aerospace
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Cold Energy Saver

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

Parker Airtek

ENGINEERING YOUR SUCCESS.

Cold Energy Saver

Thermal Mass Cycling Refrigerated Air Dryers

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 Cold Energy Saver Thermal Mass Cycling Refrigerated Air Dryer package complete with Parker Airtek 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.

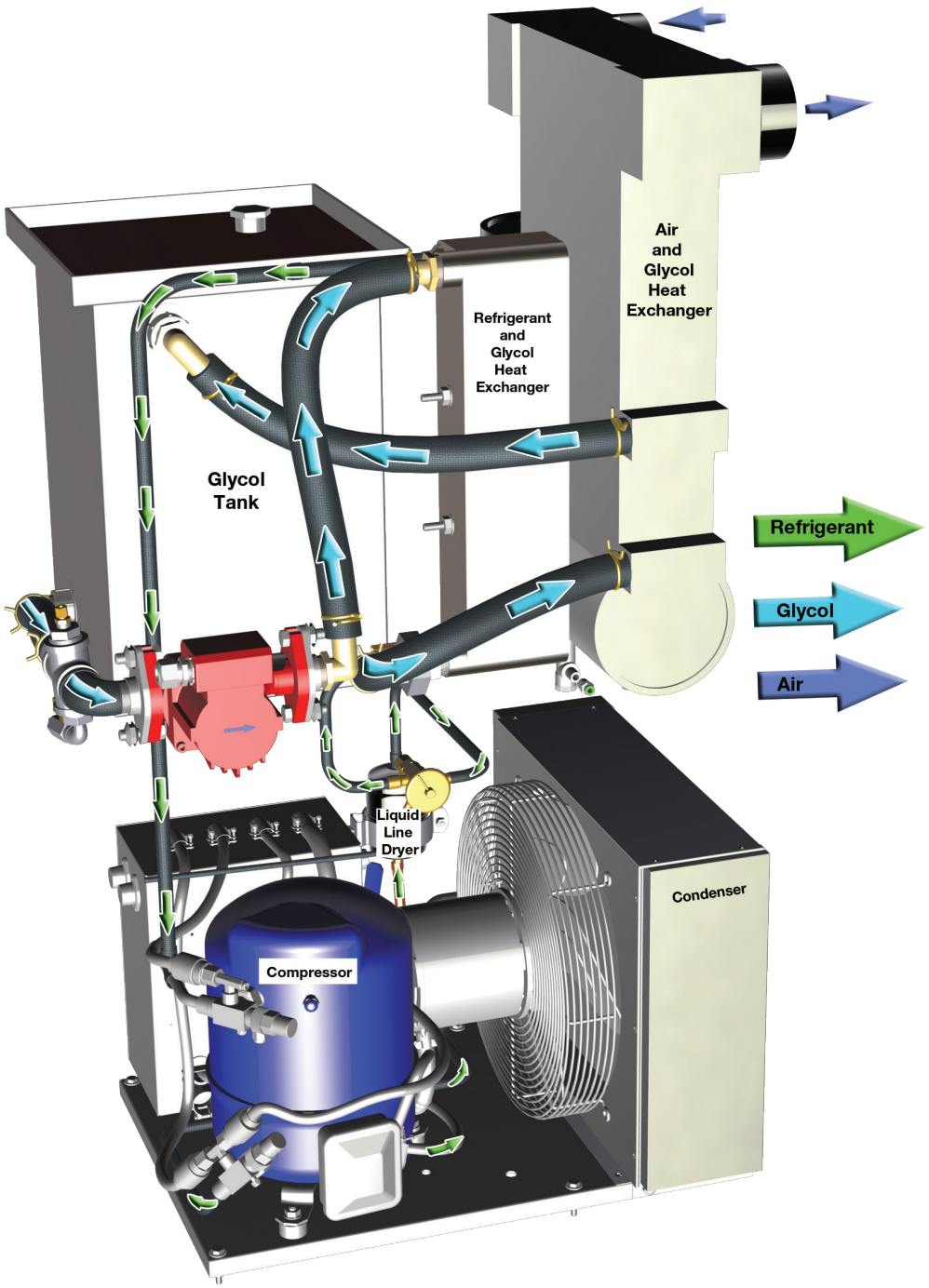
Cold Energy Saver dryers perfectly and continuously adapt to the actual operating conditions, ensuring perfect dewpoint control together with the lowest operating costs. Over and above this extreme flexibility of use, Cold Energy Saver advanced technical solutions offer reliability, efficiency, energy 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**
- **ColdPack 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 ColdStorage reduces power consumption and improves temperature control.**

