

AIR TAK

Compressed Air System Products

Heated Regenerative Air Dryers



**Compressed Air
System Products**

**That Save Energy &
Improve Operations**

Heated Regenerative Air Dryers



Super Dry Compressed Air with Maximum Operational Flexibility

Air/Tak Heated Regenerative Air Dryers will optimize the performance and extend the life of all your sensitive pneumatically-operated equipment.

Instrumentation... air logic units... cylinders, valves and actuators... all function with greater accuracy with moisture-free air.

Reduce Maintenance and Lower Operating Costs

Our heated regenerative air dryers utilize the adsorption principle of drying.

- Two twin towers are filled with an adsorbent drying medium that attracts and holds moisture on its surface. While air is being dried in one tower, the desiccant is being regenerated in the other.
- A pneumatically-actuated switching valve allows wet compressed air to enter the online tower and directs it downward through the desiccant for drying.
- At the same time, a small amount of dry purge air is directed over an external heater, upward into the offline tower. This purges collected water vapor from the saturated desiccant.
- After the purge air desorbs water vapor from the saturated desiccant, it is exhausted to the atmosphere through the muffler.
- The outlet dew point is from -40°F to -100°F at line pressure, with purge rates from 0 to 7%.



High-Performance and High-Efficiency Features are Standard in all Air/Tak Heated Regenerative Dryers

Flexible Operation – The fully programmable logic controller delivers a wide range of monitoring, operating and safety functions. Combine the PLC with our Flex Power Surge System and other options to enhance monitoring functions while saving energy.

Reduce Maintenance Costs – The actuated switching valves are either ball valves or high-performance butterfly valves. These valves feature a two-piece stem and double-offset disc/stem design that minimizes wear points between the seat and disc. This in turn extends the life of the valve seats.

Minimize Temperature Spikes and Enhance Dew Point Performance – The cooling cycle at the end of the regeneration cycle shuts down the heater. A small amount of cool, dry purge air is diverted to the regenerated tower. By cooling the tower without adding moisture from ambient air into the dried, regenerated desiccant, you avoid temperature spikes while enhancing dew point performance.

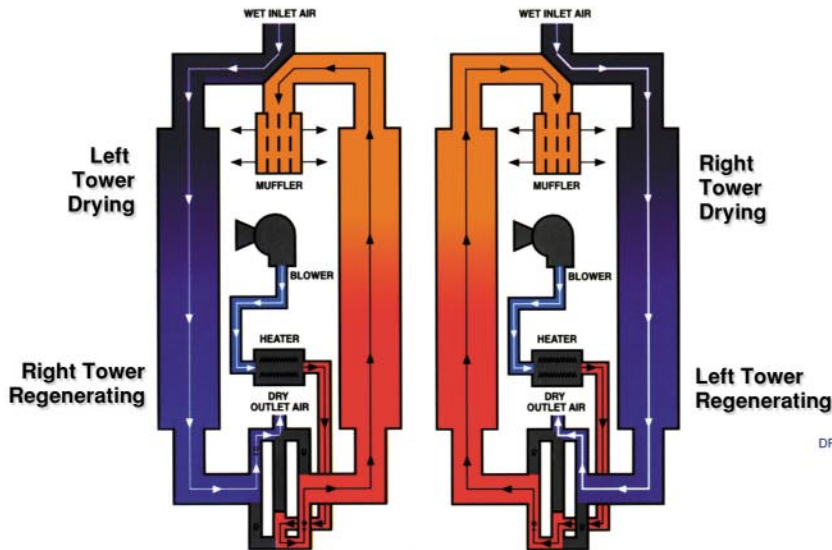
Extra Safety Features to Protect Plant and Personnel – **Air/Tak** Heated Regenerative Air Dryers feature **Power Interruption Protection (PIP)**. In the event of a power outage, PIP shuts down the dryer while maintaining the position of the switching valves. This insures that no hot air is allowed to flow downstream, preventing a potential hazard to personnel and equipment. Airflow from the tower that was online prior to the power interruption will continue. Once power is restored, PIP will allow the dryer cycle to resume.



