Regenerative Air Dryers

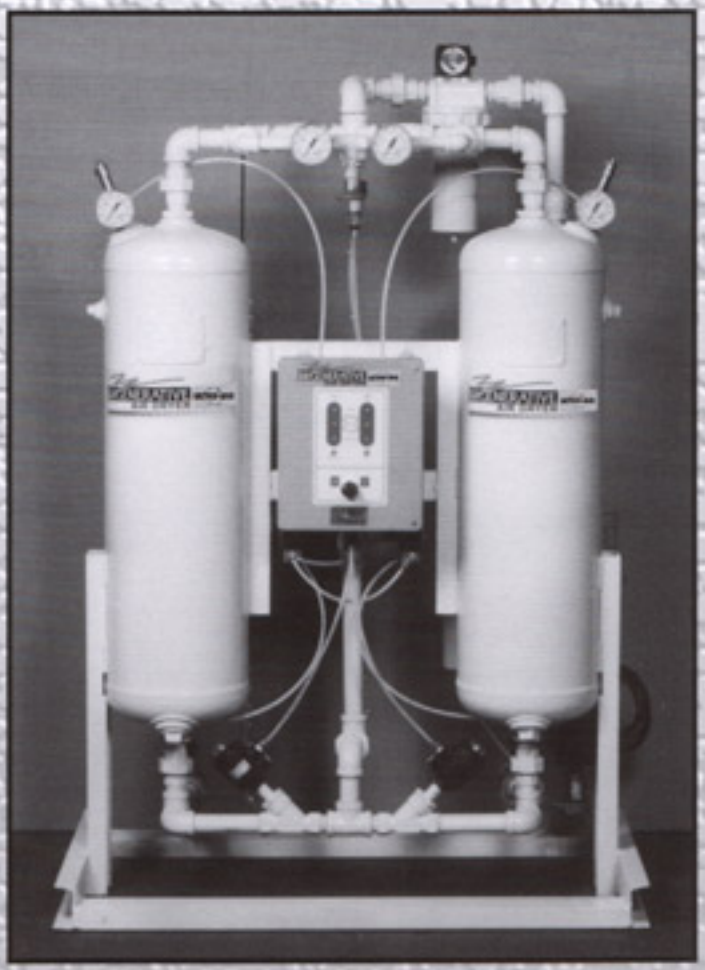
LFT, LFE & LFA Series

Environmentally Safe

- No Liquid Discharge
- No Refrigerants (CFC)
- -40°F Dewpoint

LIFETIME INLET AND PURGE VALVE WARRANTY
LFT, LFE and LFA 25 - 620

5 million cycle life or 50 years



LFT 100 with optional Ultra Pak Filtration System

NEMA 4x enclosures with dryer operation sequencing lights

ULTRa-aIR®

Principles of Operation

Drying Mode

The saturated compressed air enters the dryer inlet and is directed by the inlet air control valves into the top of one of the two desiccant towers (the On-Line tower). As the air travels upward through the desiccant bed, the moisture in the air adheres to the desiccant beads (adsorbed), lowering the dewpoint of the compressed air stream to -40°F. The air then exits the dryer moisture free and is ready for use.

Regeneration Mode

As the On-Line tower is drying, the Off-Line tower is being regenerated (stripped of moisture or desorbed). After the dry air stream (-40°F or-100°F PDP) exits the On-Line tower, a small amount is then expanded to near atmospheric pressure, where it becomes super dry and is diverted into the top of the Off-Line tower. The super dry, expanded air travels downward through the desiccant bed, stripping the moisture from the activated alumina bed that was adsorbed during the On-Line cycle and sweeps it to the atmosphere through the open purge valve.

The entire cycle takes 10 minutes to complete -40°F PDP. The cycle is as follows: The On-Line tower dries or stays on line for 5 minutes. The Off-Line tower regenerates or purges for 4.5 minutes and repressurizes for 30 seconds. The towers are shifted and the entire cycle repeats.

Dryer Construction

The dual tower, compressed air drying system utilizes ASME coded pressure vessels (100 CFM and above). The inlet air flow is controlled by 2 non-lubricated 2-way valves. The purge valves are normally closed so that if the unit is depressurized or there is a power failure, the valves will close, preventing plant air pressure from being purged to the atmosphere. The outlet air is controlled by ball cone style check valves. The purge flow is exhausted through purge mufflers to reduce the air noise level to below OSHA limits. The entire system is completely prepiped and wired on a heavy duty, structural steel frame. Only air and electrical connections need to be made.

