GREAT LAKES AIR

ECO

GNX Series Thermal Xchange Refrigeration Dryers

5 - Year Product Warranty

Great Lakes Air Products has produced high quality refrigeration dryers since it's founding. In an effort to express this quality standard, as well as distinguish it's products in the marketplace, it initiated an industry leading 5-Year product warranty on standard refrigerated air dryers. The warranty requires no additional purchases or contracts and covers the entire dryer for 5-Years, and excludes only maintenance items through a simple purchase.

Great Lakes Air has supported it's 5-Year Waranty since 1983 while many other industry warranties have been implimented and revoked, others cover only select components, or prorates charges for components at the time of replacement.

With continuous improvement in engineering and quality standards, that are a product of current technology, you can be assured that Great Lakes Air Products will provide you with a quality product for years of uninterrupted service.

Detailed warranty coverage and requirements can be refrenced in the GNX warranty publication.

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.

Engineered for a Green Future

The GNX series refrigerated compressed air dryer is designed with the most current technology and methodology for the 21st century.

- ***Enhanced High Efficiency Heat Exchangers***

The enhanced efficiency of the heat exchanger allows closer approach temperatures in both the Air-Air and Air-Refrigeration exchangers reducing the required BTU/h input of the refrigeration system required to meet or exceed ISO Class 8573 class 4 pressure dewpoints.

- ***Reduced Operating Costs & Carbon Footprint***

The reduction of required refrigeration BTU/h input correlates to smaller refrigeration requirements and reduction of operational input watts.

- ***Reduced Manufacturing Carbon Footprint***

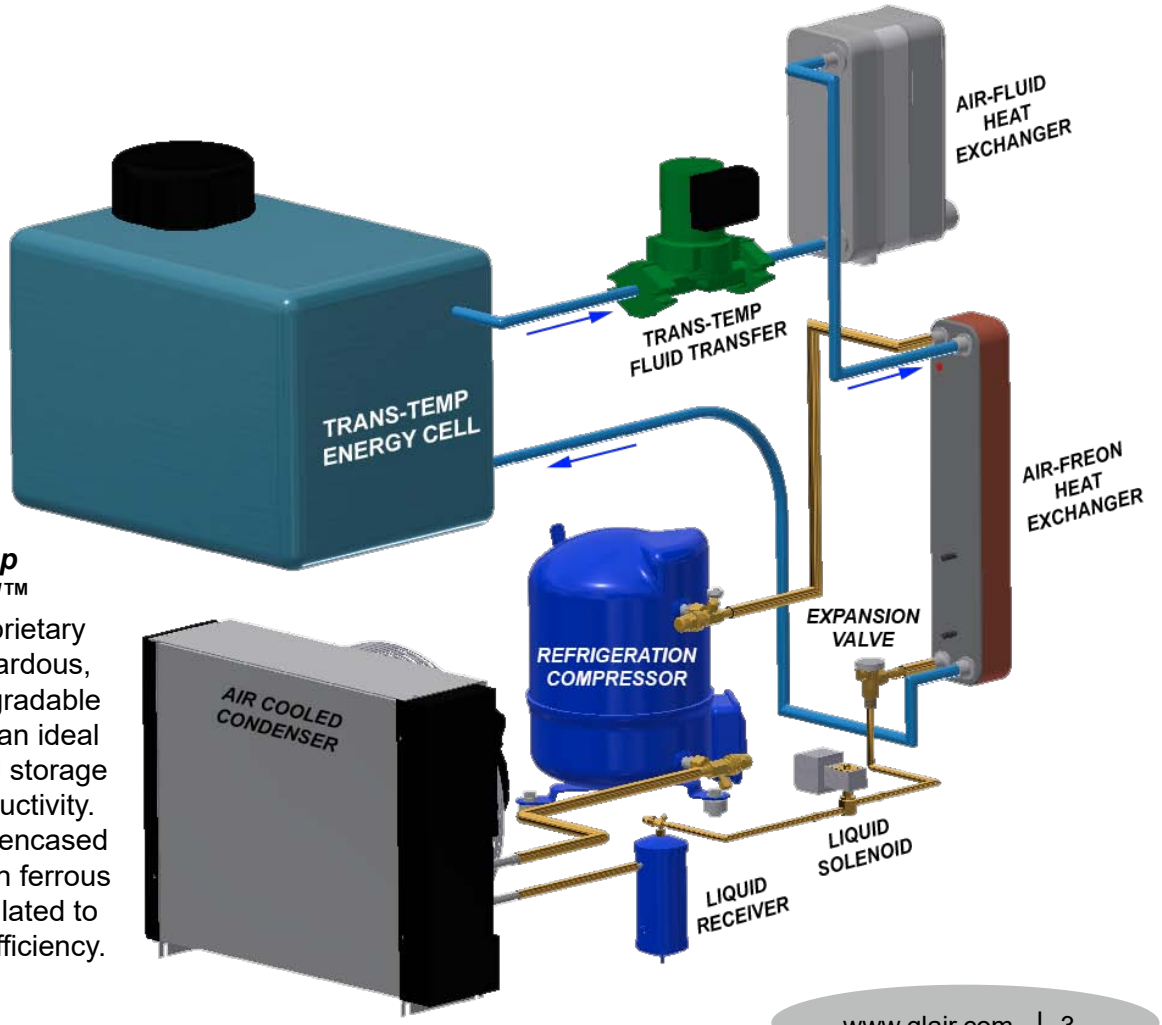
The Carbon Footprint required to manufacture a refrigeration dryer has also been reduced in the GNX series. It has a reduced material and equipment footprint which requires less materials to manufacture thus reducing it's carbon footprint.