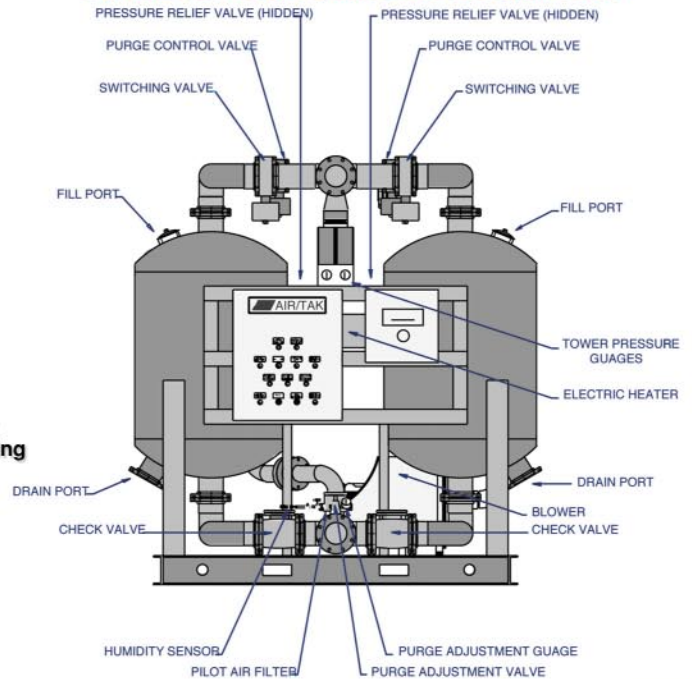
Programmable Logic Controllers for Operational Flexibility

A state-of-the-art programmable logic controller (PLC) regulates the dryer operation. The PLC is fully programmable – we can customize its settings to support your particular operational requirements

Typical Air Flow for Regenerative air Dryers



Typical Equipment Diagram



Dimensions & Weights (Inches and Pounds)*

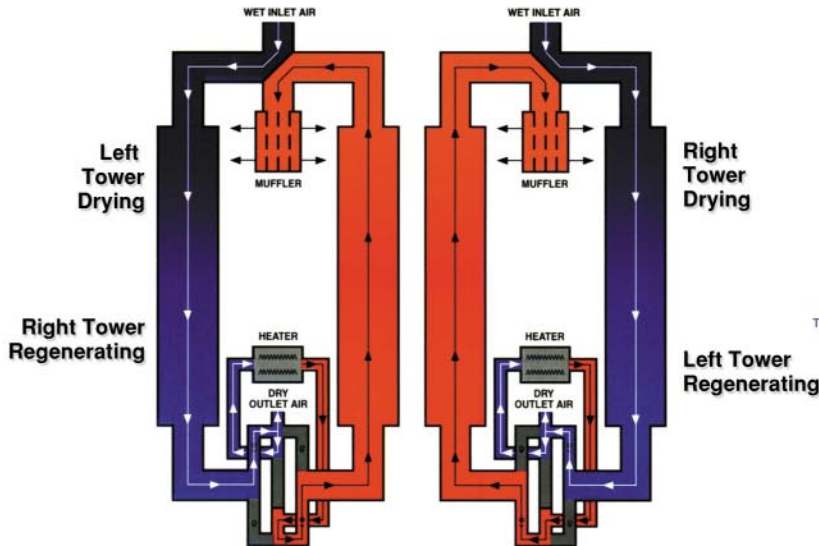
Model Number	Flow @ 100 SCFM	Heater KW	Blower H.P.	In/Out Conn**	Dimensions			Total Weight	Coalescing Prefilter	High Temp Afterfilter
					Height	Width	Depth			
BPD-250	250	4	3	1	71	42	55	1200	F12-C300	F12-HT300
BPD-350	350	5	3	1	86	42	55	1850	F14-C350	F14-HT350
BPD-500	500	8	5	2	97	50	60	2750	F20-C500	F20-HT500
BPD-700	700	10	5	2	101	49	62	3650	F24-C700	F24-HT700
BPD-850	850	12	8	2	111	50	67	4200	F30-C1300	F30-HT1300
BPD-1000	1000	12	10	3	99	72	70	4800	F30-C1300	F30-HT1300
BPD-1350	1350	17	10	3	116	72	70	6300	FF30K-C	FF30K-HT
BPD-1700	1700	25	15	3	100	74	75	7000	FF40L-C	FF40L-HT
BPD-2100	2100	33	15	3	98	79	95	9000	FF40L-C	FF40L-HT
BPD-2400	2400	33	15	4	114	88	95	11,000	FF60M-C	FF60M-HT
BPD-3100	3100	42	15	4	112	93	95	13,700	FF60M-C	FF60M-HT
BPD-3800	3800	50	20	4	120	93	95	17,800	FF60K-C	FF60K-HT
BPD-4300	4300	58	20	6	120	100	100	20,500	FF60K-C	FF60K-HT
BPD-5000	5000	67	25	6	127	100	100	22,300	FF80K-C	FF80K-HT
BPD-6250	6250	87	30	6	121	105	107	25,500	FF80K-C	FF80K-HT
BPD-7750	7750	105	40	6	128	152	152	29,000	FF100K-C	FF100K-HT
BPD-8750	8750	125	40	8	135	152	141	32,000	FF100K-C	FF100K-HT
BPD-10,000	10,000	140	50	8	142	158	147	37,000	FF100K-C	FF100K-HT

