per kW/hr 80 hours per week, and 40 weeks per year.

Progress is greener with Ingersoll Rand



Digital Microprocessor Controller

# Selecting the Right Desiccant Dryer

**It's all about choices.** Whether it's lower operating costs or a lower capital investment, Ingersoll Rand has a desiccant dryer that fits your needs.

## What Differentiates Ingersoll Rand Desiccant Dryers

Ingersoll Rand desiccant dryers are designed to virtually eliminate costly production interruptions due to moisture. All of our dryers use twin desiccant towers and strategically positioned valves for drying compressed air. Switching valves are normally open, while purge valves are normally closed to allow air flow through the dryer in case of power loss. Strategically-placed filters that remove oil and contaminants ensure only clean, dried air exits the dryer. Every dryer features an IP54 package, providing increased protection of electrical components, controls and displays. Both heatless and heated blower dryers have several standard features to ensure high quality operation as well as options to customise dryers to fit the needs of your air system.

Heatless dryers are lower in capital investment, but require a small portion of the dried compressed air to be diverted from the air system for desiccant regeneration.



Heated blower dryers have a higher initial investment, but with no or little diversion of compressed air from the system for regeneration, they offer significantly lower operating costs.



## How Desiccant Dryers Work

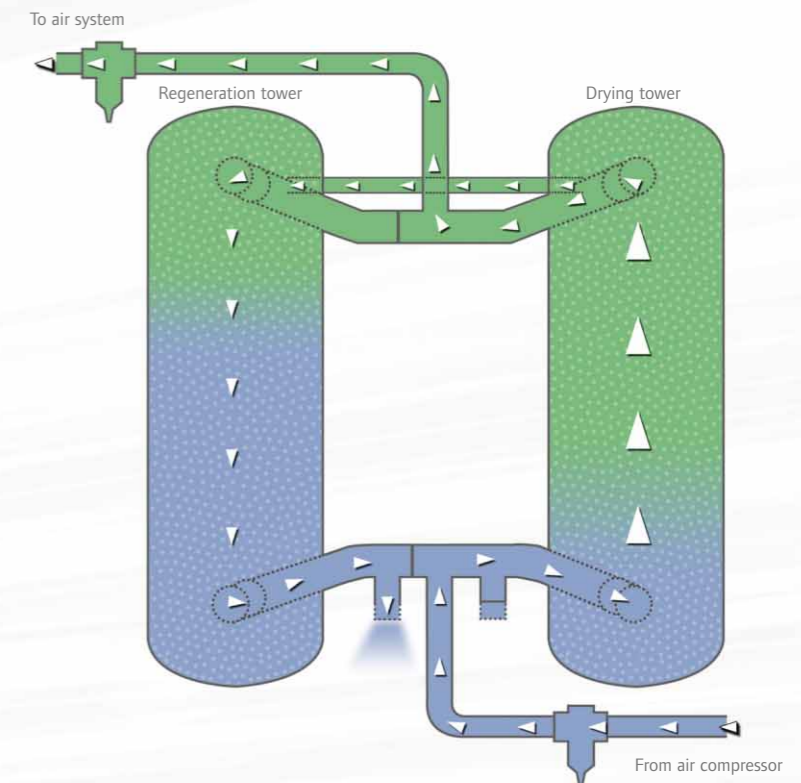
Highly adsorbent desiccant removes moisture from compressed air as it passes through the online dryer tower. The difference between our two technologies is how moisture is desorbed from the desiccant (regeneration) – see diagrams on page 5.

Features and Options	Heatless Desiccant Dryer	Heated Blower Desiccant Dryer
Energy Management System (EMS)	Option	Standard
Compressed Air Used for Regeneration	15%	0%
Controller	Digital Microprocessor	Digital Microprocessor
Environmental Protection	IP54 (Option for IP65)	IP54 (Option for IP65)
Available Flow Range	(2.8 m <sup>3</sup> /min - 55.9 m <sup>3</sup> /min)	(8.9 m <sup>3</sup> /min - 248.6 m <sup>3</sup> /min)
Constant Pressure Dew Point	-40°C (Option for -70°C)	-40°C
Included Filtration	Heavy Duty Pre-filters & After-filters	Heavy Duty Pre-filters & After-filters
Pressure Rating	10 bar g	10 bar g
Tower Insulation	Not Available	Option
Stainless Steel Control Lines	Option	Option
Dryer Bypass	Option	Option
Heatless Back-up Mode	Not Applicable	Standard

## Heatless Desiccant Dryers

**Drying:** (1) From the air compressor, the air enters the dryer through a pre-filter that removes contaminants to protect the desiccant. (2) The air is directed through the drying tower. (3) The desiccant removes moisture from the air through adsorption. (4) Dry air passes through an after-filter removing any contaminate particles before entering into the air system. (5) A small amount of the compressed air (15%) is redirected to the regenerating tower.