How A Cycling Dryer Works

Rising energy costs have forced equipment efficiency and operating costs to become a significant factor in the purchase of new equipment. A basic non-cycling refrigerated dryer is specified by matching the capacity of the dryer, with the maximum capacity requirement of the compressed air system. This design is very efficient when the loads are balanced. Unfortunately in many applications, compressed air systems experience wide fluctuations that range from 0 to 100% of full load. If the compressed air load falls, the refrigeration system of a non cycling dryer must dump or waste energy to balance the system. The GNX cycling refrigerated air dryer uses a fully loaded refrigeration system to store energy in the TRANS-TEMP energy cell during low load periods. By operating the refrigeration system fully loaded, you maximize the operating efficiency, reducing energy costs. When the ENERGY CELL reaches maximum charge, the refrigeration compressor CYCLES OFF, allowing the energy cell to continue providing the required energy for cooling and drying the compressed air system.

GNX Series Air Dryer Operation

Saturated compressed air enters the dryer and is initially cooled in the Air to Air heat exchanger by the cold outgoing air. The TRANS-TEMP Fluid from the energy storage cell further cools the compressed air in the Trans-Temp to Air heat exchanger. Liquid that has been condensed by the reduced air temperature is removed in the high efficiency separator. The cold air is then reheated as it pre-cools the inlet air via the Air to Air heat exchanger. The refrigeration system maintains the temperature in the energy cell with a microprocessor based controller and operates only as required. The energy cell is capable of maintaining dewpoint, allowing the refrigeration compressor to be cycled off, reducing the required energy of operation.



Trans-Temp Energy Cell™
Integrates a proprietary blend of non hazardous, completely biodegradable fluids that attains an ideal balance of thermal storage and thermal conductivity. The energy cell is encased in a heavy duty non ferrous vessel that is insulated to maintain energy efficiency.

Quality Products start with Quality Components

Thermostatic Expansion Valve

Interchangeable orifices specifically match system design to refrigeration load.

Thermostatic expansion valve that modulates refrigerant flow to match system requirements in fluctuating ambient temperatures and compressed air load. Low cost capillary tube systems used by other manufacturers will increase or decrease refrigerant flow based upon ambient conditions with no regard to system load. High ambient temperatures or slightly clogged condensers will increase refrigerant flow without a load to balance the system. Operation under these conditions can cause premature compressor failure.

