arcticstar & arcticstar plus®
ASD Series
Energy Saving Refrigerated Air Dryers
(10 - 3000 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 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 arcticstar or arcticstar plus® refrigerated dryer (ranging from 10 - 3000 scfm) package complete with Parker Zander Microfilter high efficiency filtration.

Parker Zander’s revolutionary PlusPack 3-in-1 heat exchanger (ASD10 - ASD175) features a 3-in-1 aluminum design with integral air connections. All models include an air-to-air freecooler, while the unique “slowflow” demister ensures perfect dewpoints whatever the operating conditions.

Our PlusPack 4-in-1 heat exchanger (ASD200 and up) offers minimal pressure drops and class leading performance, and significantly increases the efficiency of the whole compressed air treatment process. The innovative PlusControl function (ASD265 and up) 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 of Models ASD10 - ASD250

- “Plug and Play” design for easy installation (ASD10 - ASD150)
- Robust timed solenoid drain equals improved reliability (ASD15 - ASD250)
- Unique 3-in-1 heat exchanger
- Oversized demister separator resulting in excellent liquid removal over all operating conditions
- Oversized condenser to operate in ambients to 122°F (50°C)
- Fan cycling
- All models incorporate a dewpoint indicator
- Extremely compact footprint
- Low pressure differential across dryer (1.45 psi average)
- c.ETL listed & CRN registered complete unit

Benefits of Models ASD265 - ASD3000

- Optimum dewpoint levels for highest system performance
- Advanced patented design solutions
- Unique 4-in-1 PlusPack 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
- Extremely low pressure drop design
- Crankcase heaters
- PlusControl energy saving function
- Advanced compliant scroll compressor
- Oversized condenser to operate in ambient to 122°F (50°C) with prefilter
- 5 year warranty
- Third party performance verification (200 - 1000 scfm)
- c.ETL listed & CRN registered complete unit
- Dryers manufactured in facility certified to ISO9001 and ISO14001 by DNV.
What is refrigeration drying?

The use of refrigeration drying for compressed air treatment is tested and proven for many industrial applications. Dewpoints of 35°F (1.7°C) to 50°F (10°C) are suitable for many indoor applications where a general removal of bulk water and some vapor is sufficient for the end user’s process.

Refrigerated dryers can be used at low pressures as well as high pressures and use no processed compressed air during the air treatment. Proper sizing factors must be used to determine the correct sized dryer for the application based on actual (or “worst case”) flow, operating temperature and operating pressure.

Energy prices are a rising concern and a major cost to manufacturing facilities. Therefore, the refrigerated dryer has undergone many improvements to make them more energy efficient without sacrificing the quality of the air provided.

Refrigerated dryers use a set of heat exchangers or a single heat exchanger (with chambers) first to pre-cool the air; second, to refrigerate the air to condense out moisture vapor; and last, to re-heat the air to prevent pipe sweating downstream. Direct Expansion dryers are a type of dryer where the compressed air and the refrigerant come into direct contact via the heat exchanger. While reliable and simple to use, they generally require that the unit continue to run regardless of actual compressed air flow through the dryer. Cycling dryers utilize a thermal mass as the means to absorb the heat from the compressed air. By chilling a thermal mass, a refrigerant compressor may turn off in times of low demand thereby saving energy by shutting off the refrigerant compressor. There is, however, an additional heat transfer (the thermal mass), so a small amount of additional cost may or may not offset the amount of money saved by shutting off the compressor.

The use of refrigerated dryers is preferred:
- in the capacity range of 10 scfm to 30000 scfm
- inlet temperatures to 120°F (48.9°C)
- wide ranges of operating pressures
- indoor applications
- system with fluctuating conditions and demand
Energy efficient and environmentally sound

ASD Series is 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 PlusSave (ASD265 - ASD3000) control automatically and precisely adjusts energy consumption in response to actual operating conditions (air variability and seasonal changes), avoiding unnecessary waste. PlusControl controls the dryer operation via multiple sensors guaranteeing maximum savings and avoiding dewpoint surges. PlusPack’s all-in-one design and thermal insulation further enhance the overall energy-savings.