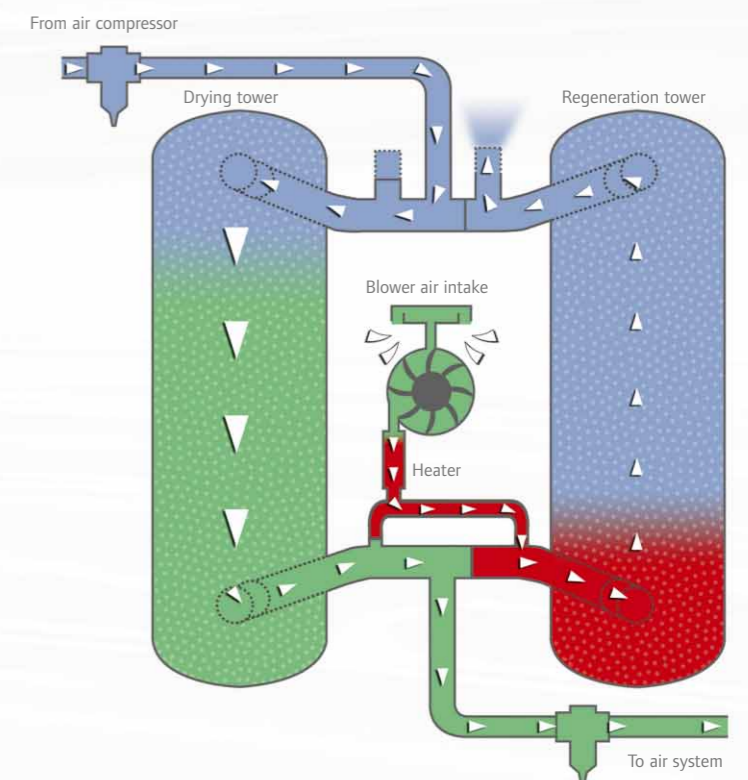
**Regeneration:** (1) Dry air flows in the reverse direction through the regenerating tower, removing trapped moisture from the desiccant. (2) Moist air exits the dryer through an exhaust port equipped with a silencing muffler to reduce noise.



## Heated Blower Desiccant Dryers

**Drying:** (1) From the air compressor, the air enters the dryer through a pre-filter that removes contaminants to protect the desiccant. (2) The air is directed through the drying tower. (3) The desiccant removes moisture from the air through adsorption. (4) The dry air passes through an after-filter removing any contaminate particles before entering into the air system.

**Regeneration:** (1) Ambient air enters through the blower intake. (2) Air temperature is elevated as air moves across the external heater. (3) The hot air is directed to the regenerating tower. (4) Hot air flows in the reverse direction through the regenerating tower, removing the adsorbed moisture from the desiccant. (5) Moist air exits the dryer through an exhaust port equipped with a silencing muffler to reduce noise.



# Desiccant Dryer Features and Benefits

## A Microprocessor Controller

Controls valve switching to correctly direct air flow and operation of blowers and heaters. Protects the dryer via continuously monitoring operating parameters.

## B Environmental Protection

IP54 rating provides protection against dust and moisture contamination (IP65 option for wash down applications).

## C Motor Protection/Soft Starter (heated blower only)

Reduces inrush current and stress on the mechanical system.

## D Power Supply

Dryers operate at 50 Hz (all models) or 60 Hz (optional). Pneumatic options also available on heatless models.

## E Centrifugal Blower (heated blower only)

High performance centrifugal blower enables the use of ambient air for regeneration, eliminating compressed air loss.

## F High Performance Heater (heated blower only)

Heats the air used for regeneration to increase the efficiency of moisture removal.

## G Desiccant

Reliable high strength non-acidic desiccant provides maximum performance and is easily stored and handled.

## H Silencing Muffler

Reduce the exhausted air noise level to ensure a worker-friendly environment.

## I High Performance Valves

High performance butterfly valves with self-energised sealing provide quick response and long life. The valves are centrally angled for easy access.

## J Heavy Duty Filters

**Pre-filter:** High efficiency removing oil aerosol content down to .01 mg/m<sup>3</sup> @ 21 °C protecting and extending the life of the desiccant.

