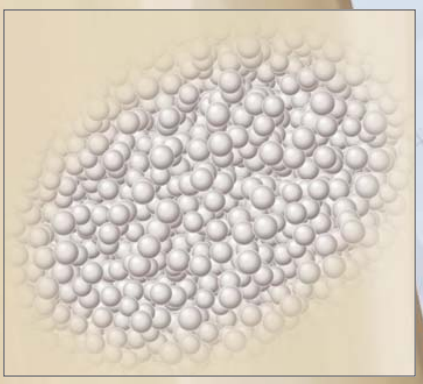
Desiccant Air Dryers

Heatless, Heated and Heated Blower

Ingersoll Rand
Industrial Technologies

Desiccant Dryers...



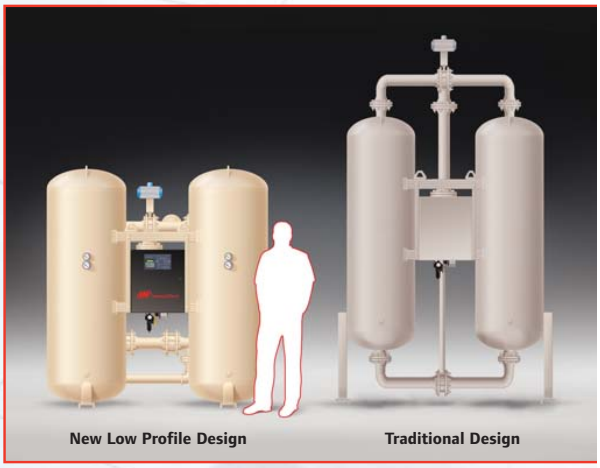
Desiccant

Our reliable high strength, non-acidic desiccant provides maximum performance and is easily stored and handled. Environmentally friendly, it eliminates worries associated with other types of dryers, such as refrigerant leaks, spills and disposal.

Designed for Reliability

When we designed the Ingersoll Rand heatless, heated and heated blower desiccant dryers we set our sights on creating the most reliable desiccant dryers you can purchase and operate. And our success was extraordinary. We set a new standard, and, in fact, re-wrote the book.

One look tells you that these dryers are like no others…extremely low silhouette… manifolds and valves within an arm's reach of the operator…readily accessible fill and drain ports…just a few of the differences apparent on the outside. Both externally and internally, each model combines innovative engineering and technically advanced, highly durable components, to provide easy installation, operation, maintenance, and, simply, the most reliable desiccant dryers available.



Low Profile Design

Our easy access design places key maintenance points at operator level for faster servicing and less downtime. The lower silhouette also allows upright shipment and facilitates installation.

Easy to Maintain High Performance Valves

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

State of the Art Controller

The advanced microprocessor-controller maintains dryer performance at optimum levels. It constantly monitors dryer functions and provides alert when maintenance is required so that downtime is held to a minimum.

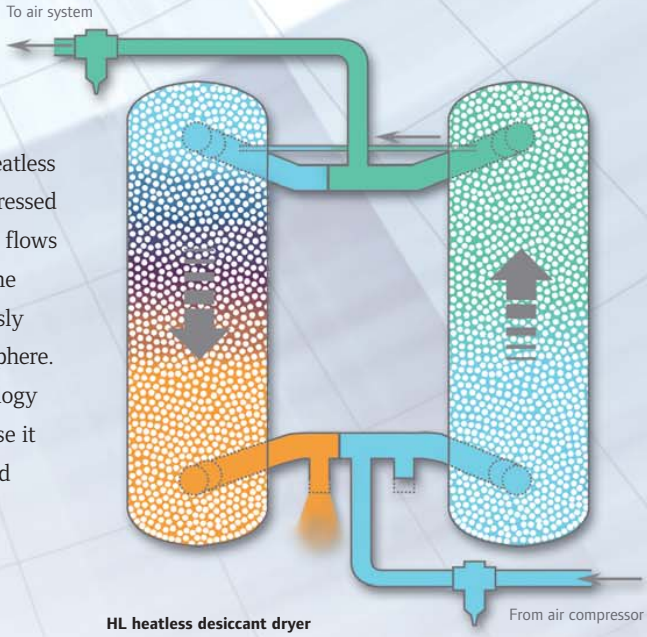
Selecting An Ingersoll Rand Desiccant Dryer

All three technologies – heatless, heated and heated blower – use twin desiccant towers and strategically positioned valves for the process of drying compressed air. Each Ingersoll Rand model incorporates high-strength desiccant and durable, easily maintained valves for unsurpassed reliability, performance and customer value.

