AHLD E-Series

70 - 5,000 SCFM

The Aircel AHLD E-Series is a fully automatic Dual Tower Heatless Regenerative Compressed Air Dryer with an integrated Energy Management Purge Reduction System. The PLC Controller provides complete reliable control of the system with text description of each step in the sequence of operation. The E-Series reliable operation and robust valving, requires no user adjustment and virtually no user maintenance. Our precision engineered components and design deliver outstanding service life and operational durability. Aircel has the experience, engineering and manufacturing capabilities to continuously develop dryers with the highest quality performance.

Delivering Energy Efficient & Purge Reduction Control

The Aircel Programmable Controller (APC) and Energy Management System (EMS) is standard on the AHLD. This energy-saving demand cycle reduces purge air and optimizes dryer performance by monitoring the moisture fast and early in the middle portion of the tower desiccant bed. This control panel automatically adjusts the regeneration cycle maintaining dew point and extending the drying cycle. Switching is less frequent, reducing dryer maintenance and fully utilizing desiccant capacity. This addition will improve reliability and performance while sustaining a constant dew point. The end result is an overall purge reduction and significant energy savings.

Advantages

• Accurate moisture sensing for precise dew point
• Heatless adsorption provides maximum purge air efficiency
• Immediate energy savings and efficient purge design
• Controller displays energy savings, cycle modes, dew point selection, service reminders and alarm conditions

Maximize your return-on-investment automatically with the AHLD E-Series. The Energy Management System delivers significant energy savings in direct relation to load variations from your air demands.

How It Works

Moisture saturated compressed air enters the coalescing pre filter (F1) where aerosols are coalesced then drained via an automatic drain system. The moist water vapor-laden inlet air free of liquid water flows to the inlet of the dryer through the APV (Automatic Piston Valve) (V1) which diverts the inlet air to one of the towers, in this example tower (T1). Air flows upward through the adsorbent bed removing the moisture vapor, the dried airflow exits the tower through the outlet APV valve (V2) flowing to the outlet particulate after filter (F2) which removes particulates from the air stream. Clean and dry air now flows to the process air distribution system.

Visit our website for a detailed description of the AHLD regeneration process under the products section.
**AHLD E-Series**

**Standard Features & Benefits**

- **Relief Valves**
  - ASME UV stamped set @ 150 psi

- **Mounted Pre & After Filter**
  - Optional Package with Zero Air-Loss Drain

- **LED Tower Operation**
  - Indicates sequence of operation (drying & regenerating) for towers.

- **Tower Pressure Gauges**
  - Large easy-to-read 3.5" display

- **Automatic Piston Valve (Inlet/Outlet)**
  - Tough and reliable automatic shifting

- **Regulated & Filtered Pilot Air**
  - Maintains constant stream of clean purified air

- **Desiccant Fill Port**
  - Premium grade Activated Alumina (3/16")
  - with high moisture capacity, made in the U.S.A.

- **Energy Management System (EMS)**
  - Accurate moisture sensing providing consistent -40°F dew point by purging only when required

- **Aircel Programmable Controller (APC)**
  - with Standard EMS for Energy Efficient Electronic Purge Reduction
  - Power ON/OFF Switch/Light
  - Savings Alarm
  - Keypad Push Buttons
  - 3" LCD Monochromatic Display
  - UL/cUL-508a Control Assembly
  - NEMA 4 Steel Enclosure
  - Configurable PLC Control

- **Purge Exhaust Mufflers**
  - For low noise with built-in safety relief valve

- **ASME Carbon Steel Vessels**
  - a.) ≤ 750 scfm 200 psi @ 450°F
  - b.) ≥ 1000 scfm 150 psi @ 450°F

- **Angle-Body Purge Exhaust Valve**
  - Durable 10 year longevity

- **Rugged Steel Frame**
  - Single complete package with floor stand

- **Desiccant Drain Port**
  - For easy desiccant replacement

- **Automatic Piston Valve (Inlet/Outlet)**
  - Tough and reliable automatic shifting

