GREAT LAKES AIR

Regenerative Air Dryer

GEH - External Heated Purge

5-2-1 Product Warranty

Industry Leading Warranty

Great Lakes Air Products has produced high quality regenerative dryers since its founding in 1983. In an effort to express these quality standards utilized in both the design & manufacture, of desiccant air dryers. Great Lakes Air has standardized on an industry leading regenerative equipment Warranty.

as well as distinguish their products in the marketplace

5 - Year coverage for any heating element
2 - Years coverage for equipment components
1 - Year labor this quality standard

Detailed warranty coverage and requirements can be referenced in the GBS warranty publication.

UL 508A Control Panels

The UL 508A standard defines guidelines of industrial control panel construction inclusive of component selection and wiring methodology to attain a product that is built for safety, function, and longevity in the industrial work environment.

The UL Listing mark demonstrates:

- The industrial control panel and components are third-party certified.
- Includes wiring, motor and induction protection,
- Meets environmental and regulatory requirements.
- Includes the required safety markings.
- The panel meets both the National Electric Code (NEC) & the Canadian Electric Code (CEC)

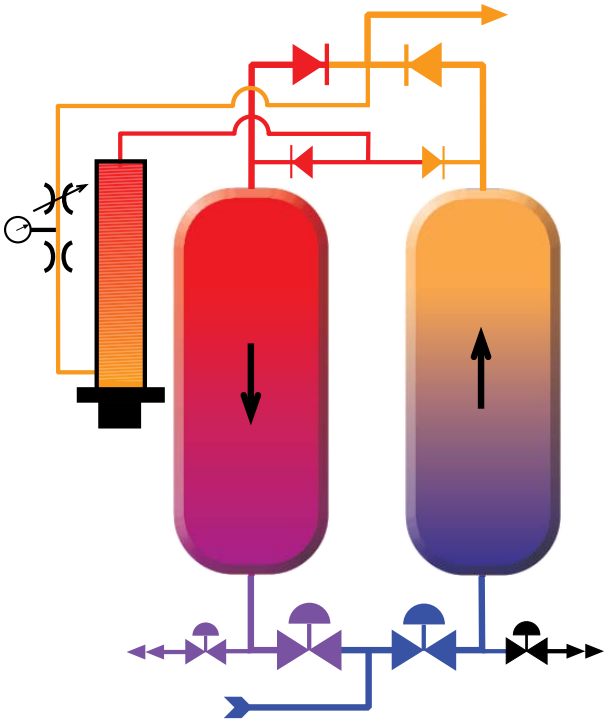
The UL listing mark requires regular inspections throughout the year to verify that control panels are constructed in accordance with approved design. UL Listed panels apply to standard design products. The addition of optional accessories or custom designs may remove the UL Panel Listing.

Made with Pride in the USA

Great Lakes Air Products manufactures all of its compressed air dryers in southeastern Michigan which has a long and rich history in manufacturing. We offer our customers a steady stream of value driven, high quality, industrial grade products with decades of proven performance. Readily available replacement components and maintenance items are locally available through the Great Lakes distribution network. Base your equipment purchase on the quality and durability of American made products.

GEH Series Air Dryer Operation

Compressed air enters the dryer and is directed to a tower by the inlet valves. It then proceeds up through the tower, gives up its moisture, then exits through the outlet check valve. A portion of the dry air, called purge is metered and expanded to atmospheric pressure through an orifice assembly. The purge air enters a circulation chamber where it is heated and its moisture holding capacity is increased. The purge air also transfers heat to the desiccant in the regeneration tower by entering the tower through the purge check valve. As the desiccant temperature increases it releases the previously adsorbed moisture. The moisture is picked up by the heated purge air, and exits to the atmosphere through the purge exhaust valve and muffler. The drying and regenerating cycles occur simultaneously for 4 hours. The regeneration cycle begins with 2.5 hours of heating and 1.4 hours of cooling, then the tower repressurizes before the inlet valves invert and the process starts again.