*Dimensions and weights subject to change without notice. **Inlet/outlet connections up to 3" are NPT, 4" and larger are flanged.

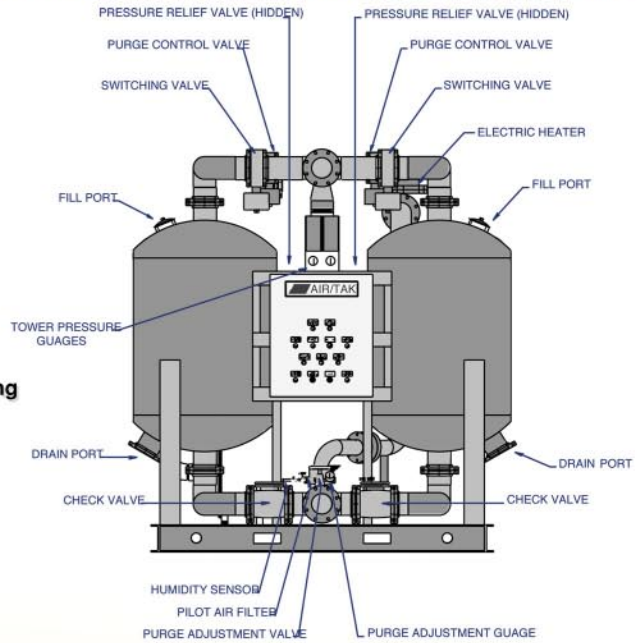
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Typical Air Flow for Externally Heated Regenerative Air Dryers



Typical Equipment Diagram for Externally Heated Regenerative Air Dryers



Dimensions & Weights (Inches and Pounds)*

Model Number	Flow @ 100 SCPM	Heater KW	In/Out Conn**	Dimensions			Total Weight	Coalescing Prefilter	High Tem Afterfilter
				Height	Width	Depth			
EHD-100	100	1	1	78	36	34	700	F10-C150	F10-HT150
EHD-175	175	1	1	82	40	38	825	F12-C300	F12-HT300
EHD-250	250	2	1	71	42	43	900	F12-C300	F12-HT300
EHD-350	350	2	1	86	42	43	1500	F14-C350	F14-HT350
EHD-500	500	4	2	97	50	44	2400	F20-C500	F20-HT500
EHD-700	700	5	2	109	44	48	2900	F24-C700	F24-HT700
EHD-850	850	6	2	111	50	50	3350	F30-C1300	F30-HT1300
EHD-1000	1000	8	3	93	71	61	3800	F30-C1300	F30-HT1300
EHD-1350	1350	10	3	110	71	61	5000	FF30K-C	FF30K-HT
EHD-1700	1700	12	3	100	78	61	5500	FF40L-C	FF40L-HT
EHD-2100	2100	16	3	98	95	70	7200	FF40L-C	FF40L-HT
EHD-2400	2400	17	4	114	99	67	8750	FF60M-C	FF60M-HT
EHD-3100	3100	25	4	112	105	67	11,000	FF60M-C	FF60M-HT
EHD-3800	3800	33	4	120	105	67	14,200	FF60K-C	FF60K-HT
EHD-4300	4300	33	6	120	116	85	16,300	FF60K-C	FF60K-HT
EHD-5000	5000	42	6	127	116	85	17,600	FF80K-C	FF80K-HT
EHD-6250	6250	50	6	121	122	85	20,200	FF80K-C	FF80K-HT
EHD-7750	7750	58	6	128	152	100	24,000	FF100K-C	FF100K-HT
EHD-8750	8750	67	8	135	152	100	27,000	FF100K-C	FF100K-HT
EHD-10,000	10,000	75	8	142	158	106	32,000	FF100K-C	FF100K-HT