Standard Features

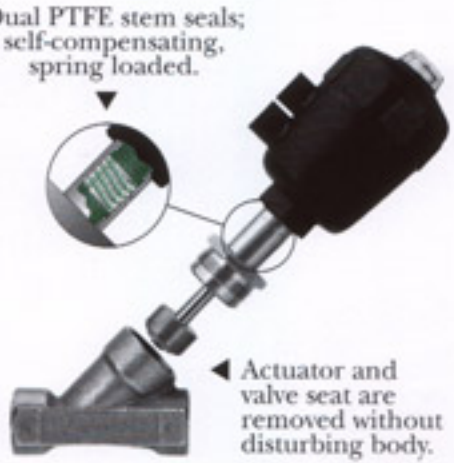
- Generous quantities of activated alumina desiccant
- Centrally mounted pressure gauge and relief valves on each tower
- ASME inspected and stamped and CRN registered pressure vessels (100 CFM and above)
- Purge air mufflers to reduce exhaust noise
- 115-1-60, NEMA 4x electrical
- Repressurization of regenerating tower before it goes on drying cycle to prevent desiccant dusting
- -40°F pressure dewpoint (lower dewpoint available)
- Control air filter
- Low pressure drops (3psid maximum)
- Fail safe mode
- Dryer Sequence Lights
- Reliable and Proven Inlet Air Control Valves and Purge Valves assure years of reliable shifting of towers and proper dryer operation. (Lifetime Warranty) LF Series 25-620 CFM.
- 1 year warranty
- NEMA 4x

Electronic Solid State Controls

The solid state timer will provide years of trouble-free operation. The timer replaces the less reliable cam timer and mechanical switches. The advantages of the solid state timer over the cam timer include:

- More precise tower switching controls
- Dryer operation sequence lights
- Tower fail-to-shift alarm (optional)
- No mechanical contact to corrode or fail
- Very reliable and easy to maintain

LIFETIME INLET AND PURGE VALVE WARRANTY – LFT, LFE and LFA 25 – 620



- **All bronze & stainless steel material**
- **5 million cycle life or 50 years**
- **LFT, LFE & LFA 800 and above come standard with high quality, reliable 2-way ball valves.**

Clean, Dry, Oil Free Air

Protect Equipment Against Moisture Problems and Downtime

Why A Heatless Regenerative Air Dryer?

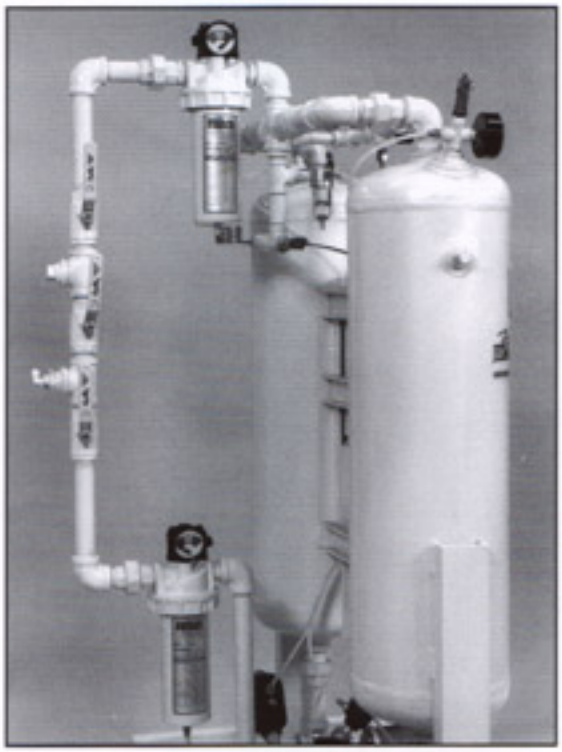
Air dryers were once considered a luxury in a compressed air system. However, as pneumatic equipment and processes became more sophisticated and moved closer to being fully automated, the need for high quality compressed air increased. Today, the fiercely competitive world market demands that plant engineers operate their facilities more efficiently than ever before. By removing moisture from your compressed air system, an air dryer enables pneumatic instruments and controls to work properly, preventing corrosion of internal parts that result in malfunctions and downtime. The result is improved efficiency, increased productivity, and overall company profitability.

Ultra Air Heatless Regenerative Dryers deliver a -40°F PDP, a dewpoint lower than that required by the Instrument Society of America. In colder climates, weather can negatively affect productivity by literally freezing and completely blocking outdoor air lines. Instrument air requires a quality of air that only a Regenerative type dryer can deliver. Therefore, whenever lower dewpoints are required for outdoor piping, instrument air, process air or gas drying, Ultra Air Regenerative Dryers should be specified.

