COMPRESSED AIR PURIFICATION IN THREE STAGES

Compressed air is an important process and energy medium applied in all areas of industrial production. The compressor inlet suction air contains contaminants, dirt particles and humidity e.g. water vapor, which condenses in the compressed air systems. This condensate can lead to considerable costs (corrosion, freezing etc.).

These costs can be avoided by the application of an Ultrapac Smart adsorption dryer.

This complete and compact purification package Ultrapac Smart is equipped with a pre-filter and after-filter with UltraPleat® technology.

1. The integrated prefilter retains solid particulates and liquid aerosols (oil/water).
2. The adsorption dryer next in line adsorbs the moisture in the compressed air up to a pressure dew point of -40°F.
3. Finally, remaining solid particulates are retained in the integrated after-filter.

Due to the three-stage purification system, a compressed air quality in accordance to ISO 8573-1:2010 is reliably achieved, which corresponds to the quality classes 1-2:1-2:1-2

<table>
<thead>
<tr>
<th>Compressed air quality classes</th>
<th>Solid particles</th>
<th>Water</th>
<th>Oil (liquid and steam)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum particle count per m³ (particle size, d in μm)</td>
<td>Pressure dew point °F</td>
<td>Concentration mg/m³</td>
<td></td>
</tr>
<tr>
<td>0.10 &lt; d ≤ 0.5</td>
<td>0.5 &lt; d ≤ 1.0</td>
<td>1.0 &lt; d ≤ 5.0</td>
<td></td>
</tr>
<tr>
<td>20,000</td>
<td>400</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>400,000</td>
<td>6,000</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>NA</td>
<td>90,000</td>
<td>1,000</td>
<td></td>
</tr>
<tr>
<td>NA</td>
<td>NA</td>
<td>10,000</td>
<td></td>
</tr>
<tr>
<td>NA</td>
<td>NA</td>
<td>100,000</td>
<td></td>
</tr>
</tbody>
</table>

No. Description
1. Dryer inlet
2. Integrated UltraPleat™ pre-filter
3. Condensate drain
4. Desiccant cartridge
5. Electronic control
6. UltraSilencer
7. Dew point transmitter (Superplus version)
8. Integrated UltraPleat™ after-filter
9. Touch display (Superplus version)
10. Dryer outlet
INNOVATIVE FEATURES

Validated performance data: Stable pressure dew point at minimal regeneration air requirements (ISO 7183), innovative UltraPleat™ filtration technology ensure a high filtration efficiency (ISO 12500).

Smart Communication: Internet of Things (IoT) and Industry 4.0-ready. Bluetooth, app and current communication interfaces ensure a secure exchange of data.

The newly developed UltraSilencer ensures quiet operation (ISO 3744).

Reliable achievement of compressed air quality suitable for the application in accordance to ISO 8573-1:2010.

Validations in accordance to ISO 7183 Ultrapac Smart, ISO 12500-1 and 12500-3 UltraPleat™, ISO 3744 UltraSilencer.

The adsorption dryer can be flexibly configured and installed, as well as integrated in machines and equipment.

Saving regeneration air through a capacity control and compressor coupling, lower differential pressure through UltraPleat™ compressed air filter.

The all-round package includes easy handling of maintenance and service. All relevant components are easily accessible; filter elements and desiccant cartridge can be quickly and easily exchanged.
MODULAR, VARIABLE, COMPACT
MODULAR DESIGN

The Ultrapac Smart impresses through its variably arranged modules and flexible installation variants. Whether standing, vertical, horizontal or attached to the wall; Ultrapac Smart fits your space requirements.

Additionally the inlet and outlet compressed air connections can be aligned in different directions and the pre-filter and after-filter are integrated into the adsorption dryer.

Space-saving application through compact design and modular arrangement
QUIET, CLEVER, STABLE

NEW SILENCER, QUIET SOUNDS

The Ultrapac Smart is significantly quieter than comparable adsorption dryers. It operates with noise emissions in the range of just 60 dB. This matches the volume of a normal conversation and effectively leads to a noise reduction in the work place.

The noise minimization is made possible by the development of the powerful UltraSilencer.

<table>
<thead>
<tr>
<th>dB</th>
<th>Ultrapac Smart</th>
<th>Competitor A</th>
<th>Competitor B</th>
<th>Competitor C</th>
<th>Competitor D</th>
<th>Competitor E</th>
<th>Competitor F</th>
<th>Competitor G</th>
<th>Competitor H</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>55</td>
<td>60</td>
<td>65</td>
<td>70</td>
<td>75</td>
<td>80</td>
<td>85</td>
<td>90</td>
<td>95</td>
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</tbody>
</table>

SERVICE-FRIENDLY CARTRIDGE, STABLE PRESSURE DEW POINT

The desiccant has a high adsorption capacity and excellent regeneration capabilities. The flow-optimized design leads to an optimum utilization of the desiccant volume even in partial load operation.

An additional plus point is the spring-loaded desiccant bed, which prevents abrasion of the desiccant and extends service life. The desiccant is protected against external influences such as pressure shocks by spring-loading.

Switching between adsorption and regeneration of the cartridges takes place thanks to a dew point transmitter integrated in the Superplus variant only when the desiccant is saturated. The pressure dew point remains stable at below -40°F. This leads to high efficiency and operational safety.
Smart Communication
IoT and Industry 4.0-ready: The data can be read via Bluetooth and app, as well as interfaces (for example bus systems, WLAN). Thus dew point, cycle times or temperature can easily be read.