*Dimensions and weights subject to change without notice. **Inlet/outlet connections up to 3" are NPT, 4" and larger are flanged.

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Standard Options Promote Safe Operation, Enhance Productivity

Burst Energy Saving Thermostat (BEST):

BEST automatically adjusts heater output to meet dryer system requirements by using the set point from the heater thermostat to *exactly* match heater energy usage to the demand load. It senses variations in system parameters and makes any fine adjustments that are necessary in less than 0.1 seconds (burst firing). This minimizes the set point deviations due to longer cycle time. Get more accurate control of both the heater element and heating process with the lowest power consumption.

Best can save up to 20% of the kW usage of a standard mechanical contactor heater system because it eliminates the need to reheat the heater element as it cycles to maintain the set point. Fewer expansions and contraction also extend the life of your heater elements as well.

Overheat Protection Control (OHP):

OHP prevents the resetting of the timing device if the purge air temperature is over 120°F. This will allow the unit to be stepped forward, one hour at a time through the first three hours of each half cycle, and forward the fourth hour only if purge air is below 120°F. Further, it will hold the unit prior to the end of each half cycle if purge air temperature is over 120°F.

Regenerative Energy Saving Thermocouple (REST):

REST automatically shortens the heating phase of the regeneration cycle (normally 3 hours) if the purge air temperature – measured at the exhaust muffler – reaches the predetermined temperature set point. Once the heater shuts down, the dryer will immediately proceed to the one hour cooling phase of the regeneration cycle. When the dryer has completed the shortened cycle, the tower being regenerated will REST until the drying cycle is complete.

The existing purge air temperature

is a measure of the moisture level of the desiccant being regenerated. As the moisture level decreases, the purge exhaust air temperature will increase until the set point is reached. This indicates that the desiccant has been fully regenerated. At this point, the dryer will begin the process leading to the REST mode. While the dryer is in the rest mode, the blower and heater remain off, thereby using no energy for regeneration. This results in significant energy savings.

Fail-to-Switch (FTS):

FTS alerts personnel of any failure in the switching process of the Heated Regenerative Dryer by means of either a warning light or audible alarm. Air/Tak's PLC reads the input from the pressure switches mounted on the drying tower – compares this with the operating conditions – and sounds the alarm if the two do not coincide.

Standard Option for Even More Efficient Operations and Energy Savings

Flex Power Purge System (FPPS) with High Humidity Alarm (HHL):

The Flex Power Purge System saves significant amounts of energy when operating conditions change and/or when -40°F dew point is not critical. When the dew point is below the dew point setting, the system will initiate cycle saving at the end of any 4-hour cycle. In this mode, energy is saved because the heater and blower remain off. When the dew point again reaches the dew point setting, the dryer automatically begins the next cycle.

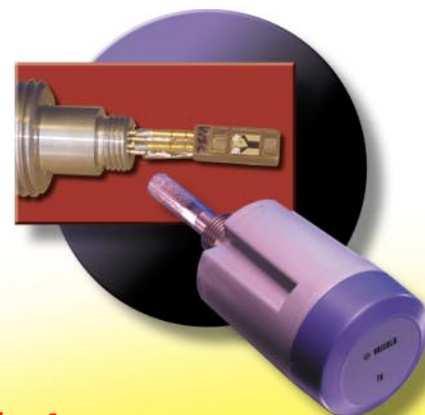
As an added feature, the Flex Power Purge System can be supplied with an additional alarm set point. This allows you to place the setting 10°F to 15°F higher than the FPPS setting. This alarm is wired to the HHL which indicates immediately the level of dryer dew point performance. It is also helpful in

determining when to change the desiccant bed.

