KAESER COMPRESSORS®

Built for a lifetime.

Heated Desiccant Dryers

KED and KBD Series

300 to 4300 cfm

kaeser.com

Desiccant Air Dryers

The right dryer for you

Most compressed air applications can achieve the required air quality by using a refrigerated dryer in combination with proper filtration. However, in cases where the product, process or equipment is highly sensitive to moisture, or where compressed air is exposed to freezing temperatures, desiccant dryers may be called for. KAESER offers both heated exhaust purge and blower purge desiccant dryers specifically designed to achieve -40°F dew points with minimal purge losses for high flow applications.

Innovation you can trust

With a cutting edge research and development team committed to building industry-leading products, KAESER continues to deliver better solutions to meet our customers' compressed air needs. KAESER's expertise and world-wide reputation for superior reliability and efficiency offer great performance and peace of mind.

Quality in every detail

Desiccant dryer performance and reliability are driven by component quality. KAESER's valves and actuators are designed for consistent dew point performance and low pressure drop. Additionally, desiccant bed symmetry is selected to ensure uniform flow distribution and maximize contact time, while the spherical activated alumina desiccant allows for long service life and minimizes dusting. It also has a high surface-to-volume ratio and great affinity for water vapor for superior adsorption.

Savings with proper application

Proper planning with the help of KAESER's system design engineers can save you money on capital and energy costs. Desiccant dryers have a higher purchase price and overall operating costs than refrigerated dryers and should be applied to the portions of a system requiring dew points below that of a refrigerated dryer. KAESER can design a system that will efficiently deliver air quality suitable for your application.

Desiccant dryer basic operation

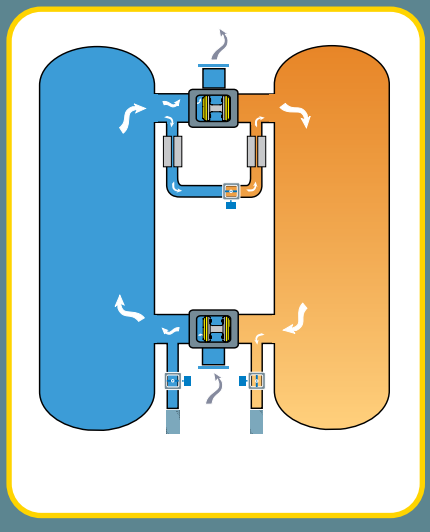
KAESER desiccant dryers use the principles of adsorption and desorption and alternately cycle the compressed air through twin desiccant towers. As the vapor-laden air flows through one tower, the moisture is adsorbed onto the desiccant. Meanwhile, in the other tower, "purge air" flows through, evaporates the water on the desiccant, and carries it out of the tower as vapor.

The benefits of counterflow regeneration

KAESER's upflow drying and downflow regeneration extends desiccant service life and ensures consistent outlet dew points.

Upflow drying also controls the accumulation of liquid water in the desiccant beds. Regardless of design, liquid water will accumulate in the piping between the prefilters and the dryer inlet. Eventually, the air stream will carry a "slug" of water into the desiccant bed.

Counterflow design ensures that the driest portion of the desiccant bed is nearest the dryer outlet at switchover, and allows purge air to be evenly distributed throughout the desiccant bed, providing more effective regeneration.




KAESER
KAESER
COMPRESSORS
1-800-279-3047
CAUTION

Heated desiccant dryers (KED & KBD)

KAESER Heated Purge Dryers (KED) are heated regenerative dryers that use only 7% of compressed air for purging. They heat the dry purge air to increase its capacity to hold moisture and to regenerate. KED's provide lower operating costs by reducing the amount of expensive purge air used to regenerate. Standard design outlet pressure dew point at rated conditions: -4°F (-40°F with the optional purge booster).

Sizes: 300 – 3200 scfm

KAESER Blower Purge Dryers (KBD) use little or no purge air by introducing atmospheric air and heating it. The heated air has a higher capacity for absorbing water and provides effective regeneration. KBD's provide the greatest energy savings by eliminating the need to use costly compressed air for purging. Standard design outlet pressure dew point at rated conditions: -40°F.