Cold Energy Saver - How it works

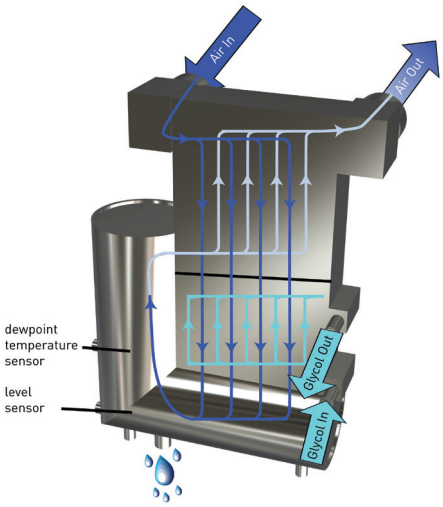
There are three circuits: air, glycol, and refrigerant. The refrigerant cools the glycol and the glycol cools the air to improve efficiency. With these three circuits, there are two primary heat exchangers: the air and glycol and the glycol and refrigerant heat exchangers. Both insulated heat exchangers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



Smart technology: the benefits

Technology that adjusts energy consumption

Parker Airtek'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 Airtek's ColdPack heat exchanger's all-in-one design and thermal insulation further enhance the overall energy savings.

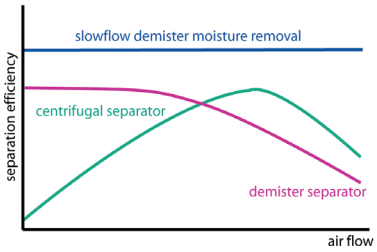


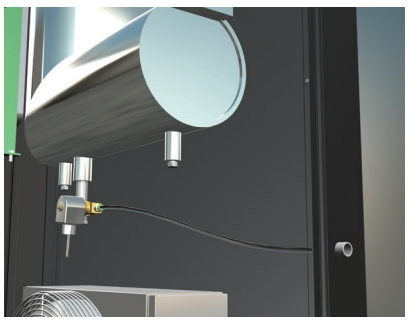
Patented ColdPack 4-in-1 heat exchanger design

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

ColdPack 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.





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

A truly unique part of ColdPack 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.

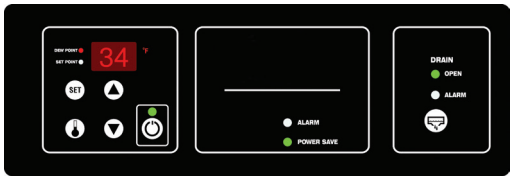
Environmentally friendly

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.

Cold Energy Saver (CESM200 - CESM1000)

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
- ColdControl - 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 (CESM400 - CESM1000)



CESM200 - CESM1000

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)

Airtek 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 CESM Series, not just any compressed air filter will do.

Sources of Contamination
Compressed air and gas lines typically contain water, oil and particulate contamination

The contaminants of greatest concern in precision compressed air systems are water, oil and solids.

Water vapor is present in all compressed air and it becomes greatly concentrated by the compression process. While air dryer systems can be used effectively to remove water from compressed air, they will not remove the second major liquid contaminant - oil.