Liquid Line Solenoid

During refrigeration compressor off cycles the liquid line solenoid isolates the high side from the low side of the refrigeration system. This prevents refrigeration liquid from condensing in the TRANS-TEMP energy cell then slugging the compressor with that condensed refrigerant during restart. The the liquid line solenoid adds years of trouble free service to your refrigeration compressor and GNX series dryer.

Heavy Duty Piston Refrigeration Compressor with Rotolock Service ports

Heavy duty, industrial service piston type refrigeration compressor with proven durrabilty that is designed to handle the fluxuating loads of a compressed air refrigeration dryer.

Rotolock service valves allow isolation as well as access to the refrigeration system that aids in the long term service and maintenance of a refrigeration dryer.

Refrigerant Pressure Switches & Fan Cycle Control

Fan Cycle pressure switch controls allow a stable and precise refrigerant operating band in various or changing ambient conditions.

Suction Accumulator

The addition of a suction accumulator further reduces the possibility of refrigerant liquid returning to the compressor causing premature failure. The addition of liquid receivers provide a stable feed to the refrigeration expansion valve. This provides pump down ability and additional refrigeration storage avoiding a critical charge system. Full service refrigeration valves are standard on both the suction and discharge systems.

High Quality Gauges

SS panel mounted gauges with brazed connections and coiled vibration eliminators removes the possibility of a refrigerant leak from a common leak point in competitive dryers.

Great Lakes Premium Diaphragm Valves

Great Lakes dryers utilize high quality diaphragm type solenoid valves as drains in addition to an isolation valve and strainer. Diaphragm valves isolate contaminants from the internal piston that would normally foul and restrict it's movement causing failure. Diaphragm valves also have much larger orifices and flow paths that in conjunction with the strainer virtually eliminates the possibility of clogging a condensate drain valve.

Quality Products start with Quality Components

Low Pressure Drops

GNX series compressed air dryers are designed for ultra low pressure drops that average 3.7 PSID. Pressure drop can substantially increase the operating cost of your dryer, each pound of pressure drop (PSID) raises the required compressor horsepower by 0.5%. If a facility is required to raise discharge pressure by 3 PSI to overcome component restriction (Pressure Drop), 1.5% additional compressor HP is required.

Adjustable Dewpoint

This feature allows the user to adjust the temperature of the Trans-Temp Energy Cell affecting the dryer dewpoint. Increasing dewpoint in applications that do not require optimum dewpoint suppression will further increase energy savings. The controller has a bright LED display, alarm text messaging, and a display that will read in °F or °C.

Features & Benifits

Description	GNX 100	GNX 125	GNX 220	GNX 300	GNX 300-400	GNX 500-600	GNX 800-3200
	Single Phase				Three Phase		
Power & Instrumentation							
Refrigeration Suction Gauge	●	●	●	●	●	●	●
Refrigeration Discharge Gauge	x	x	x	x	x	●	●
Air Outlet Pressure Gauge	x	x	x	x	x	x	●
Illuminated On/Off Power Switch	●	●	●	●	●	●	●
Junction Service Feed	-	●	●	●	●	●	●
Refrigeration System							
Piston Refrigeration Compressor	●	●	●	●	●	●	●
Thermostatic Expansion Valve	x	●	●	●	●	●	●
Automatic Expansion Valve	●	x	x	x	x	x	x
Liquid Line Solenoid Valve	x	●	●	●	●	●	●
Relay/Contactor	●	●	●	●	●	●	●
Overload Protection	●	●	●	●	●	●	●
Oil Sight Glass	x	x	●	●	●	●	●
Crankcase Heater	x	x	●	●	●	●	●
Fan Cycle Control	x	x	●	●	●	●	●
High Pressure Shutdown*	●	●	x	x	x	x	x
High/Low Press Shutdown	x	x	●	●	●	●	●
Rotolock Isolation & Service Valves	x	x	●	●	●	●	●
Suction Accumulator	x	x	x	x	x	x	●
Liquid Receiver	●	x	-	x	-	x	-
Air Cooled Condenser	●	●	●	●	●	●	●
Water Cooled Condenser	x	x	■	■	■	■	■
Condensate Drain							
Strainer with Isolation Valve	●	●	●	●	●	●	x
Smart Design Solenoid Drain	●	●	●	●	●	●	x
Zero Loss Drain Installed	x	x	x	x	x	x	●

Standard Feature ● Optional Feature ■ Not Avaliable x

Energy Saving Calculation

Compressed air volume, temperature, & pressure along with ambient temperature are variable conditions that affect the energy load on a refrigeration dryer. The two most significant variables are inlet volume and temperature. Use the following sample calculation to determine annual energy savings of a GNX cycling dryer.

