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ecostar

Thermal Mass Cycling Refrigerated Air Dryers (200 - 1000 scfm)

Parker Zander

ENGINEERING YOUR SUCCESS.

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Thermal Mass Cycling Refrigerated Air Dryer

ecostar 200 - 1000 scfm

The importance of compressed air ...

... as a provider of energy for modern industrial processes is widely known. What is often overlooked however is the need to provide quality treatment for this air.

In fact, the air entering the system contains condensate which, when cooled, will turn into liquid water, causing extensive damage not only to the compressed air network, but also to the finished product.

These costly contamination problems can be avoided by installing a ecostar Thermal Mass Cycling Refrigerated Air Dryer package complete with Parker Zander filtration. The combination of our thermal mass dryer and high quality filtration provides air quality to ISO 8573.1 Class 1.4.1.

A refrigerated dryer is typically selected to achieve its design performance at the user's most extreme working conditions. (ie. a warm summer day with the air compressor operating at maximum load).

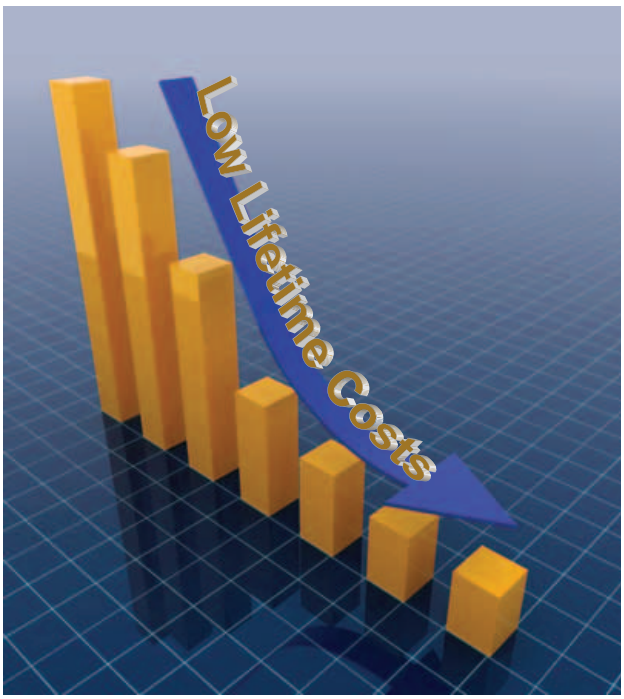
This maximum condition, however, is very rarely achieved in everyday conditions. First, the air compressor load will vary significantly during a working day and will rarely be at full load, thereby significantly reducing the load on the dryer itself.

Furthermore, average temperatures are well below the maximum inlet and ambient temperatures for which the system has been sized. Reduced temperatures at colder moments during the day and overall temperature reductions during the mid-season and winter add a further reduction to the load on the dryer.

ecostar dryers perfectly and continuously adapt to the actual operating conditions, ensuring perfect dewpoint control together with the lowest operating costs. Over and above this extreme flexibility of use, ecostar advanced technical solutions offer reliability, efficiency, energy savings, compact dimensions and low weight, making it the ideal solution for all industrial users.

... benefits

- **Optimum dewpoint levels for highest system performance**
- **Lowest operating costs**
- **Continuously and automatically adjusts to actual working parameters**
- **High reliability, easy to use and maintain**
- **eco-Pack 4-in-1 heat exchanger**
- **Integral zero air loss energy saving drain (400 - 1000 scfm)**
- **Low pressure drop design**
- **Microprocessor based energy management controller**
- **Unique Thermal Mass eco-Storage reduces power consumption and improves temperature control**