CONTROLLER VARIANTS

- Superplus
  - Touch Display
  - Bluetooth
  - Full connectivity
  - Ultraeconomy (dew point control)
  - Intermittent operation (compressor coupling)

- Plus
  - LED Display
  - Bluetooth
  - Alarm contact
  - Intermittent operation (compressor coupling)

- Standard
  - LED Signal
  - Alarm contact
  - Intermittent operation (compressor coupling)
**EXTENSIVE APPLICATION OPTIONS**

Adsorption dryers are always applied where highly purified and dry compressed air is required in accordance with ISO 8573-1. Some examples of application areas:

- Food processing
- Beverage
- Pharmaceutical
- Medical
- Industrial machinery
- Plastic industry
- Laser cutting
- Bottling
- Packaging
- Optical measuring machines
- Automotive
- Energy

### TECHNICAL DATA

<table>
<thead>
<tr>
<th>Ultrapac Smart</th>
<th>Volume flow rate* inlet scfm @ 100 psig</th>
<th>Regeneration air consumption* scfm</th>
<th>Compressed air connection FNPT</th>
<th>Dimensions (inches)</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Width A  Height C  Depth B</td>
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<tr>
<td>UPS03</td>
<td>3</td>
<td>0.5</td>
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<td>12.4  19.6  45</td>
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<td>1&quot;</td>
<td>18.3  75.7  6.6</td>
</tr>
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</table>

Explanations: * volume flow rate represents standard temperature and pressure atmospheric air at compressor inlet (68 °F, 14.7 psia), and a dryer inlet conditions of 95°F at 100 psi(g) operating pressure. Dryer outlet pressure dew point: -40 °F. Allowable operating pressures and temperatures: 58-232 psi(g) at inlet temperatures 40-130°F. Please consult table below for volume flow correction factors to be used at non-standard operating conditions.

**Sizing**

<table>
<thead>
<tr>
<th>f</th>
<th>60 psi (g)</th>
<th>75 psi (g)</th>
<th>90 psi (g)</th>
<th>105 psi (g)</th>
<th>120 psi (g)</th>
<th>135 psi (g)</th>
<th>150 psi (g)</th>
<th>165 psi (g)</th>
<th>180 psi (g)</th>
<th>195 psi (g)</th>
<th>210 psi (g)</th>
<th>225 psi (g)</th>
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<tbody>
<tr>
<td>65°F</td>
<td>0.94</td>
<td>1.02</td>
<td>1.12</td>
<td>1.20</td>
<td>1.27</td>
<td>1.34</td>
<td>1.42</td>
<td>1.48</td>
<td>1.54</td>
<td>1.60</td>
<td>1.67</td>
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<tr>
<td>75°F</td>
<td>0.92</td>
<td>1.01</td>
<td>1.11</td>
<td>1.19</td>
<td>1.26</td>
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<tr>
<td>85°F</td>
<td>0.86</td>
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<td>1.31</td>
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<td>1.45</td>
<td>1.51</td>
<td>1.56</td>
<td>1.61</td>
<td>1.67</td>
<td>1.73</td>
</tr>
<tr>
<td>95°F</td>
<td>0.65</td>
<td>0.78</td>
<td>0.91</td>
<td>1.03</td>
<td>1.16</td>
<td>1.29</td>
<td>1.38</td>
<td>1.44</td>
<td>1.50</td>
<td>1.55</td>
<td>1.60</td>
<td>1.65</td>
<td>1.71</td>
</tr>
<tr>
<td>105°F</td>
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<td>0.59</td>
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<td>0.79</td>
<td>0.89</td>
<td>0.98</td>
<td>1.09</td>
<td>1.18</td>
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<td>1.38</td>
<td>1.48</td>
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<td>1.68</td>
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<tr>
<td>115°F</td>
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<td>0.46</td>
<td>0.53</td>
<td>0.60</td>
<td>0.68</td>
<td>0.76</td>
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<td>0.91</td>
<td>0.98</td>
<td>1.07</td>
<td>1.14</td>
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<tr>
<td>120°F</td>
<td>0.29</td>
<td>0.35</td>
<td>0.41</td>
<td>0.48</td>
<td>0.53</td>
<td>0.59</td>
<td>0.65</td>
<td>0.70</td>
<td>0.77</td>
<td>0.82</td>
<td>0.88</td>
<td>0.94</td>
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<tr>
<td>130°F</td>
<td>0.23</td>
<td>0.28</td>
<td>0.32</td>
<td>0.37</td>
<td>0.41</td>
<td>0.46</td>
<td>0.51</td>
<td>0.55</td>
<td>0.60</td>
<td>0.64</td>
<td>0.69</td>
<td>0.73</td>
<td>0.79</td>
</tr>
</tbody>
</table>

\( V_{corr} = \frac{V_{nom}}{f} \)

Example: \( V_{nom} = 15 \) scfm, inlet temperature = 95°F; operating pressure = 150 psi (g)

\( V_{corr} = 15 \) scfm = 10.87 scfm calculated dryer size: Ultrapac Smart, type 0020
SUPERIOR FILTRATION. MAXIMUM PROTECTION.

Extensive Product Portfolio
- Process air, steam and liquid filtration products
- Performance engineered to sanitary guidelines
- Wide range of filtration media for any application
- Housings, elements, and parts in-stock, ready to ship

Advanced Technology
- Optimized filtration performance and efficiency
- Extensive research and development capabilities
- Advanced design and testing capabilities
- Over 1,000 engineers and scientists worldwide

Unrivaled Support and Expertise
- Expert technical specialists available as resource
- Comprehensive pre- and post-sale support
- Extensive filter analysis and trouble-shooting
- 100 years of successful global manufacturing

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