Whether using a heatless, heated or heated blower dryer, the compressed air produced is thoroughly dried as it is directed through the on-line desiccant-filled tower of the dryer. As the desiccant in this tower adsorbs moisture from the air, the desiccant in the dryer's off-line tower is purged of moisture and readied for use. The basic difference in the three technologies is the manner in which moisture is desorbed from the desiccant, also known as regeneration.

Heatless Dryers

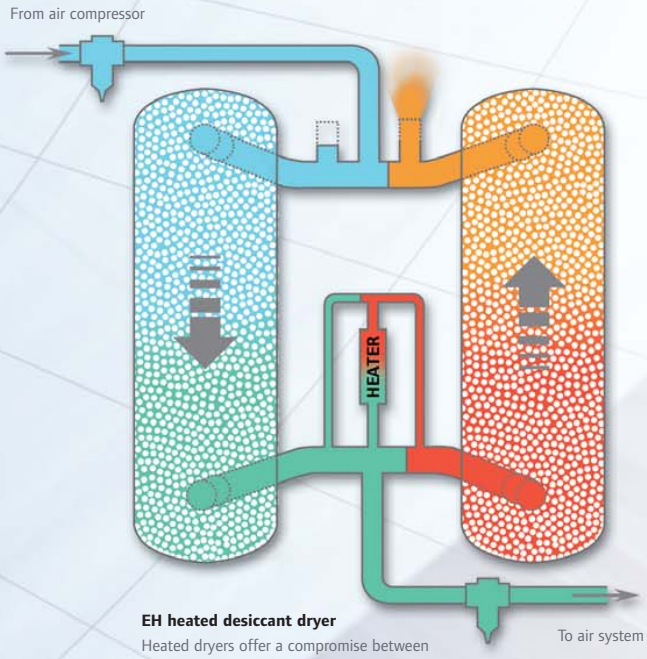
Simplest of the three technologies, the heatless dryer diverts a portion of the dried compressed air to the off-line tower. This dry air then flows through and regenerates the desiccant. The purge air, now moisture laden, is harmlessly exhausted through a muffler to the atmosphere. Lowest in capital investment, this technology may be more expensive to operate because it requires a portion of the dried compressed air to be diverted from the air system for desiccant regeneration.



HL heatless desiccant dryer
Heatless dryers offer the lowest capital investment.

Heated

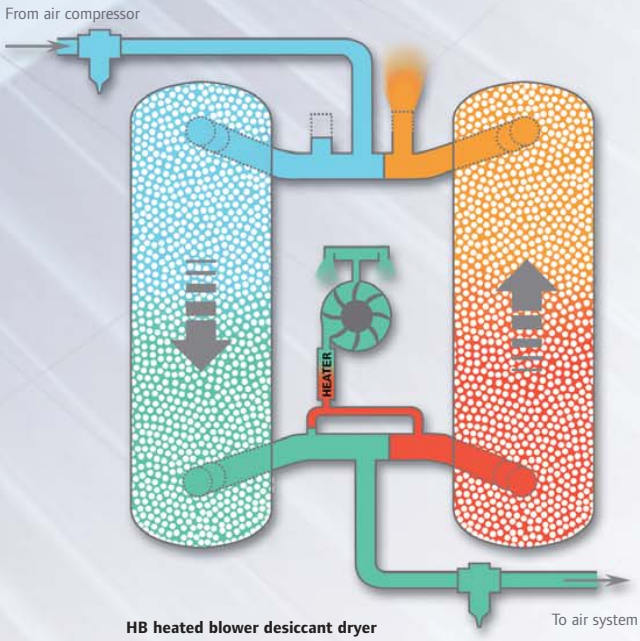
These dryers operate similarly to heatless dryers, with a big exception. Dried air diverted from the air system is first passed through a high efficiency external heater before entering the off-line tank to regenerate the desiccant. Since this heated air can hold considerably more moisture than unheated air, only about half the amount of dried compressed air is needed for regeneration. Although the addition of the heater and associated components raises the initial capital investment for a heated dryer, less diverted compressed air means lower operating costs.