The Ultra Air Distributor is qualified to analyze compressed air needs and recommend the proper system.

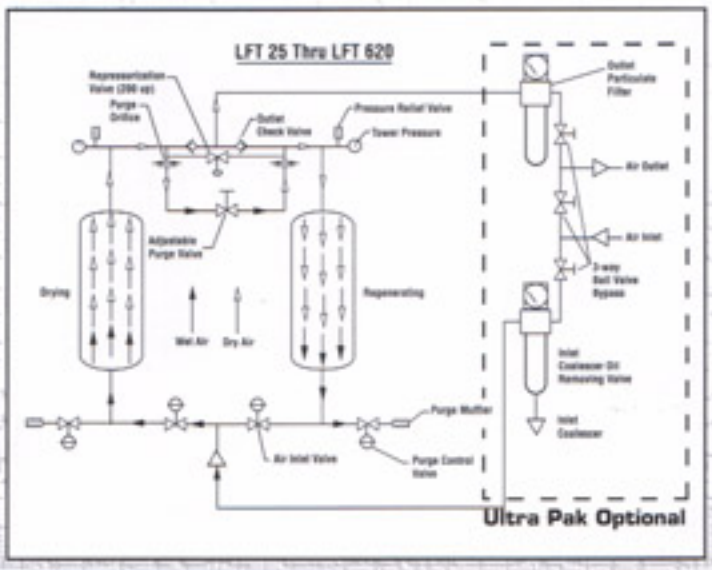
Heatless Dryer Characteristics

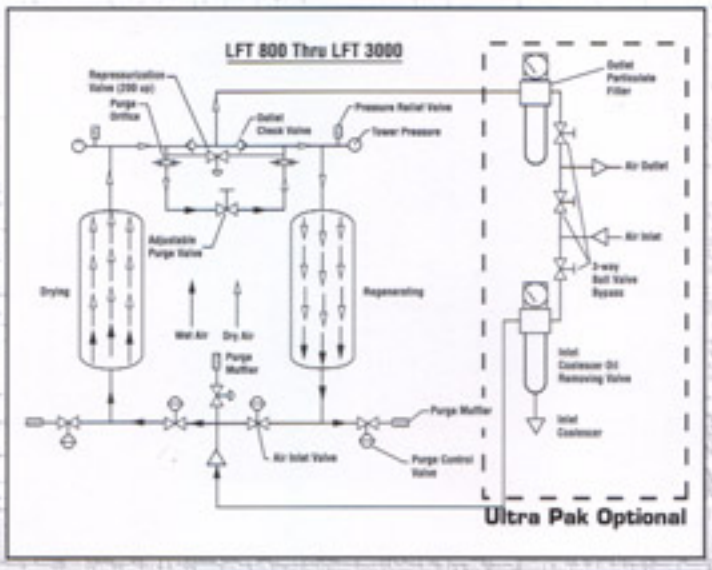
- Low initial costs
- High operating costs
- Low maintenance
- High purge air requirements
- Long life expectancy
- Reliability and simplicity



Ultra Pak Filtration System (2 Year Ext. Warranty)
Oil Removing Prefilter, Afterfilter, 3 Valve Bypass, ΔP Gauges, and Electronic Auto Drain (optional).

IMPORTANT NOTE: Every dryer must have a quality prefilter designed to remove oil down to at least a minimum D.O.P. efficiency of .3 to .6 micron at 99.97% or warranty is void and Ultra Air will not guarantee the performance of the dryer.





