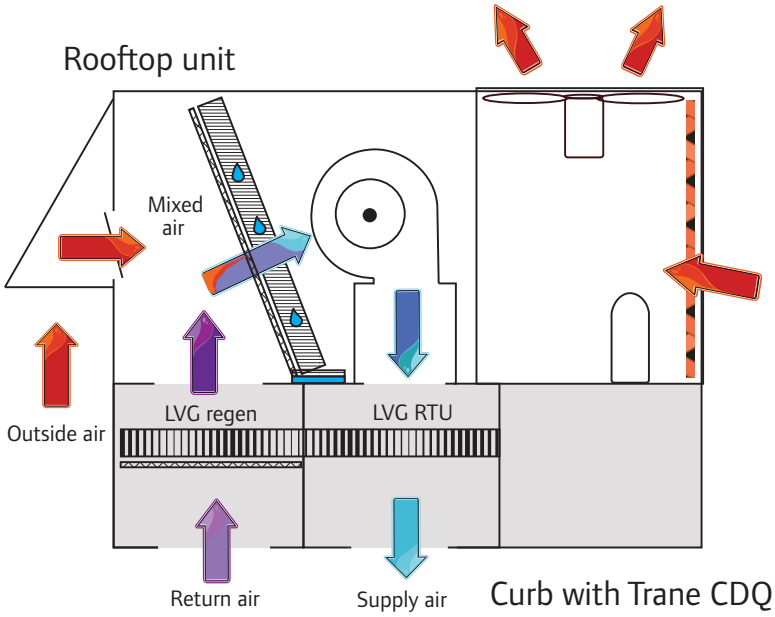
TRANE

CDQ™ dehumidification

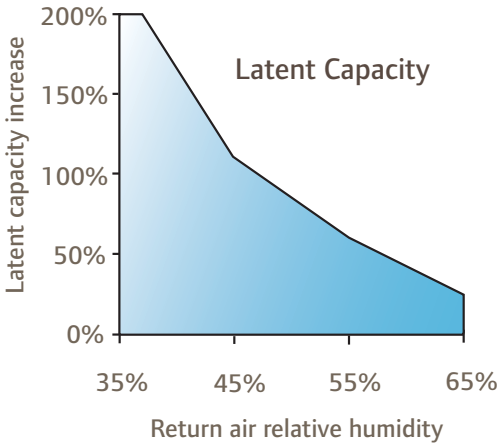
Cool, dry, quiet with Trane rooftop units

Ingersoll Rand

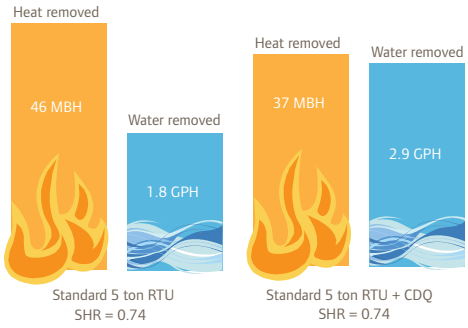
Trane CDQ™ removes more water per ton of cooling with no field modifications.



Curb with Trane CDQ



55% more dehumidification at ARI conditions



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 RTU Airflow Path illustration) 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 that 40 percent outside air, CDQ can greatly improve the latent capacity of the unit. This results in a lower sensible heat ratio (SHR) without the addition of reheat.

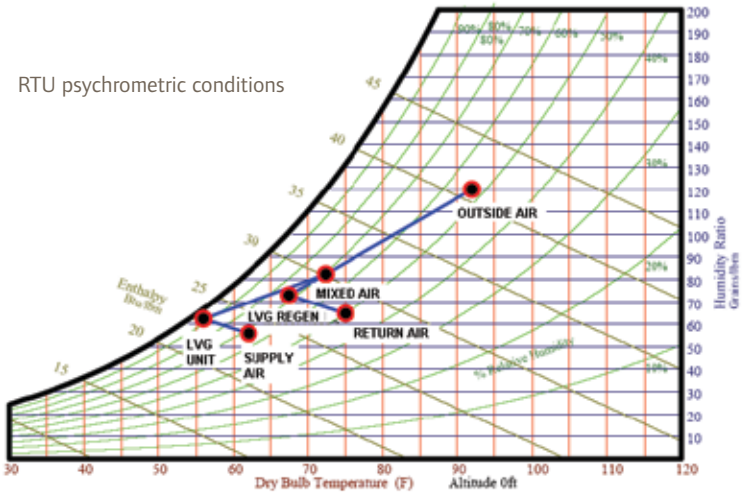
Developed in collaboration with the U.S. Department of Energy through Oak Ridge National Laboratory.

Remove up to 200% more water vapor and drop dew points below 48°F.