**Optional Structural Features**

- All-pneumatic control package (no electricity required)
- Pre-piped filters and by-pass valve packages
- High inlet pressure up to 7000 psig
- -100°F pressure dew point
- NEMA 7

**Optional Controller Features**

- Failure-to-shift alarm
- High-inlet temperature alarm
- Dew point monitor
- Pressure alarm
- Visual moisture indicator
- Optional communications: Profibus-DP, AS-I, CANopen, DeviceNet, and Ethernet

**Additional Standard Features**

- Remote start/stop control
- Fail-safe design: failure of power and/or pilot air causes the purge exhaust valves to close, uninterrupted drying
- Stainless steel desiccant supports and air diffusers to prevent channeling
- Counter-current regeneration, upflow drying, and downflow depressurization
- High performance butterfly valves (≥ 1000 scfm models)
- Easy installation with single point connection for electrical and inlet/outlet air
- Adjustable (5 & 10 min.) NEMA cycle
- Standard communication through RS-232/RS-485 combo port
Capacity Correction Factors

To Size the Dryer Capacity for Actual Conditions

**Adjusted Capacity** = \( \frac{\text{scfm}}{C_1 \times C_2} \)

To calculate the capacity of a given dryer based on non-standard operating conditions, multiply the standard capacity by the appropriate correction factor(s).

**Example:** Dryer Model: AHLD-100  
Standard Capacity: 100 scfm  
Actual Operating Conditions: 120 psig working pressure, \( C_1 = 1.18 \)  
100°F inlet temperature, \( C_2 = 1.0 \)  
Adjusted Capacity = 100 scfm \( \times 1.18 \times 1.0 = 118 \text{ scfm} \)

To Select the Dryer Model for Actual Conditions

**Adjusted Capacity** = \( \text{scfm} / (C_1 \times C_2) \)

To choose a dryer based on a given flow at non-standard operating conditions, divide the given flow by the appropriate correction factor(s).

**Example:** Given Flow: 350 scfm  
Actual Operating Conditions: 120 psig working pressure, \( C_1 = 1.18 \)  
100°F inlet temperature, \( C_2 = 1.0 \)  
Adjusted Capacity = 350 scfm \( / 1.18 \times 1.0 = 296.6 \text{ scfm} \)  
Selected Dryer Model: AHLD-300

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The Compressed Air and Gas Institute (CAGI) has developed standards to protect users of compressed air & gas equipment. ADF200, the current standard for desiccant compressed air dryers, specifies the dryers performance to be rated at 100°F inlet temperature, 100°F ambient temperature, and 100 psig system pressure. To adjust the dryer capacity from these “CAGI conditions” to your specific application, please use the correction factors below for differing system pressures \( (C_1) \) and inlet air temperatures \( (C_2) \).

**Capacity correction factors for system air pressure \( \text{(C1)} \)**

<table>
<thead>
<tr>
<th>System Pressure (psig)</th>
<th>60</th>
<th>70</th>
<th>80</th>
<th>90</th>
<th>100</th>
<th>110</th>
<th>120</th>
<th>130</th>
<th>140</th>
<th>150</th>
</tr>
</thead>
<tbody>
<tr>
<td>Correction Factor</td>
<td>0.65</td>
<td>0.73</td>
<td>0.82</td>
<td>0.91</td>
<td>1.00</td>
<td>1.09</td>
<td>1.18</td>
<td>1.27</td>
<td>1.35</td>
<td>1.44</td>
</tr>
</tbody>
</table>

*For inlet pressure above 150 psi (models 1000+), consult factory.

**Capacity correction factors for inlet air temperature \( \text{(C2)} \)**

<table>
<thead>
<tr>
<th>Inlet Temperature (°F)</th>
<th>70</th>
<th>80</th>
<th>90</th>
<th>100</th>
<th>105*</th>
<th>110*</th>
<th>115*</th>
<th>120*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Correction Factor</td>
<td>1.2</td>
<td>1.15</td>
<td>1.10</td>
<td>1</td>
<td>0.9</td>
<td>0.8</td>
<td>0.7</td>
<td>0.6</td>
</tr>
</tbody>
</table>

*For inlet temperature above 100°F, molecular sieve desiccant is required.