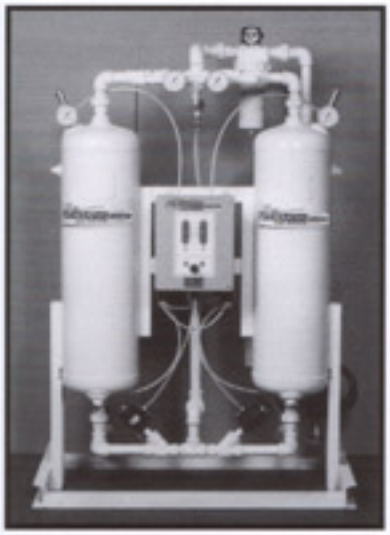
LFT Series

Heatless Regenerative Air Dryers

Model	SCFM @ 100 PSIG & 100°F (1) -40°F PDP Outlet Capacity	In & Out Size	Dimensions L	W	H	Weight (lbs.) Desiccant	Total Unit	MWP PSIG
LFT25	25	½" NPT	18"	25½"	56½"	35	225	200
LFT40	40	½" NPT	18"	29½"	48½"	49	275	200
LFT50	50	½" NPT	24"	29½"	58"	70	300	200
LFT75	75	1" NPT	24"	29½"	71"	105	355	200
LFT100	100	1" NPT	24"	40½"	51"	145	550	200
LFT150	150	1" NPT	24"	40½"	59"	175	625	200
LFT200	200	1½" NPT	31"	43½"	53½"	245	695	200
LFT250	250	1½" NPT	31"	48"	73"	350	925	200
LFT350	350	1½" NPT	31"	51½"	78"	490	1025	200
LFT520	520	2" NPT	31"	58½"	70"	728	1500	200
LFT620	620	2" NPT	38"	58½"	80"	868	1700	200
LFT800	800	3" NPT	40"	59½"	86"	960	2100	150
LFT1000	1000	3" NPT	40"	59½"	98"	1300	2600	150
LFT1200	1200	3" NPT	40"	59½"	98"	1560	2900	150
LFT1600	1600	4" FLNG.	45"	82"	116"	2240	3995	150
LFT2000	2000	4" FLNG.	45"	94"	101"	2800	4950	150
LFT2500	2500	4" FLNG.				3250	6100	150
LFT3000	3000	4" FLNG.				3900	7300	150
LFT3500	3500	6" FLNG.	Consult Factory			4900	8300	150
LFT4000	4000	6" FLNG.				5200	9700	150
LFT5000	5000	6" FLNG.				6000	11900	150

*Due to our policy of continuous improvement, all information is subject to change without notice.
*LFT2000 and above includes factory start-up.

1. For conditions other than standard, use correction factors. Maximum inlet air temperature is 120°F.
2. Dimensions subject to change without notice. Consult factory for certified drawings.
3. Standard voltage 115-1-60. For voltages other than standard, consult factory.
4. LFT 100 tanks and above are ASME inspected and stamped.
5. Higher working pressures available, consult factory.
6. Larger sizes available, consult factory.



Options

- Econo-Purge Controller automatically senses dryer outlet dewpoint and delays regeneration process until desiccant is saturated to a preset level
- -100°F pressure dewpoint
- High humidity alarms
- Visual moisture indicator
- Fail-to-shift alarm
- Bypass valves
- Temperature gauges
- NEMA 7 Electrical
- Ultra Pak filtration systems

Dryer Selection Guide

Operating Pressure	% Of Purge Loss
250	8.4%
200	9.1%
175	9.9%
150	11.2%
140	11.6%
130	12.0%
120	12.7%
110	13.5%
100	14.6%
90	15.9%
80	17.5%
70	19.7%
60	22.5%

Example:

To calculate the capacity of a LFT100 @ 120 psig and 90°F inlet temperature: 100 CFM (inlet) x 1.17 PSIG (pressure) x 1.125°F (temperature) = 132.00 SCFM (actual inlet capacity) Capacity of LFT100 @120 psig and 90°F:

Inlet Capacity	Purge Loss	Outlet Capacity
132	19	112

All Regenerative Air Dryer Models

Inlet Pressure PSIG	Capacity Multiplier
250	1.85
200	1.70
175	1.55
150	1.35
140	1.30
130	1.25
120	1.17
110	1.09
100	1.00
90	0.90
80	0.80
70	0.70
60	0.60