Sizes: 500 – 4300 scfm standard. Up to 10,000 scfm available, consult factory.

Standard pressure relief valve

- Meets ASME Section VIII

Standard stainless steel support screens and air diffusers

- Located internally at top and bottom of each vessel
- Easy to remove and clean
- Efficiently filters out large contaminants and protects outlet shuttle valve
- Effectively prevents channeling

Standard moisture indicator

- Samples outlet air
- Color change indicates elevated outlet dew point

(not shown)

Standard purge flow valve (KED only)

- Offers convenient purge rate adjustment

Controls and instrumentation

- Tower pressure gauges
- Tower status lights
- Switching failure alarm
- Purge flow indicator (KED only)
- NEMA 4 electrical enclosure
- RS232 comm port

ASME stamped pressure vessels

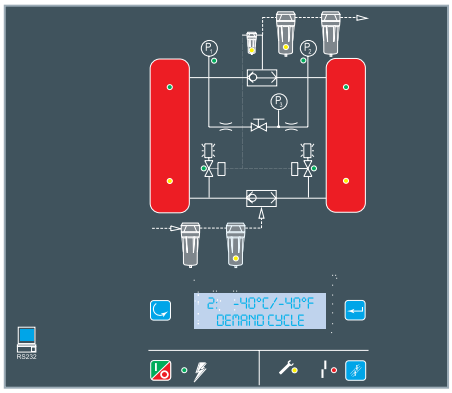
- Fabricated per Section VIII of the boiler and pressure vessel code

Long life non-lubricated inlet and purge control valves standard

KED Dryer

KBD Dryer

Dryer Controls



Standard control

The standard controller for heated dryers operates the dryer on a fixed eight-hour cycle. A tower is on-line (drying compressed air) for four hours and then taken off-line to be regenerated during the remaining four hours. Heater operation is terminated when temperature sensors detect that desiccant bed heating is complete. The standard controller's process flow schematic and LED's make status checks of control sequence, valves, and filters simple and allow the user to program reminders for routine maintenance intervals. A diagnostic mode steps through the dryer's operational sequence to verify proper function and performance. The display clearly notifies the user if a malfunction occurs. Dryer operating status is displayed on a two-line vacuum fluorescent text display with choice of three languages: English, Spanish, or French.

Energy management controls

The energy management control for heated dryers monitors the moisture level in the desiccant bed and keeps a tower on-line drying compressed air until the desiccant's adsorptive capacity has been fully utilized. Regeneration is then initiated and completed in the following four hours. The regenerated tower repressurizes then sits idle until the controller detects full use of the adsorptive capacity of the drying tower and brings the regenerated tower back on-line. For operation at less than full capacity, the unit will match power requirement to demand by reducing the frequency of regeneration. Heater operation is terminated when temperature sensors detect that desiccant bed heating is complete. The standard controller's process flow schematic and LED's make status checks of control sequence, valves and filters simple, and allow the user to program reminders for routine maintenance intervals. A diagnostic mode steps through the dryer's operational sequence to verify proper function and performance. The display clearly notifies the user if a malfunction occurs. Dryer operating status is displayed on a two-line vacuum fluorescent text display with choice of three languages: English, Spanish, or French.

Optional controls

Energy Saver

The Energy Saver Option integrates moisture and temperature sensors to monitor the humidity level near the outlet end of the desiccant beds. During periods of reduced flow, the Energy Saver extends the drying cycle thereby reducing the number of regeneration cycles, saving energy. For KED models, the Energy Saver Option also includes the Purge Booster.

Energy Management Controller

The Energy Management Option includes the Energy Saver Option above and a digital dew point monitor. This feature displays the dryer's outlet dew point and allows the user to prevent tower changeover until a user specified outlet dew point has been achieved, or lets the Energy Management determine the length of the drying period. For KED models, the Energy Management Option also includes the Purge Booster.

Purge booster (KED only)

Without increasing the use of compressed air, purge flow can be increased from 7% to 12% with the optional Purge Booster. This

device reduces compressed air consumption from 7% to 6% and draws in an equal volume of ambient air mixing it with the purge air. The increased purge airflow produces lower outlet dew points and minimizes dew point spikes.

