



aerospace climate  
control  
electromechanical  
**filtration**  
fluid & gas handling  
hydraulics  
pneumatics  
process control  
sealing & shielding



## ESR Series

Energy Saving Refrigerated Air Dryers  
(200 - 3000 scfm)



# ESR Series Energy Saving 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 moisture 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 an ESR Series refrigerated dryer (ranging from 200 - 3000 scfm) package complete with Parker Airtek high efficiency filtration.

Our EnergyPack 4-in-1 heat exchanger offers minimal pressure drops and class leading performance, and significantly increases the efficiency of the whole compressed air treatment process. The innovative

EnergyControl function automatically and continuously adjusts dryer operation to the effective working conditions, minimizing operating costs and maximizing performances.

Compressed air purification equipment must deliver uncompromising performance and reliability while providing the right balance of air quality with the lowest cost of operation. Many manufacturers offer products for the filtration and purification of contaminated compressed air, which are often selected only upon their initial purchase cost, with little or no regard for the air quality they provide, the cost of operation throughout their life or their environmental impact. When purchasing purification equipment, delivered air quality, the overall cost of ownership and the equipment's environmental impact must always be considered.

## Benefits

- Optimum dewpoint levels for highest system performance
- Advanced patented design solutions
- Unique 4-in-1 EnergyPack heat exchanger
- High reliability, easy to use and maintain
- Environmental, lowest real operating costs
- Dual mode integrated energy saving no loss level drain with back up timer drain with alarm (ESR325 - ESR3000)
- Extremely low pressure drop design
- Crankcase heaters
- EnergyControl energy saving function
- Advanced scroll compressor (400 scfm and up)
- Oversized condenser to operate in ambient to 122°F (50°C) with pre-filter
- ETL listed & CRN registered complete unit
- Dryers manufactured in facility certified to ISO9001 and ISO14001



# Energy efficient and environmentally sound

ESR Series dryers are designed not only to minimize the use of compressed air and electricity in their operation, but also to significantly reduce the operational costs of the compressor by minimizing pressure loss.



## Minimal direct energy costs

The EnergySave control automatically and precisely adjusts energy consumption in response to actual operating conditions (air variability and seasonal changes), avoiding unnecessary waste. EnergyControl controls the dryer operation via multiple sensors guaranteeing maximum savings and avoiding dewpoint surges. EnergyPack's all-in-one design and thermal insulation further enhance the overall energy-savings.

## Lowest full-load power consumption

Parker Airtek ESR Series is the most energy efficient air dryer on the market, under all operating conditions. ESR Series leads the market with the lowest full-load power consumption due to its oversized heat exchanger, compliant scroll compressors, R407C environmentally friendly refrigerant and direct operation, avoiding the increased energy consumption of thermal mass-type dryers. Parker Airtek's ESR Series consumes less energy at full load and saves more energy at partial loads. Electrical consumption usually accounts for around 50% of the air dryer's total cost over a five-year period.

## Reduced indirect costs

Electricity required by the compressor to compensate for pressure drops in the air dryer accounts for around 25% of its total cost over 5 years. Parker Airtek's ESR Series offers average pressure drops which are about one half those of conventional systems. The air compressor requires additional energy to offset the drop in compressed air pressure caused by traditional condensate drains. Zero air loss drains automatically adjust drainage patterns to avoid compressed air loss thereby saving energy.

## Lowest Differential Pressure

Parker Airtek ESR Series refrigerated dryers have an average of 2.0 psid versus the industry average of 5.0 psid.

Example: 500 scfm dryer operating, 8760 hours per year

Cost of Power	Savings Realized
\$0.05 per KW =	\$546 per year
\$0.10 per KW =	\$1091 per year
\$0.15 per KW =	\$1638 per year

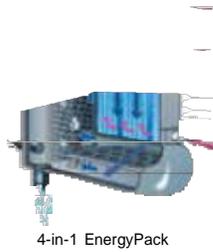
## Reduced CO<sub>2</sub> Emissions

Many countries worldwide are looking closely at their manufacturing industries in an effort to reduce the amount of harmful greenhouse gases released into the atmosphere. The use of electricity has a direct impact on the generation and release of CO<sub>2</sub>. By significantly reducing the energy consumption of its products, Parker Airtek can help you reduce your carbon footprint and protect the environment.

## Environmentally Friendly

Montreal Protocol compliant R407C refrigerant allows for zero ozone depletion, low global warming potential and low refrigerant charge.

# Energy technology: the benefits



4-in-1 EnergyPack

## EnergyPack Heat Exchanger provides less than 2 psi pressure drop

The patented EnergyPack heat exchanger features an extremely robust, all-in-one aluminum design, with no interconnecting tubing. The flow path of the heat exchanger has been designed in order to optimize its performances. In particular, large volumes allow low air velocity through the heat exchanger section, resulting in high exchange efficiency and low pressure drops. Pressure drops are further improved thanks to the absence of interconnecting pipes through the different sections of the heat exchanger and to a straight forward path of the compressed air flow with smooth and minimum changes of flow directions.



