Cool, Dry, Quiet

CDQ™
Dehumidification with Trane Rooftop Units

January 2006
CDQ-SLB001-EN
The Trane CDQ™ desiccant wheel is used to enhance the dehumidification performance of a traditional cooling coil. The wheel is configured in series with the coil (see Figure 1) such that the “regeneration” side of the wheel is located upstream of the coil and the “process” side of the wheel is located downstream of the cooling coil. The wheel recirculates the water vapor trapped downstream of the cooling coil back into the air upstream of the coil where the coil removes it through condensation. This process is accomplished without the need for a second regeneration air stream. The addition of the CDQ desiccant wheel to the system enhances the dehumidification performance of the traditional cooling coil.

For units with less than 40 percent outside air, CDQ can greatly improve the latent capacity of the unit (see Figure 2). This results in a lower sensible heat ratio (SHR) without the addition of reheat.
Part Load Energy Savings

Adding part load humidity control will add more energy no matter how it is done. Trane CDQ™ differs from hot gas reheat because it will increase the latent capacity. Reheat does not affect the latent capacity of a unit, it simply makes the unit run longer. Thus CDQ will run less than hot gas reheat and produce drier air.

**Standard 3-ton unit**
- Unit SHR = 0.80
- Run time = 40 min
- Water removed = 5.0 lb

**Standard 3-ton unit with reheat**
- Unit SHR = 0.73
- Run time = 60 min (+50%)
- Water removed = 7.5 lb (+50%)

**Standard 3-ton unit with CDQ™**
- Unit SHR = 0.66
- Run time = 50 min (+25%)
- Water removed = 10.3 lb (+106%)

---

**Cool**
- No reheat
- Efficient, all electric
- Cool but drier

**Dry**
- Lower dew points
- Lower SHRs
- Higher latent capacity

**Quiet**
- 10-15dB discharge sound attenuation
Humidity-Sensitive Application

For applications requiring humidity control 24/7 and 35-55 percent RH, a Trane high-efficiency rooftop unit (RTU) with CDQ dehumidification will:

- Allow downsizing 15-33 percent
- Improve latent capacity 40-160 percent
- Lower dew points 2-5 F
- Reduce cooling energy 10-30 percent
- Reduce reheat and total energy 30-90 percent

CDQ Curbs for Rooftop Units

To achieve these performance levels, a high-efficiency Trane rooftop unit must be used with a CDQ curb section. The CDQ curb section is manufactured by our partner, Thybar Corporation. The two components are designed to go together with no field modifications required. Together, they comprise a CDQ system that can be used for new installations and retrofit applications.

Figure 5. Energy Use Comparison

Energy Improvement
Trane RTU with CDQ vs Standard RTU with Reheat
Mixed Air Unit

<table>
<thead>
<tr>
<th>Space Relative Humidity</th>
<th>Improvement @Equal Total Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>35%</td>
<td>Max</td>
</tr>
<tr>
<td>50%</td>
<td>Min</td>
</tr>
<tr>
<td>65%</td>
<td>Savings</td>
</tr>
</tbody>
</table>

CDQ Curbs for Rooftop Units

To achieve these performance levels, a high-efficiency Trane rooftop unit must be used with a CDQ curb section. The CDQ curb section is manufactured by our partner, Thybar Corporation. The two components are designed to go together with no field modifications required. Together, they comprise a CDQ system that can be used for new installations and retrofit applications.

Thybar Corporation

Chicago 1-800-666-2872  Akron 1-800-837-2872
Dallas 1-800-777-2872  Louisville 1-800-993-2872

Trane
A business of American Standard Companies
www.trane.com

For more information, contact your local Trane office or e-mail us at comfort@trane.com

Trane has a policy of continuous product and product data improvement and reserves the right to change design and specifications without notice.