Optional Air Dryer Operation

Dewpoint Demand Controller

The Dewpoint Demand System eliminates wasted energy from dryer system with fluctuating or low load conditions. The dewpoint system senses the discharge dewpoint of the on-line desiccant bed and determines the maximum allowable drying cycle. If a dryer was sized for continuous full load conditions, the desiccant would reach the end of its useful cycle in four hours for heat type dryers, or ten minutes for heatless dryers. If a system were completely loaded, the on-line tower would reach the end of its useful adsorption cycle just as the off line tower was completing its regeneration. In low load conditions the Dewpoint Demand Controller holds the on-line tower in the drying position, and allows the other fully regenerated tower to hold in a standby mode consuming no energy until it is required, as the on-line tower reaches the end of its useful adsorption cycle. In low load conditions, heated dryer systems can continue to dry a facilities compressed air for days while expending no purge air or energy at all.

Design Features & Benefits

Solenoid Control Valves

Great Lakes Air regenerative dryers use one of two spool and sleeve directional control valves based on pilot air requirements. Each is equipped with Polyurethane dual seals in a packed bore construction that offers improved performance in rigorous applications, shrugging off contaminants or desiccant dust that would destroy ordinary valves.

Process Check Valves

Great Lakes Air desiccant dryers use all stainless steel poppet type check valves for process lines 1/2” through 1-1/2”. The valve has a high flow design for low pressure drop. The all stainless steel construction produces extraordinary service life.

Process lines 2” and larger use a wafer type check valve which has all stainless steel internals and a vulcanized sealing seat. The seat is located on the trailing edge of the process flow protecting it from the damaging desiccant dust.

Over time all valve seals experience wear. If a valve design uses the sealing medium as a hinge or sealing surface, failure can occur depressurizing the entire system. The Great Lakes Air wafer style check valve utilizes the soft seat only to ensure a bubble tight seal, the primary sealing surface is metal to metal thus removing the probability of a catastrophic failure.

Process Automated Valves

Process valves for inlet control, depressurization, and purge exhaust specific valves are selected by line size and process application

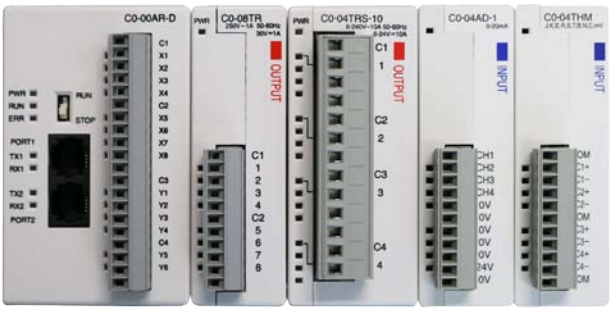
External Piston Process Valve
High flow angle valve with external aluminum alloy actuator
304 SS body and PTFE process seals

Internal Piston Process Valve
High flow angle valve with internal actuator hycar process seals and viton diaphragm

High Performance Butterfly Valve
316 SS Disc and stem w/ replaceable RPTFE Seals
rack & pinion actuator

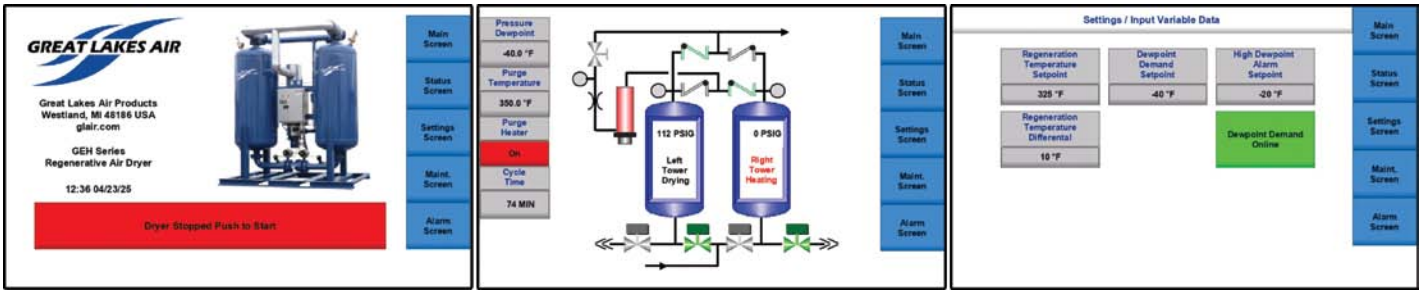
PLC Control System w/ HMI

The PLC control system is a stackable brick compact form factor design capable of multiple configurations, allowing for flexibility, reliability, ease of maintenance. With their fast response times, precise control, and scalability, they are an essential component of modern compressed air dryer control systems.



