

Smart Solutions for Drying Compressed Air
Single Tower Heat Reactivated Desiccant Air Dryer

TURBOTM HS Dryer



EAP

Engineered Air Products

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Understanding Compressed Air

Moisture in compressed air is damaging. Using untreated air results in water and contaminants in your air lines, costly shut-downs and poor quality product. Until now, the solution was simple: take a risk and implement refrigeration technology, and live with poor air quality and high maintenance, but preserve the bottom line; or pay for high quality air from a desiccant adsorption drying system, and watch the bottom line grow.

HS Turbo Dryer is a desiccant air drying system specifically designed for 1-2 shift operations and provides air quality consistent with adsorption technology, yet costs less to operate than a refrigerated dryer. With only two moving parts and rugged construction, Turbo's simplicity will impress, and perform beyond your expectations.

Turbo lets you focus on your process, not the utility that drives it....

HS Turbo Heat Reactivated Dryer

EAP Turbo heat reactivated desiccant air dryers use the adsorption method to remove moisture from compressed air. Pressure dew points as low as $-40^{\circ}\text{F}/^{\circ}\text{C}$ are achieved by directing the flow of saturated compressed air over a bed of desiccant. The most commonly used desiccant is activated alumina, a spherically shaped, hygroscopic material, selected for its consistent size, shape and extreme surface to mass ratio. This physically tough and chemically inert material is contained in an ASME (100 SCFM & larger) pressure vessel. As the saturated compressed air flows through the adsorption tower, its moisture content adheres to the surface of the desiccant. The dry compressed air is then discharged from the vessel into the distribution system.

A master controller puts the unit into the regeneration mode once a day at the users selected time. Regeneration, sometimes referred to as "purging", is the process of stripping the accumulated moisture from the desiccant bed.

EAP Turbo heat reactivated dryers combine heat with forced ambient air to affect regeneration. Regeneration requires no compressed air or heat of compression and is self contained.

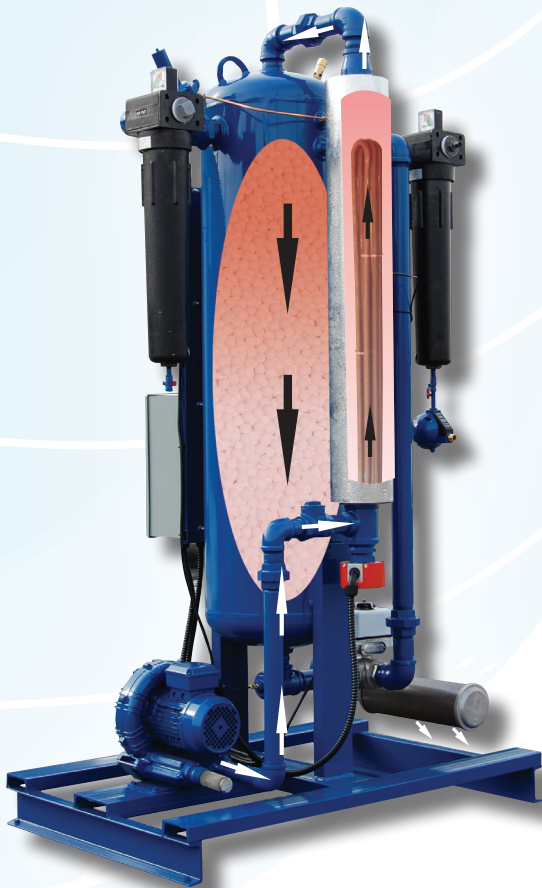
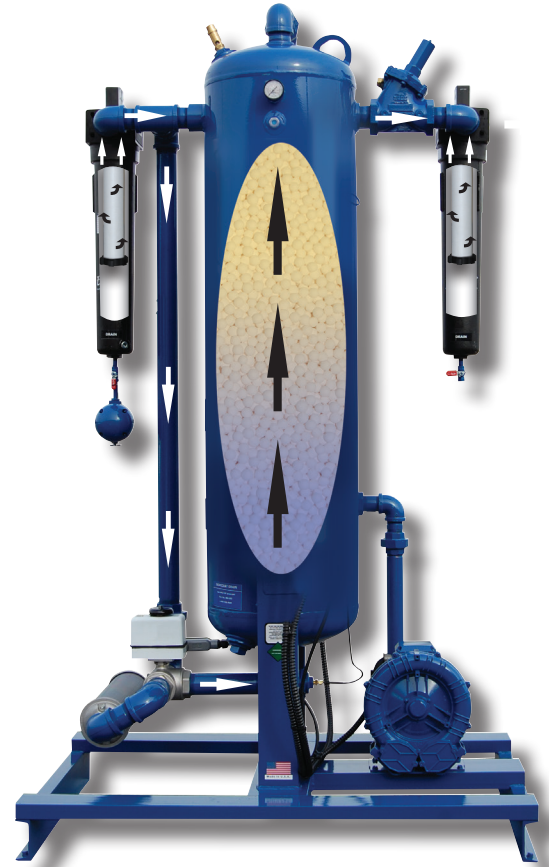
As heated, low pressure, purge air flows gently through the regenerating bed, it desorbs the moisture that had accumulated on the surface of the desiccant during the drying cycle and exhausts it to the atmosphere.