Inlet Temp. °F	Capacity Multiplier
120	0.67
110	0.76
100	1.00
90	1.125
80	1.14

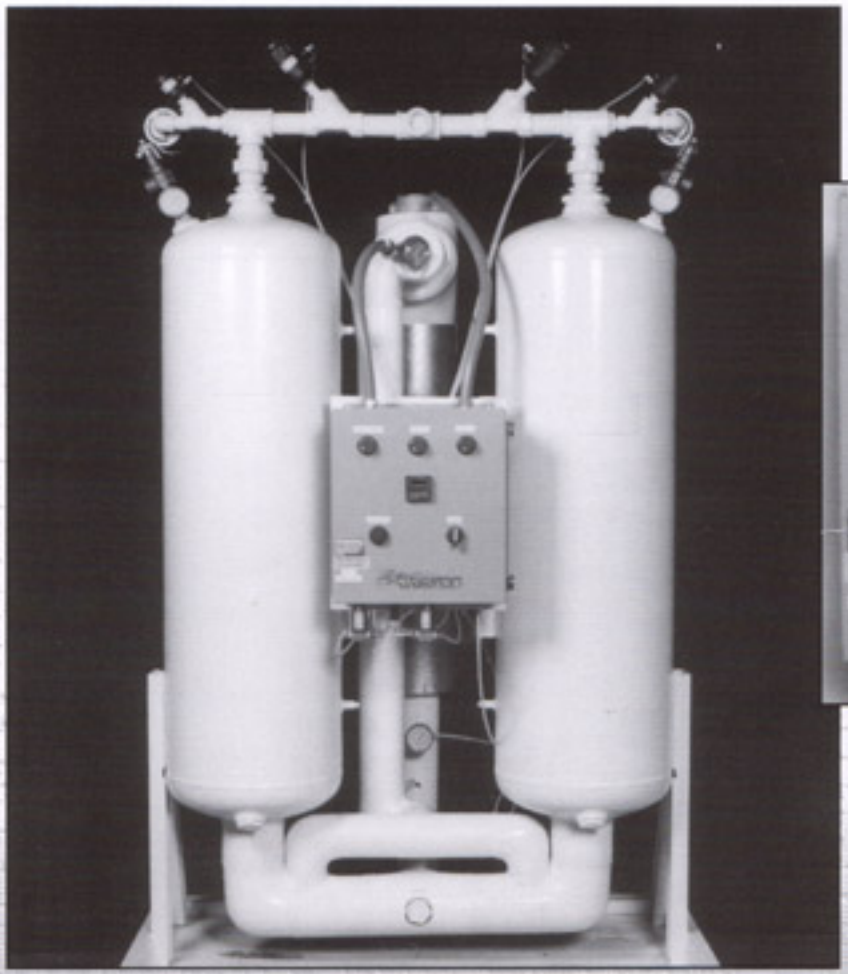
LFE Series-7% Purge Loss

Externally Heated Regenerative Air Dryers

Model	SCFM @ 100 PSIG & 100°F (1) -40°F PDP					Dimensions			Weight (lbs.)		MWP PSIG
	Outlet Capacity	Purge Loss	Inlet Capacity	Heater (1) Kw	In & Out Size	L	W	H	Desiccant	Total Unit	
LFE10	10	1	11	.5	¼" NPT	22"	28"	46"	16	75	150
LFE15	15	2	17	.5	¼" NPT	22"	28"	59"	23	85	150
LFE25	25	3	28	.5	½" NPT	24"	29¼"	56¼"	40	200	150
LFE40	40	3	43	.75	½" NPT	24"	33¼"	44¼"	56	460	150
LFE50	50	4.3	54	.75	¾" NPT	30"	33¼"	58"	80	550	150
LFE75	75	6.4	81	1.50	1" NPT	30"	33¼"	71"	120	700	150
LFE100	10	8.5	108.5	1.50	1" NPT	30"	42½"	51"	160	910	150
LFE150	150	11	161	3.00	1" NPT	30"	42¼"	55"	200	1120	150
LFE200	200	14	214	3.00	1½" NPT	37"	45½"	53¼"	280	1350	150
LFE250	250	21.3	271.2	6.00	1½" NPT	37"	50"	73"	400	1525	150
LFE350	350	29.7	379.7	7.00	1½" NPT	37"	53¼"	78"	560	2100	150
LFE520	520	36	556	9.00	2" NPT	37"	60¼"	70"	800	2400	150
LFE620	620	43	663	12.00	2" NPT	44"	60¼"	80"	1040	3020	150
LFE800	800	68	868	15.00	3" NPT	46"	61¼"	86"	1280	3750	150
LFE1000	1000	85	1085	17.00	3" NPT	52"	61½"	98"	1600	4100	150
LFE1200	1200	85	1285	23.00	3" NPT	52"	61½"	98"	2000	5900	150
LFE1600	1600	136	1736	26.00	4" FLNG.	59"	84"	116"	2560	7100	150
LFE2000	2000	170	2170	32.00	4" FLNG.	59"	96"	101"	3200	8100	150
LFE2500	2500	212.5	2712.5	40.00	4" FLNG.	Consult Factory			4000	10000	150
LFE3000	3000	255	3255	50.00	4" FLNG.				4800	19000	150
LFE3500	3500	297.5	3797.5	65.00	6" FLNG.				5600	17500	150
LFE4000	4000	340	4340	70.00	6" FLNG.				6400	19200	150

1. Actual average power consumption is only 50% of rated heater capacity.
2. Dimensions subject to change without notice. Consult factory for certified drawings.
3. Standard voltage 230-3-60 or 460-3-60. Other voltages available.
4. LFE 100 tanks and above are ASME inspected and stamped.
5. Larger sizes available, consult factory.