- ***Standard PLC*** units have two RS-232 (RJ12) serial communications ports - one programming port and one for HMI interconnection.
- ***Optional Ethernet PLC*** units have one RS-232 (RJ12) serial communication port - for HMI interconnection and one 10/100 Mbps (RJ45) ethernet communication port that supports Modbus TCP Client/Server and Ethernet/IP protocol.

Both units are controlled with intuitive programming environment which is available as an open source software.



The human machine interface (HMI) is a resistive analog LCD touch screen capable of 16.7M colors, with WQVGA screen resolution and an 800 MHz CPU. It allows users to monitor, control, and manipulate various aspects of the compressed air dryer through graphical representations.

- Ethernet 10/100 Base-T port (programing/communication)
- Serial PLC interface (RS-232C/422/485)
- One built-in SD memory card slot
- USB port A (USB device options)
- Data logging
- NEMA 4/4X, IP65
- USB port B (program/download)

Desiccant Support Screens

The Great Lakes Air desiccant support screens are fabricated from heavy gauge perforated stainless steel. The perforation pattern is designed to retain the desiccant bed while allowing small particles to pass, this prevents particle buildup and high pressure drops. Screens with tighter perforations or wire mesh covers run a high probability of damage from pressure drop. The screens are 100% welded construction, with no epoxy bonding.

Features & Benefits

Description	100/650 Standard	100/650 Analog	800/1400 Standard	800/1400 Analog	1600/5000 Standard	1600/5000 Analog
System Design & Components						
NEMA 12 Electrical	●	●	●	●	●	●
UL Listed Industrial Control Panel	●	●	●	●	●	●
5-Year Heater Warranty	●	●	●	●	●	●
Low Watt Density Incoloy Heater	●	●	●	●	●	●
Insulated Heater & Purge Piping	●	●	●	●	●	●
Regenerative Blower	●	●	●	●	●	●
ASME Relief Valves	●	●	●	●	●	●
OSHA Approved Mufflers	●	●	●	●	●	●
Desiccant Fill & Drain Ports	●	●	●	●	●	●
Control Air Filter	●	●	●	●	●	●
Adjustable Purge Flow w/ Indicator	●	●	●	●	●	●
External Piston Process Valve	◆▲❖	◆▲❖	▲❖	▲❖	❖	❖
Internal Piston Process Valve	X	X	◆	◆	X	X
High Performance Butterfly Valve	X	X	X	X	◆▲	◆▲
Control & Instrumentation						
PLC Control w/ HMI	●	●	●	●	●	●
Ethernet PLC Control w/HMI	■	■	■	■	■	■
Dewpoint Demand Controller	■	■	■	■	■	■
Tower Pressure Gauges	●	●	●	●	●	●
Heater over-temp hi-limit system	●	●	●	●	●	●
Stainless Steel Control Tubing	■	■	■	■	■	■
Alarm Systems						
Heater Overtemp Alarm	●	●	●	●	●	●
Low Purge Temperature Alarm	●	●	●	●	●	●
Fail to Shift Alarm	■	●	■	●	■	●
High Dewpoint Alarm	■	■	■	■	■	■

Standard Feature ●	Optional Feature ■	Not Available **X**
Process Valves ◆	Purge Valves ▲	Depressurization Valves ❖

Features & Benefits

Engineered Packages

Custom packages designed to meet submitted engineering specifications for the most demanding applications.

Cold Weather Packages

Upgrades a standard package to operate in ambient conditions below freezing.

Electrical Systems

Great Lakes Air regenerative dryers have a standard electrical rating of NEMA 12. The following electrical classifications are available:

NEMA 4	Watertight,
NEMA 4X	Watertight & Corrosion Resistant
Hazardous Location	Class 1 Div. 1
Hazardous Location	Class 1 Div. 2 (Z-Purge Package)

Non Standard Condition Capacity Correction

To obtain flow capacities at conditions other than standard (SCFM @ 100 PSIG, 100°F Inlet), locate the multiplier at the interception of actual operating conditions. Multiply the standard rated capacity of the dryer by the selected multiplier. The result is the flow capacity of that dryer under corrected conditions. Flow rates in excess of design due to capacity correction can result in increased pressure drop.