Thermal Mass Cycling Refrigerated Air Dryer

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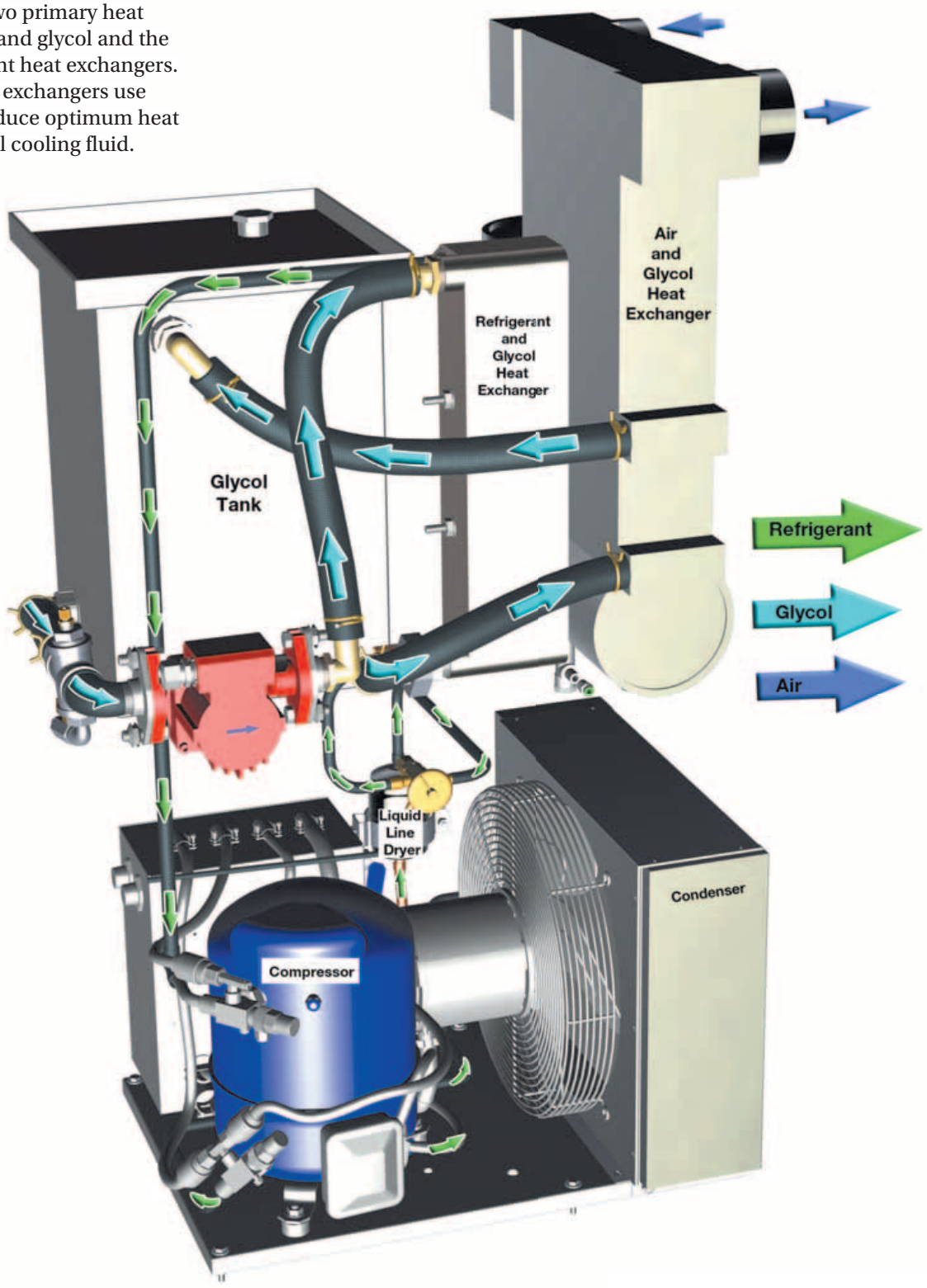
How it works ...

There are three circuits: air, glycol, and refrigerant. The refrigerant cools the glycol and the glycol cools the air to improve efficiency. With these three circuits, there are two primary heat exchangers: the air and glycol and the glycol and refrigerant heat exchangers. Both insulated heat exchangers use counter flow to produce optimum heat transfer to the glycol cooling fluid.