*LFE2000 and above includes factory start-up.



LFA Series-0% Purge Loss

Externally Heated-Blower Purged Regenerative Air Dryers

Model	Capacity-SCFM 100° F 100 PSIG	Dimensions			Weight (Kw) Actual	Electrical (Kw) Total Unit	Dessicant per Tower (lbs.)	Blower Motor Hp.	Connections Inlet & Disch./In	MWP PSIG
		L	W	H						
LFA100	100	35"	45"	65"	2.00	2.5	75	1.0	1	150
LFA150	150	38"	45"	65"	2.04	2.5	115	1.5	1	150
LFA200	200	42"	50"	73"	2.06	3.5	150	1.5	1.5	150
LFA250	250	45"	53½"	78"	3.10	4.0	200	2.0	1.5	150
LFA350	350	45"	53½"	78"	3.96	4.5	260	3	2	150
LFA520	520	47"	68"	80"	6.67"	7.0	440	5	2	150
LFA620	620	51"	68"	86"	8.95	9.0	500	5	3	150
LFA800	800	54"	73"	104"	10.49	11.0	600	5	3	150
LFA1000	1000	58"	73"	98"	13.90	15.0	750	7.5	3	150
LFA1200	1200	70"	92"	112"	15.36	16.0	900	7.5	4 FLNG.	150
LFA1600	1600	80"	92"	134"	19.00	20.0	1250	10	4 FLNG.	150
LFA2000	2000	85"	104"	113"	23.32	24.0	1750	15	4 FLNG.	150
LFA2500	2500	Consult Factory			34.5	35	1950	15	4 FLNG.	150
LFA3000	3000				47.5	48	2450	20	6 FLNG.	150
LFA3500	3500				50.5	52	2750	20	6 FLNG.	150
LFA4000	4000				62.24	63	3000	25	6 FLNG.	150

Specifications shown in this brochure are based on current information at the time of publication. Ultra Air Products, Inc. reserves the right to make product changes at any time without notice or obligation. Larger sizes available, consult factory. Standard Voltage 230/460-3-60.

*Factory start-up included for all LFA Series Dryers

Standard and Optional Features of the LFE & LFA Series

S=Standard • O=Optional • N/A=Not Available

Feature	LFE	LFA
Non-Lubricated Inlet Air Control Valves	S	S
Non-Lubricated Purge Air Control Valve	S	S
ASME Coded Pressure Vessels	S	S
Purge Air Mufflers	S	S
Pressure Relief Valves	S	S
Repressurization	S	S
Tower Pressure Gauges	S	S
Purge Air Temperature Gauge	S	S
Outlet Air Check Valve	S	S
Purge Air Chick Valve	S	S
Control Air Valve	S	S
Control Air Filter	S	S
Heater Temperature Control Thermostat	S	S
Overtemperature Control Thermostat	S	S
Open Loop Purge Air Circuit	S	S
-40°F Pressure Dewpoint	S	S
Externally Mounted Heater	S	S
NEMA 4 Electrical Enclosure	S	S
Bed Supports and Air Diffusers	S	S
Fail Safe Mode For Power Failure	S	S
Separate Desiccant Fill and Drain Ports	S	S
150 PSIG Maximum Pressure	S	S
Insulation on Hot Surfaces	S	S
Prepiped and Wired on Structural Steel Skid	S	S
Removable Stainless Steel Desiccant Bed Supports	S	S
Purge Flow Pressure Gauge	S	N/A

Feature	LFE	LFA
Purge Air Orifice	S	N/A
Adjustable Purge Valve	S	N/A
Blower Line Pressure Relief Valve	N/A	S
Purge Air Blower	N/A	S
Blower Intake Muffler/Filter	N/A	S
Blower Motor Thermal Overload Protection	N/A	S
Tower Temperature Gauges	O	S
Slow Depressurizaiton Valve	O	S
Dryer Sequence Lights	O	O
Polishing Cycle No Dewpoint or Temperature Spikes	O	S
High Humidity Alarm	O	O
Visual Moisture Indicator	O	O
Fail-To-Shift Alarm	O	O
-100°F Pressure Dewpoint	O	O
Low Pressure Shutdown	O	O
Filters Mounted On Dryer	O	O
Bypasses Around Filters and Dryer	O	O
Ultra Pak Filtration System	O	O
Econo Purge Energy Management System	O	O
NEMA-7 Electrical	O	O
NEMA-4X Electrical	O	O
Stainless Steel Control Valves and Fittings for Off-Shore of Corrosive Environments	O	O
All Welded Pipe Connections	O	O
JIC Electrical	O	O