Inlet Temperature °F		80	90	100	105	110	115	120
Inlet Air Pressure	60 psig	1.17	0.87	0.65	0.57	0.49	0.43	0.38
	70 psig	1.33	0.99	0.74	0.64	0.56	0.49	0.43
	80 psig	1.49	1.10	0.83	0.72	0.63	0.55	0.48
	90 psig	1.65	1.21	0.91	0.79	0.69	0.61	0.53
	100 psig	1.80	1.33	1.00	0.87	0.76	0.66	0.58
	110 psig	1.96	1.45	1.09	0.95	0.82	0.72	0.63
	115 psig	2.04	1.51	1.13	0.98	0.86	0.75	0.66
	120 psig	2.12	1.57	1.17	1.02	0.89	0.78	0.68
	125 psig	2.19	1.62	1.22	1.06	0.92	0.81	0.71
	130 psig	2.27	1.68	1.26	1.10	0.96	0.84	0.73
	140 psig	2.43	1.80	1.35	1.17	1.02	0.90	0.79

Example Calculation	
Dryer Inlet:	650 SCFM
	110°F
	115 PSIG
Correction Factor:	0.86
Corrected Flow:	0.86 x 650 = 559

A standard dryer with the rated capacity of 650 SCFM has a corrected capacity of 559 SCFM at the specified operating conditions of 110°F and 115 PSIG inlet conditions.

Design and Specification Information

Model Number	Capacity	Voltage	In / Out	Desiccant Weight	Purge SCFM	Heater Kw	Avg. Heater Kw/H	Dimensions		
								Height	Width	Depth
GEH-100-♦	100	460-3-60 / 380-3-50 230-3-60 / 200-3-50	1”	150	7	1.5	0.39	68	51	32
GEH-125-♦	125		1”	200	9	1.5	0.49	68	51	32
GEH-175-♦	175		1-1/2”	300	12	2.5	0.69	70	55	32
GEH-250-♦	250		1-1/2”	400	18	3	0.98	72	59	32
GEH-350-♦	350		1-1/2”	550	25	3	1.37	79	68	32
GEH-500-♦	500		2”	750	35	5	1.96	85	68	32
GEH-650-♦	650		2”	1000	46	6	2.55	77	78	41
GEH-800-♦	800		3”	1200	56	8	3.14	87	78	41
GEH-1000-♦	1000		3”	1500	70	10	3.92	89	88	45
GEH-1250-♦	1250		3”	1900	88	12	4.90	88	88	45
GEH-1400-♦	1400		3”	2100	98	15	5.49	88	88	45
GEH-1600-♦	1600		4” Flg.	2400	112	15	6.27	96	96	55
GEH-1800-♦	1800		4” Flg.	2700	126	18	7.06	96	96	55
GEH-2000-♦	2000		4” Flg.	2800	140	18	7.84	102	102	60
GEH-2250-♦	2250		4” Flg.	3150	158	20	8.82	102	102	60
GEH-2500-♦	2500		6” Flg.	3500	175	24	9.80	125	102	60
GEH-2750-♦	2750		6” Flg.	3850	193	24	10.78	131	102	60
GEH-3000-♦	3000		6” Flg.	4200	210	30	11.76	134	105	52
GEH-3500-♦	3500		6” Flg.	4900	245	30	13.72	134	105	52
GEH-4000-♦	4000		6” Flg.	5600	280	36	15.68	136	109	56
GEH-5000-♦	5000		6” Flg.	7000	315	44	17.64	140	130	60
GEH-6000-♦	6000		8” Flg.	8400	350	44	19.60	140	132	64

Notes: Capacity =SCFM @ 100°F inlet,100°F ambient & 100 PSIG
Average kW/H heater ratings incorporate actual heating load, and heating cycle time factors.
Purge & kW rates reflect 100% loaded systems and or systems without Dewpoint Demand Control
Dimensions and specifications are subject to change without notice.
Connections are NPT unless otherwise noted.
Custom design configurations available
"♦" Symbol reflects missing voltage designation

Other Products from Great Lakes Air Products

GRN Series
Refrigerated Air Dryer

GMNX Series High Capacity
Cycling Air Dryer

Nitrogen
Generators

Compressed Air
Filtration

Condensate
Drain Systems

Distributed By:

Great Lakes Air Products, Inc.
1515 S. Newburgh Road
Westland, MI 48186 USA
Ph: 734-326-7080
www.glair.com