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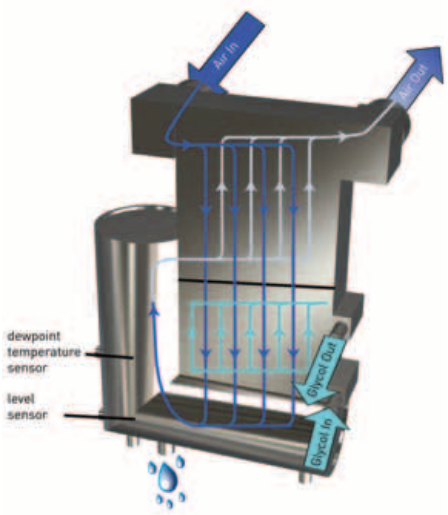
Smart technology: the benefits ...

1 Technology that adjusts energy consumption

Parker Zander's technology automatically and precisely adjusts energy consumption in response to actual operating conditions (air variability and seasonal changes), avoiding unnecessary waste. This technology controls the dryer operation via multiple sensors guaranteeing maximum savings and avoiding dewpoint surges. Parker Zander's eco-Pack heat exchanger's all-in-one design and thermal insulation further enhance the overall energy savings.

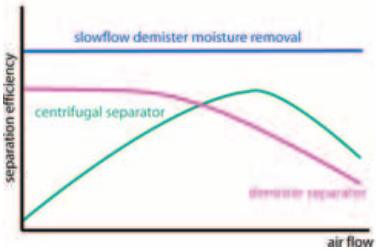
2 Patented eco-Pack 4-in-1 heat exchanger design

A 4-in-1 eco-Pack heat exchanger features an extremely robust, all-in-one aluminum design, with no interconnecting piping.



eco-Pack features the lowest pressure drop in the industry, notable energy savings and guaranteed dewpoint. Optimum dewpoint performance is ensured thanks to wide air channels leading to low air velocities, an oversized slowflow demister separator offering perfect condensate separation even at partial air flows and a dewpoint temperature sensor within the air flow for improved control. The generously sized air-to-air section and insulation contribute to a very low power consumption.

The 4-in-1 design promotes Continuous Active Separation. Separation occurs as soon as the condensate forms so most of the condensate is already removed before the air reaches the demister separator. This allows the demister to act as a final polisher - removing only the finest condensate droplets that have made it this far. The demister separator is unique in that it provides efficient separation at any air flow. Most competitors use centrifugal separators, which are designed to operate efficiently at 100% of their rated flow, but lose efficiency at higher or lower flows.



3 Integral zero air loss drain with fail safe trigger (400 - 1000 scfm)

A truly unique part of eco-Pack is the integral zero loss drain. The drainage chamber is integrated into the heat exchanger while the drain continuously adjusts itself to the actual working conditions, ensuring zero air loss and a notable reduction in system power consumption. An innovative control system continuously monitors for fault situations. If a fault does occur, an alarm is signaled and the drain switches to conventional timed solenoid drain operation. The dual mode circuitry ensures maximum reliability.

4 Environmentally friendly

Montreal Protocol compliant R404A refrigerant allows for zero ozone depletion, low global warming potential and low refrigerant charge. Because R404A does not separate easily, it is more reliable for these designs and therefore the refrigerant of choice for cycling applications.

Thermal Mass Cycling Refrigerated Air Dryer

ecostar 200 - 1000 scfm

Features

- High operating limits
- Easy to remove panels with frontal access to all major components
- User friendly control panel
- Aluminum heat exchangers for maximum efficiency
- Environmentally friendly propylene glycol
- ETL listed complete unit
- eco-Control - UL listed
- Refrigerant compressor overload protection switch
- Rugged sheet metal enclosure with polyester-based powder coat finish withstands harsh environment.
- Automatic fan cycling controls on each fan (air-cooled models)
- Suction pressure gauge - Standard all models
- Remote board loop 4-20 mA - Optional
- Integral zero air loss drain valve (CSM400 - CSM1000)

CSM200 - CSM1000

Microprocessor Based Energy Management Controller - Standard

Display LEDs
- Dryer ON
- Common Alarm
- Drain Open
- Drain Alarm
- Power Save

Setting
- Degrees °F/°C
- Set Dewpoint

Digital Display Readouts
- Process control temperature
- Set auto drain off time (minutes)
- Factory dewpoint set at 39°F (4°C)