Sample Calculation for GNX-500 Step #1

Determine an average compressed air consumption

Shift	SCFM	Min	Hours of operation	System Volume FT^3
1st	500	60	40	1,200,000
2nd	475	60	40	1,200,000
3rd	275	60	35	577,500
Weekend	150	60	16	144,000
Actual volume consumption (weekly)				3,121,500

Determine the total possible load for the compressed (GTX-500) x (60 min x 168 Hrs a week) = 5,745,600
Divide actual volume consumption by total possible load consumption

3,121,500 / 5,745,600 = 0.54 or 54% Actual Load

Sample Calculation for GNX-500 Step #2

Temperature correction has a high variance due to multiple factors like region, season, and time of day. Select an average dryer inlet temperature taking into account cool evening temperatures. If an annual average is to general to get an accurate result. Average temperature by seasons and break the cost savings calculation into individual seasons.

Temperature	Multiplier	Temperature	Multiplier
60°F/ 15.5°C	0.29	85°F/ 29.4°C	0.64
70°F/ 21.1°C	0.40	90°F/ 32.2°C	0.74
75°F/ 23.8°C	0.47	100°F/ 37.7°C	1.0
80°F/ 26.6°C	0.55	110°F/ 43.3°C	1.32

Sample Calculation for GTX-500 Step #3

In step #1 the average compressed air consumption calculated to 54% of full load conditions. Assuming an average inlet temperature of 85°F select the multiplier of .64 or 64%. Multiply the actual load multiplier by the temperature correction multiplier to attain a total percentage of load.

0.54 x 0.64 = 0.346 or 34.6%

Convert corrected load to percentage of savings
(100 x 0.346)-100 = 65.4%

Select the GNX-500 operating wattage and multiply by the percentage of savings 4625 x .654 = 2983
(3007 x (8760 hrs / 1000) x local power costs per kW/H = $ Savings

GNX Cost Saving Calculator

If a more detailed calculation of power savings is required the Great Lakes GNX cost saving calculator is avaliable for download at:
www.glair.com/downloads

Non Standard Condition Capacity Correction

Inlet Temperature °F		90			100			110			120		
Ambient Temperature °F		90	100	110	90	100	110	90	100	110	90	100	110
Inlet Air Pressure	70 psig	1.10	1.01	0.86	0.81	0.74	0.63	0.60	0.55	0.47	0.45	0.42	0.35
	80 psig	1.23	1.13	0.96	0.90	0.83	0.70	0.67	0.62	0.52	0.51	0.47	0.40
	90 psig	1.35	1.24	1.06	1.00	0.91	0.78	0.74	0.68	0.58	0.56	0.51	0.44
	100 psig	1.48	1.36	1.15	1.09	1.00	0.85	0.81	0.75	0.63	0.61	0.56	0.48
	110 psig	1.61	1.47	1.25	1.18	1.09	0.92	0.88	0.81	0.69	0.66	0.61	0.52
	120 psig	1.73	1.59	1.35	1.09	1.17	0.99	0.95	0.87	0.74	0.72	0.66	0.56
	130 psig	1.86	1.70	1.45	1.37	1.26	1.07	1.02	0.94	0.80	0.77	0.71	0.60
	140 psig	1.98	1.82	1.55	1.46	1.34	1.14	1.09	1.00	0.85	0.82	0.75	0.64
	150 psig	2.11	1.93	1.64	1.55	1.42	1.21	1.16	1.06	0.90	0.87	0.80	0.68
	175 psig	2.40	2.20	1.87	1.80	1.65	1.41	1.37	1.25	1.07	1.05	0.96	0.82

To obtain flow capacities at conditions other than standard (SCFM @ 100 PSIG, 100°F Inlet & 100°F Ambient), 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.