Dryer Construction

Heat Reactivated Air Dryer

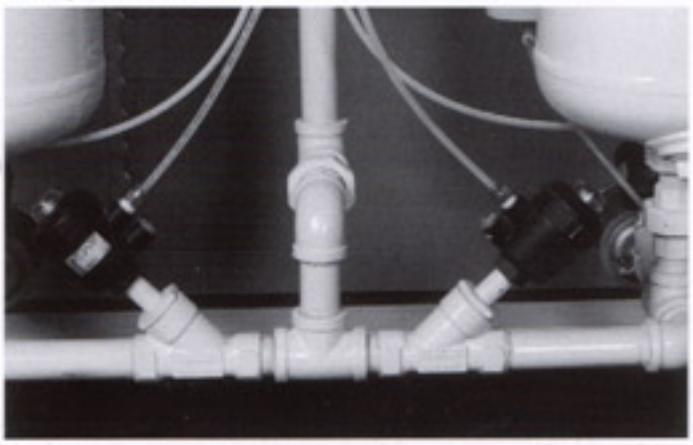
The dual tower, compressed air drying system utilizes ASME coded pressure vessels (100 CFM and above). Each vessel is equipped with full flow pressure relief valves, tower pressure and temperature gauges. The inlet air flow is controlled by full ported, non-lubricated 2-way valves. The purge valves are normally closed so that if the unit is depressurized or if there is a power failure, the valves will close, preventing plant air pressure from being purged to the atmosphere. The purge air and outlet air are controlled by wafer-style check valves with teflon seals.

In a blower purge dryer system, air is generated by a heavy duty industrial blower. In an externally heated dryer system, a small portion of the air existing the on-line tower is expanded to near atmospheric pressure and passed through the off-line tower. The purge air is heated by a low watt density heater mounted in a heavy duty steel chamber. The purge flow is exhausted through purge mufflers to reduce the air noise level to below OSHA limits. The entire system is completely prepiped and wired on a heavy duty, structural steel frame. Only air and electrical connections need to be made.

Quality Features

Tower Switching Valves

The inlet air flow is controlled by fully ported, non-lubricated, 2-way valves. The premium quality valves and actuator assure years of trouble free operation. The actuators are simple, yet reliable rack and pinion design. The valve conforms to ANSI B2.1 specifications



Electrical Control

Standard on LFA800 and Above

The switching valves and heater operation are controlled by a programmable controller unit. The controller consists of a CPU board with either 10 inputs and 6 outputs or 20 inputs and 12 outputs with 4K eprom program storage. The controller can be interfaced with any IBM compatible PC to document, on-line troubleshoot, or test the operation of the dryer. The controller is located in a NEMA-12 electrical enclosure.

Control Air Filter

Each dryer is equipped with a control air filter to protect the control air valves. The filter is 98.5% efficient on solids 0.5 microns and larger.

Insulation

Hot surfaces are covered with fiberglass insulation and an aluminum jacket to cut down on heat loss and to protect personnel from hot surfaces.

Purge Air Heater

The heater is located in the purge air line in a heavy duty steel chamber. The elements are low-watt density and stainless steel sheathed to assure a long heater life. The heater is controlled by thermostats to guard against dewpoint and temperature spikes, and a proportionate controller that provides the optimum resolution in power proportioning to the heater load.

Pressure Vessels

All pressure vessels are built to current ASME pressure vessel codes and CRN registered (100 CFM and above). The vessel diameter and length are designed to achieve the optimum velocity and contact time. Proper design assures low pressure drops, extended desiccant life and proper dewpoint. Each pressure vessel is fitted with stainless steel desiccant bed support screens and air flow diffusers. Each vessel also has desiccant fill and drain ports, full flow pressure relief valves, and pressure and temperature gauges.

Desiccant

Each pressure vessel will contain generous quantities of activated alumina desiccant. Activated alumina is made from aluminum trihydrate by a patented process. It is essentially aluminum oxide in a porous, amorphous form. It is available in several different sizes and has a density of 48 lbs. per cubic foot.

Purge Air Blower-LFA Series Only

The blower is a centrifugal type, driven by a TEFC motor. The blower and the desiccant bed are protected by an inlet air filter silencer, designed with a single unit frame, single shaft construction, and wide internal clearances.

Fail Safe Mode

In the event of a power failure, the dryer's purge valves will close automatically to prevent plant air pressure from being lost. When power is restored, the dryer will continue at the same point in the cycle as when the failure occurred.