EH heated desiccant dryer
Heated dryers offer a compromise between operating efficiency and capital investment.

Heated Blower

This type of dryer does not divert dried compressed air from the air system to remove moisture from the desiccant in the off-line tank. Rather, it employs its own high performance centrifugal blower to direct ambient air through a heater and then through the off-line tank. There the stream of heated air regenerates the desiccant. Heated blower technology requires the highest initial capital investment, but with no or little diversion of compressed air from the system for regeneration, it offers significantly lower operating costs than the other two desiccant dryer technologies.



HB heated blower desiccant dryer
Heated blower dryers offer the lowest operating cost.

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.

Ingersoll Rand HL Heatless Desiccant Dryer

HL heatless desiccant dryer

Available in flows ranging from 120 SCFM (3.4 nm^3/min.) to 1800 SCFM (51.0 nm^3/min.), Ingersoll Rand HL heatless desiccant dryers are designed to ensure a constant –40°F (-40°C) or optionally –100°F (-70°C) pressure dew point, virtually eliminating costly interruption of production due to moisture. Clean air is further assured by use of strategically placed filters: a pre-filter to remove oil andcontaminants in air entering the dryer, and an after-filter to make sure that only clean dried air exits the dryer. As an additional design precaution, the dryer's switching valves are normally open and purge valves normally closed, to allow air flow through the dryer in case of power loss.

A standard feature of every Ingersoll Rand heatless desiccant dryer is its NEMA 4 package, providing increased protection of electrical components, as well as advanced digital dryer controls and displays. It includes a NEMA 4 electrical enclosure to protect against water and condensation, a UL/ULC panel, and an advanced digital electronic controller. In addition, every HL comes standard with a compressor interlock feature. This substantially prolongs compressor life and improves reliability.

While reliability has been a key focus of its design, the Ingersoll Rand HL heatless desiccant dryer is also a leader in its class for energy efficiency and the health and safety of operating personnel and the environment.

Ingersoll Rand EH Heated and HB Heated Blower Desiccant Dryers

EH heated desiccant dryer

Ingersoll Rand EH heated desiccant dryers incorporate an external heater to heat dry purge air. This allows EH dryers to divert significantly less dry air from the air system for regenerating desiccant than is required by heatless dryers.

Available in sizes ranging from 400 SCFM (11.3 nm^3/min.) to 2100 SCFM (59.5 nm^3/min.), Ingersoll Rand EH dryers deliver –40°F (-40°C) pressure dew point air for critical applications.

Ingersoll Rand HB heated blower desiccant dryers are equipped with dedicated durable centrifugal blowers to provide purge air for regeneration, eliminating the need to divert dry compressed air from the air system. Instead, the blower directs ambient air through an external heater and then through the off-line tower to regenerate the desiccant. This means more compressed air is available for critical downstream applications. Available in sizes from 1000 SCFM (28.3 nm^3/min.) to 8000 SCFM (226.5 nm^3/min.), Ingersoll Rand HB dryers deliver –40°F (-40°C) pressure dew point air.

The EH and HB dryers use high performance ball or butterfly valves for switching and purge operations. These non-lubricated valves are designed specifically for high temperature applications and feature stainless steel internals, filled PTFE seats, and include double-acting pneumatic actuators.

Both EH heated and HB heated blower models provide the reliability and safety features of heatless dryers, with increased energy efficiency. These features include heatless back-up mode in the event of heater or blower malfunction, and an innovative solid-state relay heater control to extend valve and heater life. NEMA 4 electrical enclosures are standard and include an advanced multi-function digital controller.

HB heated blower desiccant dryer

Benefits Of Desiccant Dryers

High efficiency heater reduces air needed to regenerate desiccant.