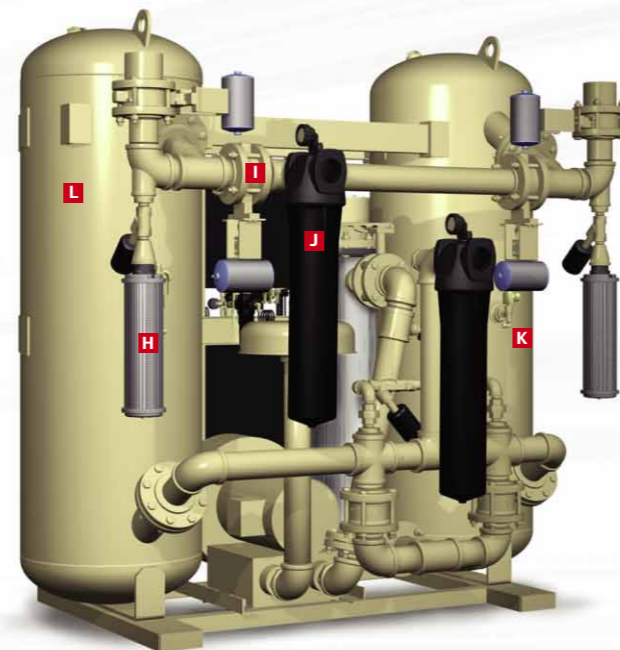
**After-filter:** Heavy duty removing particles down to 1 micron insuring high air quality downstream to the customer.

## K Safety Relief Valve

Protects the dryer from over pressurisation incase of fire.

## L Desiccant Towers

The towers are rated for continuous 10 bar g operation. The digital controller turns the towers off and on for regeneration regulation.



## M Humidity Sensor

The sensor is part of the EMS package that allows continuous monitoring of the dew point.

## N Cool Sweep Mode (heated blower only)

Reduces temperature and humidity spikes that may occur during switching.

## So, how do you select the right desiccant dryer technology?

That depends on the variables, such as system demand, compressed air capacity, air quality requirements and applicable life cycle costs that are unique to your compressed air system.

### Heatless Desiccant Dryer Specifications

Model	Flow -40°C PDP		Flow -70°C PDP		In/Out Connection	Dimensions			Weight kg
	cfm	m <sup>3</sup> /hr	cfm	m <sup>3</sup> /hr		Width mm	Depth mm	Height mm	
D160IL	94	160	75	128	1.0 BSP	1,029	762	1,600	241
D200IL	118	200	94	160	1.0 BSP	1,029	762	1,600	256
D275IL	162	275	130	220	1.5 BSP	1,130	813	1,676	321
D350IL	206	350	165	280	1.5 BSP	1,130	813	1,676	332
D500IL	294	500	236	400	2.0 BSP	1,232	813	1,702	419
D700IL	412	700	330	560	2.0 BSP	1,334	813	1,727	506
D900IL	530	900	424	720	2.0 BSP	1,435	864	2,083	710
D1000IL	589	1,000	471	800	2.0 BSP	1,435	864	2,083	755
D1600IL	942	1,600	754	1,280	3.0 BSP	1,626	1,067	2,235	1,016
D2000IL	1,178	2,000	942	1,600	3.0 BSP	1,626	1,067	2,235	1,100
D2500IL	1,472	2,500	1,178	2,000	DN100	1,994	1,397	2,057	1,350
D3300IL	1,943	3,300	1,554	2,640	DN125	2,134	1,549	2,388	1,773

### Heated Blower Desiccant Dryer Specifications

Model	Flow -40°C PDP		Heater kW	Blower kW	In/Out Connection	Dimensions			Weight kg
	cfm	m <sup>3</sup> /hr				Width mm	Depth mm	Height mm	
D500IB	294	500	6	3.0	1.5 BSP	1,334	813	1,727	670
D900IB	530	900	12	4.0	2.0 BSP	1,435	864	2,023	958
D1400IB	824	1,400	18	6.0	3.0 BSP	1,626	1,194	2,184	1,451
D1800IB	1,060	1,800	24	9.0	3.0 BSP	1,994	1,219	2,032	1,710
D2200IB	1,295	2,220	24	9.0	3.0 BSP	1,994	1,219	2,032	1,857
D2600IB	1,531	2,600	30	15.0	3.0 BSP	2,134	1,397	2,337	2,504
D3200IB	1,884	3,200	36	15.0	DN125	2,134	1,524	2,337	2,775
D3900IB	2,296	3,900	45	15.0	DN125	2,134	1,524	2,337	3,138
D5300IB	3,120	5,300	60	18.5	DN150	2,438	1,676	2,489	4,417
D7000IB	4,121	7,000	80	22.0	DN150	2,591	1,930	2,286	5,524
D9300IB	5,475	9,300	100	30.0	DN150	3,505	2,210	2,464	6,072
D10600IB	6,241	10,600	125	37.0	DN150	3,810	2,337	2,616	7,264
D14900IB	8,772	14,900	175	45.0	DN200	4,267	2,489	2,667	9,035

Referenced to 20°C and 1 bar a, inlet 35°C and 7 bar g. Maximum working pressure is 10 bar g. Desiccant is factory-installed on all models except D5300IB to D14900IB. Dimensions and weights are approximate.

## Ingersoll Rand Ultra Care

### Helping you maintain a healthy business

UltraCare five year maintenance and performance agreements have been designed to be easy to understand with absolutely no surprises.

Find out more about protecting the heart of your business contact your local distributor or Ingersoll Rand Sales office.