Drying Mode

- During operations, Turbo has no moving parts and chances of shutdown are eliminated.

- 1** Compressed air enters the dryer through a pre-coalescing filter where 99.9% of liquid oil, moisture and particles are removed.
- 2** Next the compressed air flows over the desiccant where water vapor is separated resulting in dew points as low as $-40^{\circ}\text{F}/\text{C}$.
- 3** A final filter polishes the air and removes any desiccant and particle fines before delivering clean, dry air.



Regeneration Mode

- Turbo regenerates during off peak hours when energy costs are lowest.

- 1** The HS Turbo exclusive digital controller will automatically start the regeneration cycle at the selected time.
- 2** The 3-way positioning valve slowly opens to depressurize the desiccant tank allowing regeneration air to escape through and exhaust muffler.
- 3** The heater and blower provide a steady stream of heated, low pressure air that gently desorbs the accumulated moisture from the desiccant material. Upon completion, the system is cooled and repressurized, returning to the drying position.

All Turbo Dryers are equipped with Allen Bradley Digital Programmable Controls that provide simple, reliable, and intelligent capabilities.



HS Turbo Logic Pro Controller

- Four line interactive backlit display
- Cycle time adjustments and real time clock
- Cycle stepping, cycle reset and manual regeneration function keys
- Energy saving exhaust temperature control system reduces KW usage
- Last regeneration duration readout monitor
- Permanent back up memory

Digital Indication of:

- Inlet Air Temperature
- Regeneration Exhaust Temperature
- Heater Core Temperature
- Over-Temperature Alarm

UL Listed Components, CSA Compliant

Purge Saver Energy Management System

The Purge Saver Energy Management System automatically adjusts energy use to the actual moisture load. Moisture loading is affected by inlet temperature, pressure, relative humidity and flow. These conditions vary throughout the day and rarely combine in such a manner as to produce maximum moisture loads. An inlet temperature reduction of just 20° F will reduce the moisture load by almost 50%. EAP Desiccant dryers are sized for "worst case" operation with the regeneration cycle fixed to accommodate maximum moisture loads. Because the fixed cycle does not compensate for fluctuating loads, the Purge Saver Energy Management System will eliminate the over use of energy by checking the exhaust temperature as the dryer regenerates. When the exhaust temperature reaches the optimum temperature the heater shuts off and the dryer goes into its cool down phase.

The Energy Management System can save you hundreds or even thousands of dollars per year in power costs and thousands of dollars per year over competitive refrigerated dryers.



HS Turbo's High Quality Components

3 way Ball Valve

The non-lubricated electronically actuated 3 way ball valve is rated for up to 200 cycles per day, yet only moves twice a day.