Adjustable Operating Parameters
- Adjustable dewpoint (36-50°F (2-10°C))
- Automatic drain close time
- Automatic drain test

Fault Alarm Warnings (W) and Shutdowns (S)
- High dewpoint (W)
- Low evaporative temperature alarm shutdown (S)
- Dryer overload alarm shutdown (S)
- Low refrigerant pressure alarm shut down (S)
- High refrigerant pressure alarm shut down (S)
- Low coolant temperature shutdown alarm (S)
- Drain fault alarm with back-up time drain mode (W)
- Sensor fault open dewpoint sensor alarm (S)
- Sensor fault shorted dewpoint sensor alarm (S)
- Sensor fault open thermal mass sensor alarm (S)
- Sensor fault shorted thermal mass sensor alarm (S)
- Service due indicator (W)
- Compressor protection anti short cycle warning (“CP”) (W)
- Short cycle shutdown (S)

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Parker Zander GL Series filtration, add to your savings ...

Any restriction to airflow within a filter housing and element will reduce the system pressure. To generate compressed air, large amounts of electrical energy are consumed, therefore any pressure lost within the system can be directly converted into a cost for wasted energy. The higher the pressure loss, the higher the energy costs. In order to build upon the low pressure drop of the ecostar Series, not just any compressed air filter will do.

- ISO 8573-1 Class performance
- High efficiency filter element media is manufactured from borosilicate nano-fibers with a voids volume of 96% and external drainage layer
- Optimum air distribution throughout entire element
- Deep bed pleating techniques result in 4.5 times more effective filtration area than conventional filter elements
- Conical air dispenser at the base of the element prevents turbulence
- No wet band provides longer turbulent free zone
- Simple installation and easy maintenance

International Standard ISO8573-1 has become the industry standard method for specifying compressed air cleanliness.

ISO8573-1:2010 CLASS	Solid Particulate				Water		Oil
	Maximum number of particles per m^3			Mass Concentration ppm	Vapor Pressure Dewpoint	Liquid g/m^3	Total Oil (aerosol liquid and vapor) ppm
	0.1 - 0.5 micron	0.5 - 1 micron	1 - 5 micron				
0	As specified by the equipment user or supplier and more stringent than Class 1						
1	≤ 20,000	≤ 400	≤ 10	-	≤ -94°F (-70°C)	-	0.01
2	≤ 400,000	≤ 6,000	≤ 100	-	≤ -40°F (-40°C)	-	0.1
3	-	≤ 90,000	≤ 1,000	-	≤ -4°F (-20°C)	-	1
4	-	-	≤ 10,000	-	≤ 37.4°F (3°C)	-	5
5	-	-	≤ 100,000	-	≤ 44.6°F (7°C)	-	-
6	-	-	-	≤ 5	≤ 50°F (10°C)	-	-
7	-	-	-	5 - 10	-	≤ 0.5	-
8	-	-	-	-	-	0.5 - 5	-
9	-	-	-	-	-	5 - 10	-
X	-	-	-	> 10	-	> 10	> 10