All of our desiccant dryers are designed with energy efficiency, reliability, productivity and safety in mind:

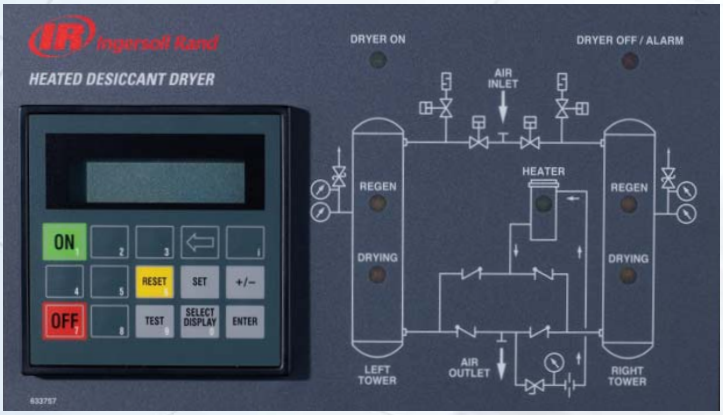
- Engineered for low pressure drop through valve selection, tower size and filter design
- Optional Energy Management System (EMS) reduces purge consumption while maintaining a constant dew point, monitors the dew point and extends the dryer cycle, greatly reducing energy costs
- Large sound attenuating purge mufflers minimize noise and include built-in relief valves to enhance safety
- Low profile places valves at operator's level and provides ready access to fill and drain ports, increasing operator safety, and ease of maintenance
- Pre-filter and after-filter protect desiccant and downstream air from oil contamination and particulates to help improve air quality, increasing productivity
- Easy to replace stainless steel desiccant screen keeps downtime to a minimum
- Heater and/or blower controlled by outlet regeneration temperature that shuts off to save electrical power once desiccant has been thoroughly regenerated (available with EMS on heated dryers)

After-filters help improve air quality, increasing productivity.

Low profile design, with angled manifolds, makes maintenance a snap!

Stainless steel desiccant screens prevent contamination of the downstream air system and are easily removed for cleaning.

Ingersoll Rand Desiccant Dryer Controls



All Ingersoll Rand desiccant dryers, models HL, EH and HB, are supplied with a digital electronic multi-function controller as standard equipment. This is the dryer's command center.

The advanced digital controller is programmed to execute all valve switching functions, as well as to completely monitor dryer operations. Further, it is MODBUS compatible, permitting connection to MODBUS-capable networks, and it makes possible some remarkable enhanced dryer operating functions. The controller's full-featured panel includes:

- Backlit LCD Display for viewing critical dryer parameters in all lighting conditions
- Integrated keypad, providing user with access to all internal functions and selectable displays
- Schematic depiction of dryer, offering visual indication of current operating status
- Remote alarm contact
- Failure code storage
- Multiple displays, from "Dryer On/Off Control" to "Regeneration Sequence Status"

Global Reach...

Unsurpassed Local Customer Support

Ingersoll Rand provides its products and services directly or through distributors to customers in close to 200 countries. We focus on providing innovation to increase your productivity and profitability. Expect more with Ingersoll Rand. We are your total solutions provider.

Ready to Use Desiccant

Each dryer is shipped with a desiccant testing kit. This allows the user to easily confirm the condition of the desiccant providing maximum desiccant life and dew point performance.

Replacement Parts Made Easy

Ensure that you have all the right parts on hand with our simplified ordering. Ingersoll Rand's reputation for dryer parts availability is second to none.

Long Term Value

There is more to value than simply price. The commitment of many thousands of dedicated compressed air specialists, either directly employed or members of a select market channel partnership, mean that friendly Ingersoll Rand support is close at hand. In addition to parts availability, qualified on-site service is available globally.

Preventative Maintenance and Warranty

Factory training and certified Ingersoll Rand technicians can protect your investment by providing high quality preventative maintenance. In addition we can offer a comprehensive 7 year parts and labor warranty.

The best overall value is getting the most out of your investment. Ingersoll Rand customer support teams will help you protect your investment.

