

## SONOMACOOOL

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 Improve HVAC Performance.
 

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Sonoma Cool was developed in cooperation with NREL and the US Department of Energy

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**Why Sonoma Cool?**

**Energy efficient means cost effective**—Drying air before cooling it reduces HVAC electricity usage by up to 25%.

**Quick ROI**—Lower operating costs means payback of capital investment (<2 years in supermarket refrigeration applications).

**Environmental control**—Maintain comfort zone all day in even the most humid climates.

**Improved air quality**—Reduced humidity prevents mold and mildew growth.

**Low-cost maintenance**—Lowest installation and maintenance cost compared to other humidity control options.

**Reduce RH-related demands**—Lower RH means dramatically reduced demands on supermarket refrigeration systems.

**Cost-effective Cooling**

Sonoma Cool leverages simple tools found in nature's evaporation cycle—salt, water, and heat—to reduce the latent moisture load in the HVAC cycle and provide highly efficient cooling. This dehumidify-first approach improves the performance of commercial air conditioning, significantly reducing energy costs while maintaining the desired temperature and humidity comfort zone.

Sonoma Cool brings the benefits of liquid desiccant technology to your building. The system, which seamlessly interfaces with the building's established HVAC system, consists of a conditioner, a regenerator, and two heat exchangers. The conditioner uses concentrated desiccant to dry fresh air before entering the HVAC system. The regenerator employs low-grade heat to return the dilute desiccant from the conditioner to a concentrated state.

*Overall system design achieves an industry-leading COP of 1.15.*

**Solid vs. Liquid***Solid desiccant wheel*

- Large size
- Requires natural gas-fired heaters to regenerate
- Latent heat converted to sensible heat
- High-maintenance system
- High air side pressure

*Liquid desiccant*

- Compact, light-weight unit
- Employs low grade heat: waste heat, hot water supplies, or a solar thermal array
- Latent heat completely removed
- Low-maintenance system
- Air-side pressure drops much lower

# The System

## SONOMACOOOL

### Fresh Air Capability

- Water removal capacity: 100-300 lb/hr
- 2,000-6,000 CFM
- Latent COP 1.15 (2-stage regeneration)

### System Specifications

- 5-7 kW electric
- 3500-4,500 lbs/1588-2041 kg (skid)
- 11.5' x 7' x 6.25'/305.5 x 213.4 x 190.5 cm

### Heat source options

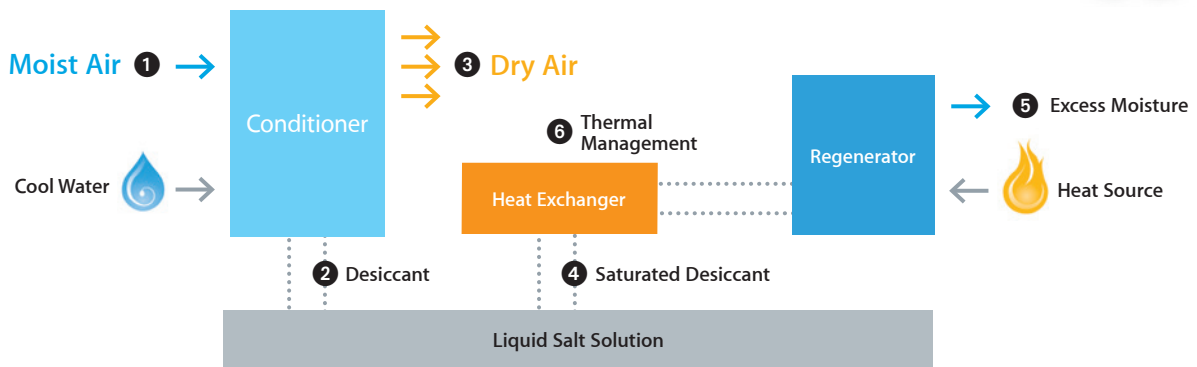
- Solar thermal or solar hot air PVT array  
*Works with Solar!*
- Low grade waste heat (<180°F) from refrigeration or other equipment
- Hot water heater (160-180°F hot water)
- Bio-fuels
- Co-generation

### Cool water options (60-80° F cold water)

- Cooling tower
- Ground source cooling
- Existing chilled water
- Seawater

### Efficient Cooling

- Supermarkets and refrigerated warehouses
- Hospitals and laboratories
- Shopping malls, movie theaters, ice rinks
- Office buildings
- Process industries
- Any commercial interior where managing heat and humidity poses a challenge



1

Outside, humid air is drawn into the Conditioner.

2

Liquid desiccant (salt) removes the moisture; water cools the Conditioner.

3

Dried process air is released to the building's cooling unit.

4

Saturated desiccant is sent to the Regenerator.

5

Heat dries the desiccant. Air flows through the Regenerator, carrying off excess moisture.

6

Heat Exchanger reduces energy consumption throughout the system.

## PAXSTREAMLINE

### Corporate Headquarters

52 Leveroni Court  
Novato, CA 94949  
P: 415-883-2300  
F: 415-883-2301

### Sonoma Cool Sales Office

341 North Berry Street  
Brea, CA 92821  
P: 714-674-4906  
F: 714-674-4976