Lowest full-load power consumption

The most energy efficient air dryer on the market, under all operating conditions. Parker Zander arcticstar plus® (ASD265 -ASD3000) 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 Zander’s ASD 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. R134a refrigerant is standard on ASD10 - ASD175.

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 Zander’s ASD 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, standard in ASD265 - ASD3000 automatically adjusts its drainage pattern to avoid compressed air loss thereby saving energy.

Lowest Differential Pressure

Parker Zander ASD Series 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

<table>
<thead>
<tr>
<th>Cost of Power</th>
<th>Savings Realized</th>
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</thead>
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<tr>
<td>$0.05 per KW =</td>
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<tr>
<td>$0.10 per KW =</td>
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<tr>
<td>$0.15 per KW =</td>
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</table>

Reduced CO2 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 CO2. By significantly reducing the energy consumption of its products, Parker Zander can help you reduce your carbon footprint and protect the environment.

Environmentally Friendly

Montreal Protocol compliant R134a & R407C refrigerants allow for zero ozone depletion, low global warming potential and low refrigerant charge.
PlusPack Heat Exchanger provides less than 2 psi pressure drop

The PlusPack (patent pending) 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 (ASD265 - ASD3000)

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 (ASD265 - ASD3000)

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. Float Drain is standard on ASD10; Timed Solenoid Drain on ASD15 - ASD250.

PlusControl with PlusSave Cycling

The multifunction PlusControl (ASD265 - ASD3000) provides a versatile platform for user interface and PlusSave Cycling (if enabled). The innovative PlusSave (patent pending) 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. ASD10 - ASD175 includes on/off switch, power on light and 3 stage dewpoint indicator. ASD200 - ASD250 includes main switch, high/low dewpoint, warning light, push to test drain button and service due light.

Compliant Scroll Compressors

Parker Zander ASD Series features Compliant 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 refrigeration circuit longevity.
Compressed air filters are now recognized as being an integral part of any system. Few, if any, compressed air systems can operate successfully without high efficiency filters. Product and process standards demand the finest quality air and components are now manufactured to such tight tolerances that no contamination is permitted.

Parker Zander Microfilter Compressed Air & Gas Filters emphasize not only the filtration efficiency but links this to energy costs in terms of pressure differential, product consistency and reliability.

Add to your energy savings with Microfilter Compressed Air & Gas Filters
Validated performance designed to complement the ASD range

Pleated filter elements
Microfilter filters use machine pleated elements, which form the heart of the filter. With 3 to 4.5 times the filter surface of a wrapped filter (below right), our elements have a consistent and reproducible quality.

Benefits of pleating:
- lower velocity
- lower differential pressure
- better separation
- higher dirt holding capacity
- longer service life
- lower operating costs

The advantages quickly pay for themselves. No matter what the installed capacity of the system, the pleated filter elements save considerable electrical costs. The below graph gives an example of a 200 hp compressor. Parker Zander pleated filters can save $1200 per year compared to a conventional wrapped element.

Filtered air filters are now recognized as being an integral part of any system. Few, if any, compressed air systems can operate successfully without high efficiency filters. Product and process standards demand the finest quality air and components are now manufactured to such tight tolerances that no contamination is permitted.

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Filter housings
- High grade aluminum casting.
- Alocrom treated inside and out to prevent corrosion.
- Epoxy powder coated to ensure top quality finish.
- Two piece coated to enable easy maintenance.
- 10 year filter housing guarantee.

Tie rod
- Eliminates possibility of the end cap separating under severe shock conditions.
- Easy to change element.
- No risk of element end cap corrosion.

Typical ASD Series & Microfilter Installation
Technical

Technical data - Models ASD10 - ASD175

Maximum ambient temperature: 122°F (50°C)
Maximum inlet temperature: 149°F (65°C)
Minimum ambient temperature: 41°F (5°C)
Maximum pressure: 232 psi (16 bar g)
Refrigerant: R134a

Flow correction factors

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

Models ASD10 - ASD175

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Models ASD200 - ASD3000

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