## Optional Smart BMS Interface (ESR325 - ESR3000)

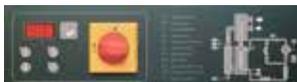
Simple BMS interface includes:

- RS485 serial card provides direct communication to Modbus. Requires no gateway or A.N.I.
- Provides visualization of dewpoint, alarm conditions and service indication.
- Provides remote control of the dryer including on/off and alarm reset (depending on actual alarm)



## Dual Mode Zero Air Loss Drain (ESR325 - ESR3000)

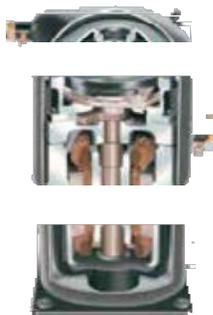
The drainage chamber is integrated into the heat exchanger while the valve mechanism is fitted in an easily accessible drain niche. The Zero Air Loss Drain continuously adjusts itself to the actual working conditions, ensuring zero air loss and a notable reduction in system power consumption. An innovative 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.



## EnergyControl with EnergySave Cycling

The multifunction EnergyControl provides a versatile platform for user interface and EnergySave Cycling (if enabled). The innovative EnergySave Cycling Control continuously monitors the demand placed on the dryer. At conditions of low demand the refrigerant compressor is cycled off to save energy. A sophisticated algorithm continuously adapts the operation of the dryer for optimum energy efficiency while minimizing the dewpoint spikes common to traditional thermal mass dryers.

Included are a main switch, high/low dewpoint, warning light, push to test drain button and service due light.



## Advanced Scroll Compressors (400 scfm and up)

Parker Airtex's ESR Series features advanced scroll compressors, offering energy savings of 20% when compared with piston compressors. The ability to tolerate liquid returns coupled with 50% less moving parts render them nearly indestructible and highly reliable. Low vibration levels increase overall refrigerated circuit longevity.

# 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 the ESR 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 0.008 PPM w/w - ISO12500-1 tested at 40 PPM inlet challenge.
- ISO 8573-1 Class performance
- Elements are self sealing
- Epoxy saturated borosilicate glass micro-fiber media with outer synthetic fabric dryer layer allowing swift removal of coalesced liquids
- Includes DPI (Differential Pressure Indicator) providing visual assurance of performance
- Durable aluminum chromated heads and bowls with powder coated finish
- Large sump capacity to handle condensate
- 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 <sup>3</sup>			Mass Concentration ppm	Vapor Pressure Dewpoint	Liquid g/m <sup>3</sup>	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

## Product Selection

Model	Air Connections	Nominal Capacity (scfm)*	Dimensions ins (mm)			Weight		Primary Voltages	Recommended Pre-Filter Model*	Recommended After-Filter Model**
			H	W	D	lbs	kg			
ESR200	1 1/2" NPT-F	200	38.3 (972)	27.7 (703)	22.1 (562)	183	83	230V/3Ph/60Hz	JC0250-C10	JC0250-C
ESR250	2" NPT-F	250	41.9 (1064)	27.8 (706)	41.2 (1046)	287	130	230V/3Ph/60Hz & 460V/3Ph/60Hz	JC0250-C10	JC0250-C
ESR325	2" NPT-F	325	41.9 (1064)	27.8 (706)	41.2 (1046)	320	145	230V/3Ph/60Hz & 460V/3Ph/60Hz	JC0350-C10	JC0350-C
ESR400	2" NPT-F	400	41.9 (1064)	27.8 (706)	41.2 (1046)	320	145	230V/3Ph/60Hz & 460V/3Ph/60Hz	JC0450-C10	JC0450-C
ESR500	2" NPT-F	500	41.9 (1064)	27.8 (706)	41.2 (1046)	342	155	230V/3Ph/60Hz & 460V/3Ph/60Hz	JC0625-C10	JC0625-C
ESR700	3" NPT-F	700	52.0 (1316)	31.7 (806)	45.9 (1166)	529	240	230V/3Ph/60Hz & 460V/3Ph/60Hz	JC0800-C10	JC0800-C
ESR800	3" NPT-F	800	52.0 (1316)	31.7 (806)	45.9 (1166)	529	240	230V/3Ph/60Hz & 460V/3Ph/60Hz	JC0800-C10	JC0800-C
ESR1000	3" NPT-F	1000	52.0 (1316)	31.7 (806)	45.9 (1166)	551	250	460V/3Ph/60Hz	JC1000-C10	JC1000-C
ESR1200	3" NPT-F	1200	66.5 (1690)	39.7 (1007)	43.2 (1097)	816	370	460V/3Ph/60Hz	JC1000-C10	JX3NF1500C
ESR1600	4" Flg	1600	67.8 (1722)	39.7 (1007)	71.2 (1808)	1279	580	460V/3Ph/60Hz	JX3FF1500C10	JX4FF2000C
ESR2000	6" Flg	2000	67.8 (1722)	39.7 (1007)	71.2 (1808)	1477	670	460V/3Ph/60Hz	JX4FF2000C10	JX4FF2000C
ESR2400	6" Flg	2400	67.8 (1722)	39.7 (1007)	71.2 (1808)	1521	690	460V/3Ph/60Hz	JX6FF3000C10	JX6FF3000C
ESR3000	6" Flg	3000	81.0 (2048)	39.7 (1007)	71.2 (1808)	1609	730	460V/3Ph/60Hz	JX6FF3000C10	JX6FF3000C