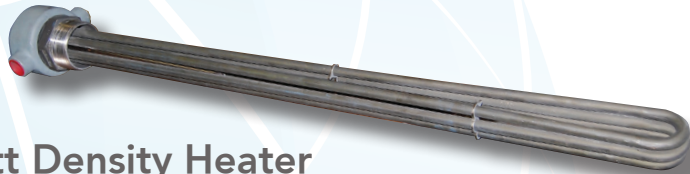
Given the HS Dryer operation, the 3 way ball valve will cycle 365 times per year making the life expectancy of the valve over 30 years.



Low Watt Density Heater

This industrial duty low watt density heater is rated for over 36,000 hours of operation.

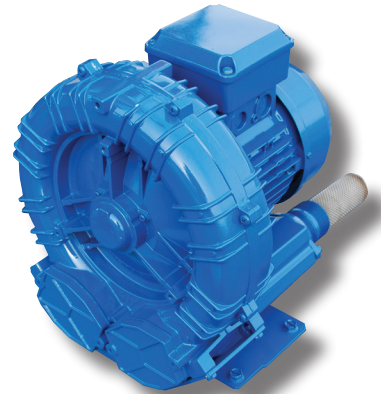
Given the HS Dryer operation, the heater will operate an average of 4 hours a day or 1,460 hours per year, making the life expectancy of the heater over 24 years.



Industrial Duty Blower

This industrial duty blower is rated for over 50,000 hours of operation.

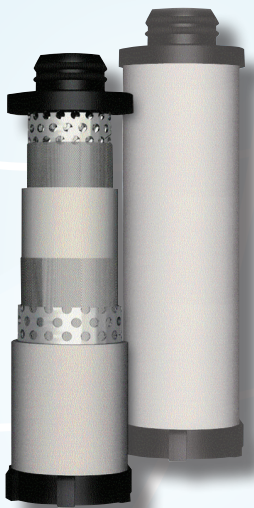
Given The HS Dryer operation the blower will operate on an average of 4 1/2 hours a day or 1,642 hours per year making the life expectancy of the blower over 27 years.



Packaged Filters

System Coalescing pre-filter removes oils, hydrocarbons and particle matter prior to entering the air drying column. All pre-filters are provided with a zero loss drain with isolation valve.

Particulate after-filters remove solids with 99+% efficiency to 1 micron. Pre-packaging of filters simplifies installation and ensures system integrity



Stainless Steel Bezel Pressure Gauge

These quality pressure gauges feature a stainless steel case, built-in snubber, acrylic lens, and excellent 1.5% of full range accuracy.

HS Turbo Dryers vs Refrigerated Dryers

HS Turbo Dryer	Performance	Refrigerated
0 to -40°F	Dew Point	+40° to 60°F
99.9% @ 0.3 - 0.6 Micron	Oil Removal	0%
99.9% @ 1 Micron	Particle Remover	0%
Simple only 2 moving parts. No Certified Technician Required	Service	Complex over 50 Moving Parts Certified HVAC Technician is required to Troubleshoot and Fix the Unit
No Refrigerants / Desiccant is inert	Environmental Impact	Contains Refrigerants and synthetic oils