Desiccant Dryer Specifications

Model	Capacity		Heater	Blower	In/Out	Dimensions in./(mm)			Weight
	SCFM	nm^3/min.	kW	hp/(kW)	Connection in.	Width	Depth	Height	lbs./(kg)
HL120	120	3.4	–	–	1.0 NPT	40.5/(1029)	30/(762)	63/(1600)	563/(256)
HL160	160	4.5	–	–	1.5 NPT	44.5/(1130)	33/(838)	66/(1676)	707/(321)
HL200	200	5.7	–	–	1.5 NPT	44.5/(1130)	33/(838)	66/(1676)	731/(332)
HL250	250	7.1	–	–	1.5 NPT	48.5/(1232)	33/(838)	67/(1702)	869/(395)
HL300	300	8.5	–	–	2.0 NPT	48.5/(1232)	34/(864)	67/(1702)	924/(419)
HL400	400	11.3	–	–	2.0 NPT	52.5/(1334)	36/(914)	68/(1727)	1115/(506)
HL500	500	14.2	–	–	2.0 NPT	56.5/(1435)	40/(1016)	82/(2083)	1564/(710)
HL600	600	17.0	–	–	2.0 NPT	56.5/(1435)	40/(1016)	82/(2083)	1664/(755)
HL800	800	22.7	–	–	3.0 NPT	64/(1626)	52/(1321)	88/(2235)	2017/(916)
HL1000	1000	28.3	–	–	3.0 NPT	64/(1626)	52/(1321)	88/(2235)	2237/(1016)
HL1200	1200	34.0	–	–	3.0 NPT	64/(1626)	52/(1321)	88/(2235)	2424/(1100)
HL1500	1500	42.5	–	–	4.0 FLG	78.5/(1994)	55/(1397)	81/(2057)	2974/(1350)
HL1800	1800	51.0	–	–	4.0 FLG	84/(2134)	61/(1549)	94/(2388)	3905/(1773)
EH400	400	11.3	4.5	–	2.0 NPT	56.5/(1435)	38/(965)	82/(2083)	1539/(699)
EH500	500	14.2	4.5	–	2.0 NPT	56.5/(1435)	40/(1016)	82/(2083)	1707/(775)
EH600	600	17.0	6	–	3.0 NPT	64/(1626)	52/(1321)	86/(2184)	2369/(1076)
EH800	800	22.7	7.5	–	3.0 NPT	64/(1626)	52/(1321)	86/(2184)	2681/(1217)
EH1000	1000	28.3	9	–	3.0 NPT	78.5/(1994)	57/(1448)	80/(2032)	3043/(1382)
EH1200	1200	34.0	12	–	3.0 NPT	78.5/(1994)	57/(1448)	80/(2032)	3285/(1491)
EH1500	1500	42.5	15	–	3.0 NPT	84/(2134)	68/(1727)	92/(2337)	4480/(2034)
EH1800	1800	51.0	18	–	4.0 FLG	84/(2134)	67/(1702)	92/(2337)	4956/(2250)
EH2100	2100	59.5	18	–	4.0 FLG	84/(2134)	64/(1626)	92/(2337)	5350/(2429)
HB1000	1000	28.3	24	7.5/(5.6)	3.0 NPT	78.5/(1994)	57/(1448)	80/(2032)	3767/(1710)
HB1200	1200	34.0	24	7.5/(5.6)	3.0 NPT	78.5/(1994)	57/(1448)	80/(2032)	4091/(1857)
HB1500	1500	42.5	30	15/(11.2)	3.0 NPT	98/(2489)	65/(1651)	92/(2337)	5515/(2504)
HB1800	1800	51.0	36	15/(11.2)	4.0 FLG	98/(2489)	65/(1651)	92/(2337)	6113/(2775)
HB2100	2100	59.5	45	15/(11.2)	4.0 FLG	98/(2489)	65/(1651)	92/(2337)	6911/(3138)
HB3000	3000	84.9	60	20/(14.9)	6.0 FLG	120/(3048)	77/(1956)	100/(2540)	9730/(4417)
HB4000	4000	113.3	80	25/(18.7)	6.0 FLG	126/(3200)	82/(2083)	92/(2337)	12167/(5524)
HB5000	5000	141.6	100	30/(22.4)	6.0 FLG	138/(3505)	87/(2210)	97/(2464)	13375/(6072)
HB6000	6000	169.9	125	30/(22.4)	6.0 FLG	150/(3810)	92/(2337)	103/(2616)	16000/(7264)
HB8000	8000	226.5	175	40/(29.8)	8.0 FLG	168/(4267)	98/(2489)	105/(2667)	19900/(9035)

Performance data per CAGI Standard 200 ADF 200
Maximum working pressure is 150 psig (10.3 barg)
Desiccant is factory installed on all models except HB3000 to HB8000
Dimensions and weights are approximate