Options

Insulation for heated desiccant air dryers

Insulation with protective jacket for heater and heater discharge piping is standard; however, insulation for the desiccant vessels is optional. Vessel insulation offers protection for personnel and reduces operating costs. Vessel insulation is flexible open-cell melamine foam having a permanently bonded PVC film laminated polyester fabric jacket. This insulating system absorbs impact and returns to its original shape, thus maintaining its insulating qualities.

Filtration

All desiccant dryers require proper filtration. Coalescing pre-filters prevent contamination of desiccant beds by hydrophobic aerosols. Particulate after-filters collect traces of desiccant dust that may exit the dryer. Maintaining these filters extends service intervals and provides excellent air quality. All KAESER desiccant dryers offer optional filter packages with or without block and bypass valves.

Inlet flow

Inlet Flow capacities shown in the Specifications Table have been established at an inlet pressure of 100 psig (7 bar) and a saturated inlet temperature of 100°F (38°C). To determine maximum inlet flow at other conditions, multiply the inlet flow from the Specifications Table by the multiplier from Table 6 that corresponds to your operating conditions.

KED/KBD inlet conditions correction factors (Table 6)

Inlet Pressure (psig)	Inlet Temperature °F (°C)						
	60 (15.6)	70 (21.1)	80 (26.7)	90 (32.2)	100 (37.8)	110 (43.3)	120 (48.9)
60	1.03	1.01	0.99	0.80	0.58	0.43	0.32
70	1.10	1.08	1.07	0.94	0.68	0.50	0.37
80	1.17	1.15	1.14	1.08	0.79	0.58	0.43
90	1.24	1.22	1.20	1.18	0.89	0.66	0.49
100	1.30	1.28	1.26	1.24	1.00	0.74	0.55
110	1.36	1.34	1.32	1.30	1.11	0.82	0.61
115	1.39	1.37	1.35	1.33	1.16	0.86	0.64
120	1.42	1.40	1.38	1.36	1.22	0.90	0.67
125	1.45	1.43	1.41	1.39	1.27	0.94	0.70
130	1.48	1.46	1.44	1.42	1.33	0.99	0.74
140	1.53	1.51	1.49	1.47	1.44	1.07	0.80
150	1.58	1.56	1.54	1.52	1.50	1.16	0.87

Important:

For inlet temperatures above 100°F, we ***strongly*** recommend installing a trim cooler. Please note that for every 20°F inlet temperature increase, moisture load/dryer size approximately doubles.

KAESER heated purge dryers (KED) (Table 4)

KED Model Number	Inlet flow @ 100 psig 100°F (scfm)	Purge Flow Rate (scfm)	Air Available Average (scfm)	Heater		Dimensions W x D x H (in.)	Approx. Weight* (lb.)	In/Out Connection* (in.)	Pre-filter (KB Series) (scfm)	High-Temp After-filter (HTA Series) (scfm)	Total Replacement Desiccant*** (lb.)
				(nom kW)	(Avg kW)						
300	300	21	279	4.5	1.5	48 x 46 x 98	1360	1.5 NPT	390	400	420
400	400	28	372	6	2.0	53 x 52 x 104	1776		500	400	708
500	500	35	465	7	2.5	53 x 52 x 105	1776	2 NPT	500	600	
600	600	42	558	8	3.0	53 x 53 x 108	1978		625	600	906
750	750	53	698	10	3.8	60 x 59 x 114	2323	3 FLG	1250	1200	1180
900	900	63	837	12	4.5	60 x 59 x 114	2323				
1050	1050	74	977	14	5.3	64 x 62 x113	2816				1420
1300	1300	91	1209	17	6.5	66 x 63 x 118	3326		1875	1800	1848
1500	1500	105	1395	19	7.5	80 x 66 x 116	5094				2518
1800	1800	126	1674	23	9.0	80 x 66 x 116	5094				
2200	2200	154	2046	28	11.0	85 x 73 x 128	7753	4 FLG	2500	2400	3734
2600	2600	182	2418	33	13.0	85 x 73 x 128	7753		3125	3000	
3200	3200	224	2976	40	16.0	85 x 82 x125	8963		3750	4800	4754