Benefits

- No Reheat
- Efficient, All Electric
- Cool But Drier
- Lower Dew Points
- Lower Sensible Heat Ratios
- Higher Latent Capacity
- 10 - 15dB Discharge Sound Attenuation

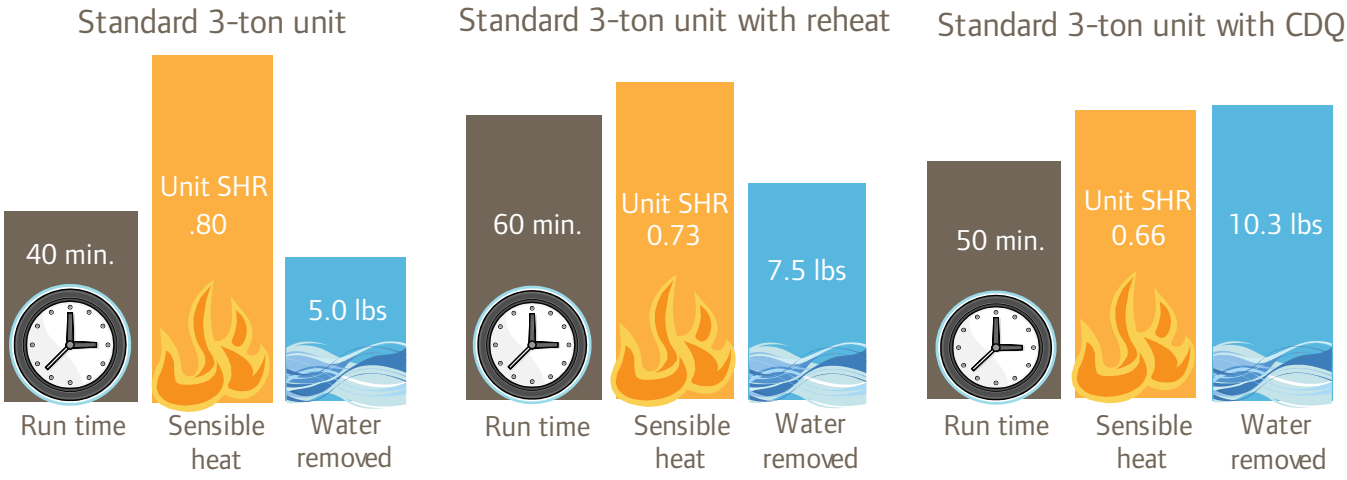
RTU psychrometric conditions

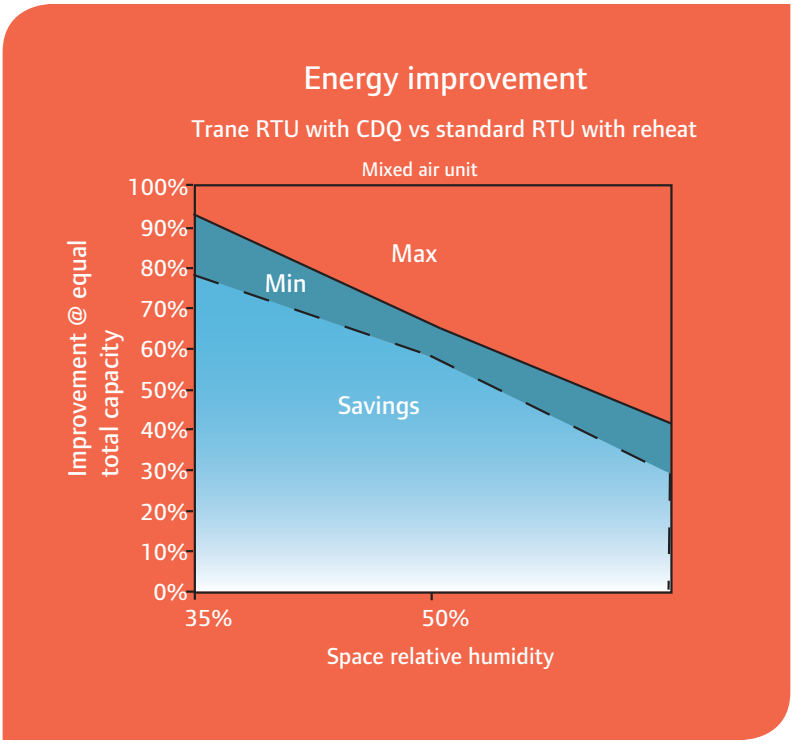


Part load energy savings

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 effect 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.

Improving part-load dehumidification RTU DX unit





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.

Ingersoll Rand

Ingersoll Rand (NYSE:IR) is a world leader in creating and sustaining safe, comfortable and efficient environments in commercial, residential and industrial markets. Our people and our family of brands—including Club Car®, Hussmann®, Ingersoll Rand®, Schlage®, Thermo King® and Trane®—work together to enhance the quality and comfort of air in homes and buildings, transport and protect food and perishables, secure homes and commercial properties, and increase industrial productivity and efficiency. We are a $13 billion global business committed to sustainable business practices within our company and for our customers.

CDQ-SLB001-EN October 07, 2010