Thermal Mass Cycling Refrigerated Air Dryer

ecostar 200 - 1000 scfm

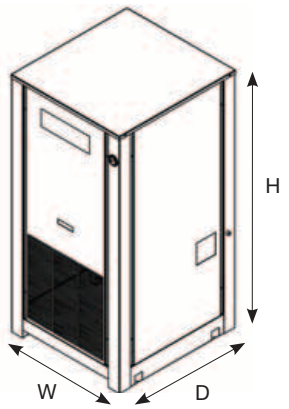
Performance Data

Model	Nominal Capacity (scfm)	Air Connection	Dimensions ins (mm)			Weight lbs (kg)	Electrical Supply	Recommended Pre-Filter	Recommended After-Filter
			H	W	D				
CSM200	200	2" FPT	58 (1473.2)	28 (711.2)	30 (762.0)	446 (202)	230V/1Ph/60Hz	GL11ZLD-N	GL11XLD-N
CSM250	250	2" FPT	58 (1473.2)	28 (711.2)	30 (762.0)	492 (223)	230V/1Ph/60Hz 230V/3Ph/60Hz 460V/3Ph/60Hz	GL12ZLD-N	GL12XLD-N
CSM325	325	2" FPT	58 (1473.2)	28 (711.2)	30 (762.0)	508 (230)	230V/1Ph/60Hz 230V/3Ph/60Hz 460V/3Ph/60Hz	GL12ZLD-N	GL12XLD-N
CSM400	400	2" FPT	61 (1549.4)	41 (1041.4)	36 (914.4)	702 (318)	230V/3Ph/60Hz 460V/3Ph/60Hz	GL13ZLD-N	GL13XLD-N
CSM500	500	2" FPT	61 (1549.4)	41 (1041.4)	36 (914.4)	712 (323)	230V/3Ph/60Hz 460V/3Ph/60Hz	GL14ZLD-N	GL14XLD-N
CSM700	700	3" FPT	76 (1930.4)	60 (1524.0)	48 (1219.2)	1022 (464)	230V/3Ph/60Hz 460V/3Ph/60Hz	GL17ZLD-N	GL17XLD-N
CSM850	850	3" FPT	76 (1930.4)	60 (1524.0)	48 (1219.2)	1047 (475)	230V/3Ph/60Hz 460V/3Ph/60Hz	GL17ZLD-N	GL17XLD-N
CSM1000	1000	3" FPT	76 (1930.4)	60 (1524.0)	48 (1219.2)	1174 (533)	230V/3Ph/60Hz 460V/3Ph/60Hz	GL19ZLD-N	GL19XLD-N

575V/3Ph/60Hz available (CSM250 - CSM1000)
Air-cooled - Standard. Water-cooled available (CSM250 - CSM1000)

Technical Data

Maximum Ambient Temperature	115°F (46°C)
Maximum Inlet Temperature	140°F (60°C)
Minimum Ambient Temperature	41°F (5°C)
Maximum Pressure	200 psi g (13.8 bar g)
Refrigerant	R404A



CSM200 - CSM1000

Correction Factors

To obtain dryer capacity at new conditions, multiply capacity x C1 x C2 x C3.

(C1)

Ambient Temperature in °F	Ambient Temperature in °C	Temperature Correction Factor
80	**27**	1.12
90	**32**	1.08
95	**35**	1.05
100	**38**	1.00
105	**41**	.95
110	**43**	.90
115	**46**	.84

(C2)

Inlet Temperature in °F	Inlet Temperature in °C	Temperature Correction Factor
80	**27**	1.22
85	**29**	1.22
90	**32**	1.22
95	**35**	1.10
100	**38**	1.00
105	**41**	0.92
110	**43**	0.83
115	**46**	0.76
120	**49**	0.69
130	**54**	0.56
140	**60**	0.46

(C3)

Inlet Pressure in psi g	Inlet Pressure in bar g	Pressure Correction Factor
50	**3.5**	.80
60	**4.1**	.84
75	**5.2**	.90
80	**5.5**	.92
90	**6.2**	.96
100	**6.9**	1.00
110	**7.6**	1.01
125	**8.6**	1.02
130	**9.0**	1.03
140	**9.7**	1.04
150	**10.3**	1.05

Worldwide Filtration Manufacturing Locations

North America

Compressed Air Treatment

Filtration & Separation/Balston
Haverhill, MA
978 858 0505
www.parker.com/balston

Finite Airtek Filtration
Airtek/domnick hunter/Zander
Lancaster, NY
716 686 6400
www.parker.com/faf

Finite Airtek Filtration/Finite
Oxford, MI
248 628 6400
www.parker.com/finitefilter

Engine Filtration & Water Purification

Racor
Modesto, CA
209 521 7860
www.parker.com/racor

Racor
Holly Springs, MS
662 252 2656
www.parker.com/racor

Racor
Beaufort, SC
843 846 3200
www.parker.com/racor

Racor – Village Marine Tec.
Gardena, CA
310 516 9911
desalination.parker.com

Hydraulic Filtration

Hydraulic Filter
Metamora, OH
419 644 4311
www.parker.com/hydraulicfilter

Process Filtration

domnick hunter Process Filtration
Oxnard, CA
805 604 3400
www.parker.com/processfiltration

Europe

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