Most oil comes from compressor lubrication carry-over, but even the air produced by oil-free compressors has hydrocarbon contamination brought into the system through the intake.

The third contaminant is solid matter including dirt, rust, and scale. Solid particulates, combined with aerosols of water and oil, can clog and shorten the life of air system components and can foul processes.

Airtek High Efficiency Filtration

- Maximum oil carryover 0.012 PPM w/w - ISO12500-1 tested at 40 PPM inlet challenge.
- Elements utilize low turbulence flow design
- Epoxy saturated borosilicate glass nanofiber media with outer synthetic fabric dryer layer allowing swift removal of coalesced liquids
- Differential pressure gauge and auto drain
- Durable aluminum chromated heads and bowls with powder coated finish
- Large sump capacity to handle condensate
- Simple installation and easy maintenance

JD Series

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

Technical (CESM200 - CESM1000)

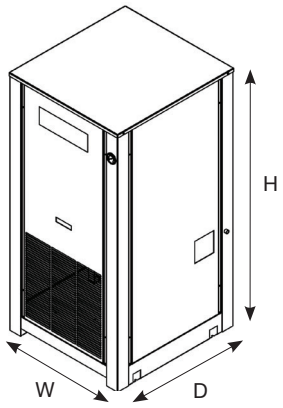
Air-Cooled Units

Model	Nominal Capacity (scfm)	Air Connection	Dimensions ins (mm)			Weight lbs (kg)	Electrical Supply	Recommended Pre Filter	Recommended After Filter
			H	W	D				
CESM200	200	2" FPT	58 (1473.2)	28 (711.2)	30 (762.0)	446 (202)	230V/1Ph/60Hz	JD0340H-7CPY	JD0320H-6CY
CESM250	250	2" FPT	58 (1473.2)	28 (711.2)	30 (762.0)	492 (223)	230V/1Ph/60Hz 230V/3Ph/60Hz 460V/3Ph/60Hz	JD0340H-7CPY	JD0320H-6CY
CESM325	325	2" FPT	58 (1473.2)	28 (711.2)	30 (762.0)	508 (230)	230V/1Ph/60Hz 230V/3Ph/60Hz 460V/3Ph/60Hz	JD0340H-7CPY	JD0320H-6CY
CESM400	400	2" FPT	61 (1549.4)	41 (1041.4)	36 (914.4)	702 (318)	230V/3Ph/60Hz 460V/3Ph/60Hz	JD0465H-7CPY	JD0430H-6CY
CESM500	500	2" FPT	61 (1549.4)	41 (1041.4)	36 (914.4)	712 (323)	230V/3Ph/60Hz 460V/3Ph/60Hz	JD0900J-7CPY	JD0650J-6CY
CESM700	700	3" FPT	70.125 (1781.175)	48.125 (1222.375)	36.125 (917.575)	1022 (464)	230V/3Ph/60Hz 460V/3Ph/60Hz	JD1300K-7CPY	JD0900K-6CY
CESM850	850	3" FPT	70.125 (1781.175)	48.125 (1222.375)	36.125 (917.575)	1047 (475)	230V/3Ph/60Hz 460V/3Ph/60Hz	JD1300K-7CPY	JD0900K-6CY
CESM1000	1000	3" FPT	70.125 (1781.175)	48.125 (1222.375)	36.125 (917.575)	1174 (533)	230V/3Ph/60Hz 460V/3Ph/60Hz	JD1300K-7CPY	JL1250-C

575V/3Ph/60Hz available (CESM250 - CESM1000)
Air-cooled - Standard. Water-cooled available (CESM250 - CESM1000)

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



CESM200 - CESM1000

Flow correction factors

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

Ambient Temperature (C1) air-cooled only

°F	80	90	95	100	105	110	115
°C	27	32	35	38	41	43	46
Factor	1.12	1.08	1.05	1.00	0.95	0.90	0.84