Power Cost Comparison — Advantage Turbo 60-3000 SCFM

Capacity (SCFM)	Non-Cycling	Cycling	HS Single Tower	Heatless Twin Tower	Heated Blower Purge
60	\$587	\$456	\$456	\$1,417	\$872
100	\$876	\$561	\$505	\$2,362	\$1,105
150	\$1,139	\$759	\$576	\$3,544	\$1,612
200	\$1,577	\$1,226	\$659	\$4,725	\$2,389
250	\$1,577	\$1,343	\$738	\$5,906	\$2,897
300	\$2,102	\$1,635	\$903	\$7,087	\$3,404
400	\$3,154	\$1,927	\$1,270	\$9,450	\$4,778
500	\$3,241	\$2,920	\$1,467	\$11,812	\$5,794
650	\$4,030	\$2,920	\$1,807	\$14,174	\$6,809
800	\$5,168	\$3,913	\$2,082	\$18,899	\$9,916
1000	\$6,482	\$5,198	\$2,697	\$23,624	\$13,742
1200	\$8,322	\$6,132	\$3,111	\$29,530	\$16,279
1600	\$9,899	\$7,650	\$3,614	\$37,798	\$21,627
2100	\$12,089	\$7,884	\$4,581	\$49,610	\$26,703
2600	\$14,788	\$9,227	\$6,743	\$61,422	\$33,574
3000	\$16,890	\$10,868	\$7,180	\$70,872	\$37,634

Note:

The HS Turbo Dryer power cost is based on full load conditions and reflects NO power savings from the Purge Saver Energy Management System which comes standard on every unit.

Typical Annual Operating Costs based on two shift operation and \$0.10/KW

The HS Turbo Dryer uses the operating KW only when it is in regeneration mode, and regenerates only once a day. Depending on the moisture load the Turbo can be in the regeneration mode anywhere from 1 to 7 hours.

Power Cost Analysis

Consult Engineered Air Products to obtain a free power cost analysis comparing dryer types, specific to your application.

HS Turbo Specifications

Model	SCFM @ 100 PSIG	Line Size (Inches)	Electrics	Dimensions W x D x H (Inches)	Unit Shipping Weight (lbs)	Maximum Pressure (PSIG)
HS60	60	1	120V/1	32 x 32 x 76	270	200
HS100	100	1	120V/1	32 x 32 x 73	475	200
HS150	150	1	120V/1	32 x 32 x 76	560	200
HS200	200	1½	208-230V/1	46 x 30 x 78	590	200
HS250	250	1½	208-230V/1	46 x 30 x 78	610	200
HS300	300	1½	460V/3	46 x 30 x 78	940	150
HS400	400	2	460V/3	50 x 36 x 84	1,070	150
HS500	500	2	460V/3	50 x 36 x 84	1,190	150
HS650	650	2	460V/3	50 x 36 x 84	1,215	150
HS800	800	2	460V/3	56 x 40 x 87	1,270	150
HS1000	1,000	3FL	460V/3	56 x 40 x 87	1,385	150
HS1200	1,200	3FL	460V/3	56 x 40 x 87	1,510	150
HS1600	1,600	3FL	460V/3	62 x 46 x 94	1,715	150
HS2100	2,100	4FL	460V/3	68 x 52 x 94	2,255	150
HS2600	2,600	4FL	460V/3	68 x 52 x 95	2,575	150
HS3000	3,000	6/4FL	460V/3	72 x 60 x 95	3,433	150

Specifications are subject to change without notice.

All systems are provided with Engineered Air Tuned Regeneration along with the Purge Saver Energy Management System resulting in maximum KW savings based on air usage.

Standard Equipment

- Purge Saver Energy Management System - Shuts Off Regeneration Cycle when Limit Temperatures are Reached
- EAP Exclusive Logic Pro Information Center
- System Inlet and Regeneration Temperature Readouts
- Mounted Pre and After-Filters
- Filter Drains
- Filter Differential Pressure Indication
- Premium Electronic Switching Valve
- Tuned Regeneration System (Patented)
- Industrial Duty Blower
- Low-Watt density Heater
- Heater Over-Temperature Protection with Alarm
- Tower Moisture Indicator
- Tower Stainless Steel Bezel Pressure Gauges
- ASME/CRN Pressure Vessel (HS100 and Larger)
- Purge Exhaust Muffler
- Full Charge of Desiccant

Optional Equipment

- Three (3) Valve System Bypass
- Dual Filter Packages
- High Pressure (to 800 PSIG)
- Tower Insulation
- Outdoor Insulation
- 575V/3



Backed by our 18 Month Bumper to Bumper Warranty



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Patents Pending