The blower is protected by a pressure relief valve that prevents overheating in case blower line blockage occurs. The heater is controlled by an adjustable thermostat and an overtemp thermostat. Dry contacts are provided for fail-to-shift, blower failure, heater failure and high dewpoint.

Econo-Purge™ Control Deluxe

(EPC) Energy Management System
Regenerative Dryer Energy Saving System

The Econo-Purge Energy Management System

Ultra Air Products' engineers designed and developed this system to continuously monitor the exact relative humidity, pressure, flow and temperature the dryer is being subjected to and adjust the amount of purge air needed to completely regenerate the system. The end result can be up to a 65% energy savings in operating costs, versus a dryer that operates on a fixed cycle.

Heatless and Heated Dryers

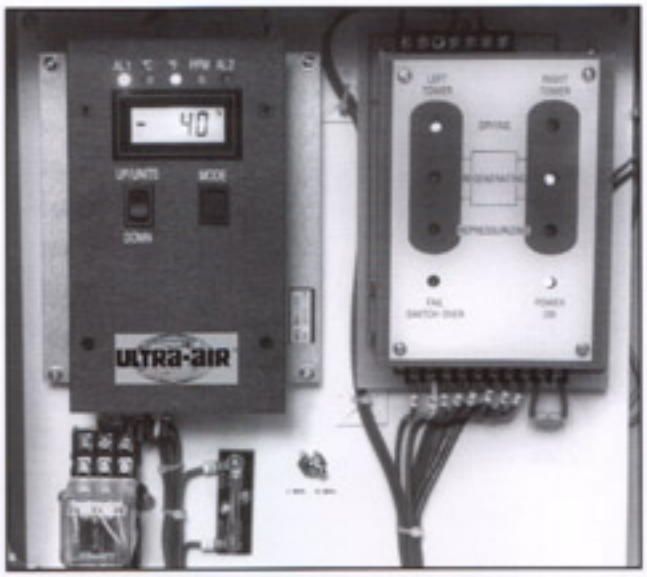
A standard -40°F PDP heatless air dryer system operates on a fixed 10 minute cycle: 5 minutes drying, 4.5 minutes regenerating, and 30 seconds repressurization.

The dryer will only cycle when the On-Line tower is completely saturated. After the regenerating cycle and repressurization cycle is complete and if the outlet dewpoint has not risen above -40°F PDP, the EPC will turn off the cycle timer, leaving the dryer in a dormant condition with no energy being used. No purge is being used, plant air will continue to flow through the On-Line tower until the dewpoint rises above -40°F, indicating that the On-Line tower moisture holding capacity is used up and it is time to shift to the Off-Line tower, which is already regenerated, repressurized, and ready to go On-Line. The entire cycle is then repeated.

The end result is that at the end of a 24 hour period, if the dryer was subjected to less than maximum design conditions, the purge time will be reduced, saving the user energy costs. A dryer without the EPC would cycle every 5 minutes, regardless of the moisture load.

The Econo-Purge Energy Management System features:

- **Dependability and Reliability –** The system is designed to operate normally in excessive heat, vibration and humidity, which are common in many industrial environments.
- **Fail Safe Design –** If there is a power failure, the purge valves will automatically close to prevent unnecessary purging and the possibility of losing plant air pressure.



The Econo-Purge™ Control Energy Management System will pay for itself in less than 1 year.

Assumptions

Electrical cost of compressed air is $.23/1000 standard cubic feet (based on $.0671/KWH electrical cost) Purge loss for all heatless dryers is 15%. Purge loss for external heater dryers is 7%.

Heatless Dryer Operating Cost Estimate

Dryer design capacity 1170scfm x 15% purge rate = 175.5 ft³/min. x 60 min. = 10,530 ft³/hr x 24 hours = 252,720 ft³/day x 365 days = 92,242,800 ft³/yr x $.23/1000 = $21,216 annual operating cost.

If your dryer averages 50% capacity during the year, **Ultra Econo-Purge System** will reduce electrical costs by 55%, for a savings of $11,669 annually.

Calculate Your Savings:

Heatless Dryer Operating Cost Estimate Dryer design capacity

_____ x 15% purge rate= _____ ft³/min.

x 60 min. = _____ ft³/hr x 24 hours =

_____ ft³/day x 365 days= _____ ft³/yr

x $.23/1000 = $ _____ annual operating cost.

If your dryer averages 50% capacity during the year, **Ultra Econo-Purge System** will reduce electrical costs by 55%, for an annual savings of $ _____.

Distributor:

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