Design and Specification Information

Single Phase											
Model Number	Capacity SCFM @100 PSIG		Refrigeration System			Available Voltages	In / Out Ports	Max. Inlet Pressure	Dimensions Inches			Shipping Weight
	35-39°F PDP	50°F PDP	HP	Watts	Freon				H	W	D	
GNX-100A-♦	100	120	1/2	795	134A	120-1-60 230-1-60	1”	220 PSIG	34	26	33	320
GNX-125A-♦	125	150	5/8	948	134A		1”		34	26	33	350
GNX-220A-♦	220	265	1	1,372	134A	230-1-60	1-1/2”		46	33	30	500
GNX-300A-♦	300	360	1-1/2	2,216	404A		2”		46	33	30	525

Three Phase												
Model Number	Capacity SCFM @100 PSIG		Refrigeration System			Available Voltages	In / Out Ports	Max. Inlet Pressure	Dimensions Inches			Shipping Weight
	35-39°F PDP	50°F PDP	HP	Watts	Freon				H	W	D	
GNX-300A-♦	300	360	1-1/2	2,209	404A	230-3-60 460-3-60 575-3-60	2”	220 PSIG	46	33	30	525
GNX-400A-♦	400	480	2	2,562	404A		2”		46	33	45	750
GNX-500A-♦	500	600	3	4,625	404A		2”		46	33	45	920
GNX-600A-♦	600	720	3	4,744	404A		2”		46	33	45	950
GNX-800A-♦	800	960	4	5,424	404A		3”	150 PSIG	60	35	56	1525
GNX-1000A-♦	1000	1200	5	7,153	404A		3”		60	35	56	1780
GNX-1350A-♦	1350	1620	7	9,486	404A		3”		65	42	67	3200
GNX-1600A-♦	1600	1920	9	10,960	404A		4” Flg		75	57	74	3800
GNX-2000A-♦	2000	2400	10	13,860	404A		4” Flg		75	57	74	4050
GNX-2600A-♦	2600	3120	13	17,620	404A		6” Flg		75	57	74	4375
GNX-3200A-♦	3200	3840	(2) 9	21,370	404A		6” Flg		96	58	96	4865

Notes:
1. Capacity reflects 100°F & 100 PSIG inlet conditions and a 100°F ambient.
2. The symbol "♦” represents a missing voltage designation see table for appropriate designation
3. Inlet/Outlet connections are NPT unless otherwise specified
4. Refrigeration watts specified is an average of all power components through a fully loaded operational cycle.
5. For full load amps and recommended max fuse see owners manual.
6. Dimensions are in inches, complete drawings available at www.glair.com
7. Shipping weight is in pounds
8. Dimensions, weights, and specifications are subject to change without notice

Dryer Heat Rejection & Cooling Requirements

Heat Rejection	***Air-Cooled Units:***
	60 BTU/H per rated SCFM of dryer capacity to ambient
	Water-Cooled Units:
	55.2 BTU/H per SCFM of dryer capacity to cooling fluid
	4.8 BTU/H per SCFM of dryer capacity to ambient
Fluid Cooling Requirements	0.0040 GPM per SCFM of dryer capacity @ 50°F Fluid
	0.0050 GPM per SCFM of dryer capacity @ 60°F Fluid
	0.0065 GPM per SCFM of dryer capacity @ 70°F Fluid
	0.0100 GPM per SCFM of dryer capacity @ 80°F Fluid
	0.0150 GPM per SCFM of dryer capacity @ 90°F Fluid

♦ Voltage Designations

115-1-60	116
230-1-60	216
230-3-60	236
460-3-60	436
575-3-60	536
Allowable Voltage Range +/- 10%	

Other Products from Great Lakes Air Products

GRN Series
Refrigerated Air Dryer

GMNX Series
High Capacity Cycling Air Dryer

Regenerative
Desiccant Air Dryers

Compressed Air
Filtration

Nitrogen
Generators

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