Automatic Logic Function (ALF):

The ALF option automatically changes the timing cycle of the Heated Regenerative Air Dryers to Heatless (HLD) mode when a predetermined failure condition exists. This failure could result from low or no flow from the blower, low heater element temperature, or low steam pressure on steam reactivated (SR) units.

When a failure occurs, the dryer will complete the regeneration cycle. When the towers switch, the dryer will begin HLD mode. This will continue until the failure is remedied or the unit is reset.



Features

- Thin Polymer Moisture Sensor
- Microprocessor Based Transmitter
- Auto-calibrating Software
- Microprocessor Base Controller
- Two Alarm Contacts - Adjustable Set Points
- Dual 4-Digital LCD Displays

Specifications

- Sensor Moisture Range: -112° to 65°F PDP
- Accuracy: ± 3.5° to 76°F PDP
- Sensor Temperature Range: -40°F to 200°F
- Housing Classification: IP 65 (NEMA 4)

Heated Regenerative Air Dryers

Heated Regenerative Air Dryer Specifications:

- Maximum Working Pressure 150 PSIG
- Maximum Inlet Temperature 110°F
- Dryer Vessel: ASME Code, Section VIII and latest addenda
- Exterior Finish: Industrial enamel

Standard Equipment:

- On/Off Switch
- Tower Indicating Lights
- Dryer Running Light
- Pilot Air Switching Valves
- Purge Cooling Valve
- Purge Control Pressure Gauge
- Purge Control Valve
- Tower Pressure Gauge
- Tower Pressure Relief Valves
- Blower (BPD Models)
- Blower Intake Filter (BPD Models)
- Electric Heater
- Heater High Temperature Control
- Pneumatically Actuated Switching Valves
- Visual Moisture Indicator
- Check Valves
- Pilot Control Valve
- Purge Adjustment Valve
- Regeneration Valve
- ASME Code Vessels
- Jacketed Insulation
- Activated Alumina
- Desiccant Fill and Drain Ports

Several Options Available to Meet Your Plant's Needs

PAK

Coalescing Pre-Filter:

- Grade C Filter Element
- Automatic or Solenoid Drain Valve
- Differential Pressure Indicator or Gauge

High-Temperature After-Filter:

- Grade HT High-Temperature Filter Element
- Differential Pressure Indicator or Gauge

Filter Mounting

- Both filters pre-piped and skid-mounted with the Blower Purge Regenerative Air Dryer
- Easy installation!

PAK PLUS I

Filter Mounting and Bypass Piping

- Both Coalescing Pre-Filter and High-Temperature After-Filter
- Pre-piped with a three-valve bypass and skid-mounted with the Blower Purge Regenerative Air Dryer
- Visual Moisture Indicator

BPD-PAK PLUS II

- Both Coalescing Pre-Filter and High-Temperature After-Filter
- Pre-piped with a three-valve bypass and skid-mounted with the Blower Purge Regenerative Air Dryer
- Flex Power Purge System
- High Humidity Alarm
- Fail-to-Switch Warning Light

Filtration Equipment:

A **Coalescing Prefilter** (Grade C) is highly recommended to protect the desiccant against premature damage from liquid oil and water as well as solid contaminants. A High Temperature Afterfilter (Grade MT) which removes any desiccant dust from the outlet air, is highly recommended to protect downstream equipment. **Air/Tak** Compressed Coalescing and High Temperature Filters are available in a full range of capacities for installation with Heated Regenerative Air Dryers (See the **Air/Tak** Air System Filters Brochure.

Advanced Control System Capabilities

The controls on these dryers can be upgraded to be part of an integrated state-of-the-art combined control system that seamlessly provides information between networks. These integrated combined control systems include control platforms such as Logix with Open network architecture for communication such as Ethernet/IP, ControlNet and DeviceNet.

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Compressed Air System Products That
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