KAESER blower purge dryers (KBD) (Table 5)

KBD Model Number	Inlet flow @ 100 psig 100°F (scfm)	Blower Flow Rate (scfm)	Blower		Heater		Dimensions W x D x H (in.)	Approx. Weight* (lb.)	In/Out * Connection (in.)	Pre-filter (KB Series) (scfm)	High-Temp After-filter (HTA Series) (scfm)	Total Replacement Desiccant (lb.)***
			(nom hp)	(Avg kW)	(nom kW)	(Avg kW)						
500	500	94	2.5	1.6	10	8.5	53 x 59 x 105	1861	2 NPT	500	600	708
600	600	113	4	2.5	12	10.2	54 x 60 x 108	2084		625		906
750	750	140		2.2	14	12.6	60 x 68 x 114	2429	3 FLG	1250	1200	1180
900	900	158		2.0	17	14.2	60 x 68 x 114	2445				
1050	1050	183	5	2.8	19	16.5	64 x 62 x 113	2966				1420
1300	1300	227	7.5	5.3	23	20.5	66 x 73 x 118	3576		1875	1800	1848
1500	1500	281	10	7.5	28	25.4	80 x 79 x 116	5359				2518
1800	1800	317		7.0	33	28.6	80 x 79 x 116	5359	4 FLG			
2200	2200	403		5.6	40	36.4	85 x 86 x 128	8018		2500	2400	3734
2600	2600	449	15	10.3	45	40.6	85 x 89 x 128	8123		3125	3000	
3200	3200	552	5	2.8	53	49.8	85 x 107 x 128	9243	4/6 FLG**	3750	4800	4754
3600	3600	614	7.5	4.0	58	55.5	85 x 116 x 134	12,095	6 FLG			5222
4300	4300	732		4.4	70	66.1	109 x 123 x 130	13,245		5000		7088

Actual kW is less and proportional to the average water load presented to the dryer.

*Dryer only. See drawing for inlet/outlet connection size for dryer with filter package. Weight is dryer only. Dryer shipping weight appears on drawing. For shipping with a filter package, consult factory. // **KBD 3200 has a 4" FLG inlet and 6" FLG outlet connection. // ***See manual for replacement desiccant details

The world is our home

As one of the world's largest compressed air systems providers and compressor manufacturers, KAESER COMPRESSORS is represented throughout the world by a comprehensive network of branches, subsidiary companies and factory trained partners.

With innovative products and services, KAESER COMPRESSORS' experienced consultants and engineers help customers to enhance their competitive edge by working in close partnership to develop progressive system concepts that continuously push the boundaries of performance and compressed air efficiency. Every KAESER customer benefits from the decades of knowledge and experience gained from hundreds of thousands of installations worldwide and over ten thousand formal compressed air system audits.

These advantages, coupled with KAESER's worldwide service organization, ensure that our compressed air products and systems deliver superior performance with maximum uptime.

KAESER COMPRESSORS®

Built for a lifetime.

www.kaeser.com

Kaeser Compressors, Inc.
511 Sigma Drive
Fredericksburg, VA 22408 USA
Telephone: 540-898-5500
Toll Free: 800-777-7873
info.usa@kaeser.com

Kaeser Compressors Canada Inc.
3760 La Vérendrye Street
Boisbriand, QC J7H 1R5 CANADA
Telephone: (450) 971-1414
Toll free: (800) 477-1416
info.canada@kaeser.com

Kaeser Compresores de México S de RL de CV
Calle 2 #123
Parque Industrial Juríca
76100 Querétaro, Qro.
Telephone: 01 (442) 218 64 48
sales.mexico@kaeser.com

Kaeser Compresores de Guatemala y Cia. Ltda.
3a calle 6-51, zona 13
Colonia Pamplona
01013–Guatemala City
Telephone: +502 2412-6000
info.guatemala@kaeser.com