\*Flowrates at the following climatic conditions - Ambient Temperature: 100°F (38°C), Inlet Temperature: 100°F (38°C), Inlet Pressure: 100 psi g (7 bar g).

Note: Filters supplied loose.

## Technical Data

Models	Max Ambient Temperature	Max Inlet Temperature	Min Ambient Temperature	Max Inlet Pressure	Refrigerant
ESR200 - ESR3000	122°F (50°C)	149°F (65°C)	41°F (5°C)	203 psi g (14 bar g)	R407C

## Correction Factors

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

Ambient Temperature (C1)	°F	70	80	90	100	110	120	122
	°C	21	27	32	38	43	49	50
	CF	1.22	1.15	1.05	1.00	0.94	0.79	0.71

Inlet Temperature (C2)	°F	90	100	110	120	130	140
	°C	32	38	43	49	54	60
	CF	1.22	1.00	0.82	0.68	0.56	0.46

Working Pressure (C3)	psi g	60	80	100	125	150	174	203
	bar g	4	6	7	9	10	12	14
	CFP	0.83	0.93	1.00	1.07	1.12	1.15	1.18

### Notes:

- Models ESR200 - ESR3000 include the following equipment as standard:
  - multi-functional control panel
  - continuous separation cross-flow heat exchanger
  - zero air loss condensate removal system with adjustable set points (ESR325 and above)
  - dryer cycling control
  - on/off switch with integrated disconnect switch
  - compliant scroll compressor (ESR250 and above)
- ED3007 Zero Air Loss Drain optional on filters for ESR325 - ESR500.  
ED3030 Zero Air Loss Drain optional on filters for ESR700 - ESR2000.  
ED3100 Zero Air Loss Drain optional on filters for ESR2400 - ESR3000.
- For reliable operation and to meet warranty conditions, a pre-filter must be installed.

# Aftermarket

Compressed air equipment users demand much more than the supply of high quality products in order to maintain a competitive edge.

Modern production technology is increasingly demanding the provision of a higher purity and more reliable compressed air supply. Products and solutions that are manufactured by Parker Airtek are designed to provide air quality that meets with and often exceeds international standards.

As well as the requirement for air purity and reliability, there are additional factors to consider when choosing the right service provider for your compressed air and gas purification system. For example, knowledge of the many regulations regarding the management of industrial waste, energy efficiency improvement programs and consideration of any environmental impact. It is anticipated that future legislations will demand further in-depth technical and knowledge-based support from service providers.

Our commitment to industry does not stop with the supply of high quality products. We are also committed to ensuring that our equipment provides high performance by providing a trouble-free service from a bespoke maintenance and verification package – all tailored to your own specific requirements.

We offer a wide range of valuable services that will impact positively on your drive towards improved production efficiency and product quality with reduced production rejections and operational costs.

From initial selection to installation, commissioning, preventative maintenance and specialized services, Parker Airtek is redefining customer service.



Filter Elements and Consumable Parts	Maintenance, Repair and Overhaul	Customer Support	Specialized Services
<ul style="list-style-type: none"> <li>Genuine Replacement filter elements</li> <li>Preventative Maintenance Kits</li> <li>Repair Kits</li> <li>Installation Kits</li> <li>Upgrade Kits</li> </ul>	<ul style="list-style-type: none"> <li>Installation and Commissioning</li> <li>Maintenance and Repair</li> <li>Updates and Upgrades</li> <li>Service Contracts</li> <li>Parts Service</li> <li>Warranty</li> </ul>	<ul style="list-style-type: none"> <li>Business Development</li> <li>Technical Support Group</li> <li>Training</li> <li>Technical Publications</li> </ul>	<ul style="list-style-type: none"> <li>Air Quality Testing</li> <li>Dewpoint Measurement</li> <li>Leak Detection</li> <li>Particle Counting</li> <li>Micro-biological Testing</li> </ul>