Inlet Temperature (C2)

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

Inlet Pressure (C3)

psi g	50	60	75	80	90	100	110	125	130	140	150
bar g	3.5	4.1	5.2	5.5	6.2	6.9	7.6	8.6	9.0	9.7	10.3
Factor	0.80	0.84	0.90	0.92	0.96	1.00	1.01	1.02	1.03	1.04	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

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www.parker.com/racor

Holly Springs, MS
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Beaufort, SC
843 846 3200
www.parker.com/racor

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

Parker Sea Recovery
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310 637 3400
www.searecovery.com

Hydraulic Filtration

Hydraulic Filter
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www.parker.com/hydraulicfilter

Laval, QC Canada
450 629 9594
www.parkerfarr.com

Process Filtration

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Oxnard, CA
805 604 3400
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Madison, WI
608 824 0500
www.scilog.com

Phoenixville, PA
610 933 1600
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Aerospace Filtration

Velcon Filtration
Colorado Springs, CO
719 531 5855
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Europe

Compressed Air Treatment

domnick hunter Filtration & Separation
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+44 (0) 191 402 9000
www.parker.com/dhfns

Parker Gas Separations
Etten-Leur, Netherlands
+31 76 508 5300
www.parker.com/dhfns

Hiross Zander
Padova Business Unit
Padova, Italy
+39 049 9712 111
www.parker.com/hzd

Hiross Zander
Essen Business Unit
Essen, Germany
+49 2054 9340
www.parker.com/hzd

Engine Filtration & Water Purification

Racor
Dewsbury, England
+44 (0) 1924 487 000
www.parker.com/rfde

Racor Research & Development
Stuttgart, Germany
+49 (0)711 7071 290-10
www.parker.com/rfde

Hydraulic Filtration

Hydraulic Filter
Arnhem, Holland
+31 26 3760376
www.parker.com/hfde

Urjala Operation
Urjala, Finland
+358 20 753 2500
www.parker.com/hfde

Condition Monitoring Centre
Norfolk, England
+44 (0) 1842 763 299
www.parker.com/hfde

Parker Kittiwake
West Sussex, England
+44 (0) 1903 731 470
www.kittiwake.com

Parker Procal
Peterborough, England
+44 (0) 1733 232 495
www.kittiwake.com

Process Filtration

domnick hunter Process Filtration
Birtley, England
+44 (0) 191 410 5121
www.parker.com/processfiltration

Parker Twin Filter BV
Zaandam, Netherlands
+31(0)75 655 50 00
www.twinfilter.com

Asia Pacific

Australia
Castle Hill, Australia
+61 2 9634 7777
www.parker.com/australia

China
Shanghai, China
+86 21 5031 2525
www.parker.com/china

India
Navi Mumbai, India
+91 22 651 370 8185
www.parker.com/india

Parker Fowler
Bangalore, India
+91 80 2783 6794
www.johnfowlerindia.com

Japan
Tokyo, Japan
+81 45 870 1522
www.parker.com/japan

Parker Techno
Osaka, Japan
+81 66 340 1600
www.techno.taiyo-ltd.co.jp

Korea
Hwaseon-City
+82 31 359 0852
www.parker.com/korea

Singapore
Jurong Town, Singapore
+65 6887 6300
www.parker.com/singapore

Thailand
Bangkok, Thailand
+66 2186 7000
www.parker.com/thailand

Latin America

Parker Comercio Ltda.
Filtration Division
Sao Paulo, Brazil
+55 12 4009 3500
www.parker.com/br

Pan American Division
Miami, FL
305 470 8800
www.parker.com/panam

Africa

Aeroport Kempton Park, South Africa
+27 11 9610700
www.parker.com/africa

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Parker Hannifin Corporation
Finite Airtek Filtration Division
4087 Walden Avenue
Lancaster, NY 14216
phone 716 686 6400
www.parker.com/faf