

Sintesis™ Air-Cooled Chillers

With Free Cooling for Highest Efficiency



Trane® Sintesis air-cooled chillers deliver high energy efficiency, robust cooling performance, and sustainable solutions to help building owners lower their operating costs and reduce their environmental impact.

Efficient Design

According to the Environmental Protection Agency's ENERGY STAR® program, approximately 30 percent of energy in buildings is used inefficiently or unnecessarily. Incorporating designs that maximize individual product efficiencies with overall system strategies will help you minimize these inefficiencies and take advantage of cost savings.

The already high efficiency operation of the Sintesis chiller could be further enhanced by incorporating energy-saving options such as factory-integrated free cooling.

Free Cooling Capability

The free cooling option delivers optimal performance by minimizing compressor operation when outdoor air temperatures are low enough to assist in cooling the chilled fluid loop.

Applications—like data centers—that often have limitations in using traditional air-side economizers, can benefit from Sintesis chiller free cooling option and gain up to 100 percent of the nominal chiller capacity – without running the compressor, reducing energy use and annual operating expenses.

Furthermore, these facilities gain additional cooling redundancy, maximizing uptime, critical to their operations.



Depending on the climate zone and the building cooling load profile, incorporating free-cooling could deliver chiller part-load efficiency improvement of 17 to 77 percent, significantly lowering operating costs for building owners.

EcoWise™

An Environmentally Sustainable Solution

Sintesis chillers are products within the Trane Technologies EcoWise™ portfolio designed to minimize environmental impact with next-generation, low global warming potential (GWP) refrigerant and high efficiency operation.

These Chillers:

- Deliver over 25 percent higher part-load efficiency than required by ASHRAE 90.1–2013
- Operate with either R-134a or R-513A: a next generation, GWP refrigerant
- Require up to 40 percent lower chiller refrigerant charge due to innovations including compact, high-efficiency, integrated, low refrigerant charge (CHIL) evaporator and microchannel condenser coil

Sintesis™ Chillers with Free Cooling are Ideal for Applications with:

- Cooling load that exists even with lower outdoor temperatures.
- Relatively warm chilled fluid.
- Separate sensible and latent loads, often in conjunction with the use of a dedicated outdoor air system.
- Requirement to use a water-side economizer rather than an air-side economizer.

Even if leveraging the free cooling option is not feasible all year, the use of it for a fraction of the year can make a significant impact on energy consumption and operating costs of the building.

Reliable Performance

The Sintesis chiller economizer integration is designed and built as part of the regular manufacturing process at the factory, assuring higher reliability and proper performance.

As a matter of fact, with Sintesis chillers, the factory installed free cooling option is available in the broadest tonnage range on the market!

Additional Considerations for Free Cooling Integration

To encourage the overall higher energy efficiency operation, the use of economizer free cooling has become part of many energy code requirements. However, ASHRAE Standard 90.1-2013 provides an exception to this requirement for applications with chillers with superior part load efficiency. For many parts of the country, HVAC systems with Sintesis chillers, due to their high part load efficiency, qualify for one or more exceptions.

The Bottom Line

Adding the free cooling option to Sintesis chillers, even where it is not required by code, helps improve energy efficiency, lower operating costs and reduce the environmental impact of the buildings they serve.

For even further savings, Sintesis chillers are ideal for supporting ice-enhanced chiller plants to reduce cooling costs by making and storing ice during nighttime hours when utility rates are usually at their lowest. These systems not only use less expensive electricity, they may also use less of it, in a more environmentally sustainable manner.

To learn more about Trane Sintesis air-cooled chillers with free cooling contact your Trane account manager or visit trane.com/sintesis.



Free Cooling Factory Installation Benefits

- ✓ Increased reliability and better controls integration when included in the standard manufacturing process
- ✓ Smaller footprint than required by a chiller with separate dry cooler configuration when option is added post production
- ✓ Lower first cost than field-installed or modified chillers

Free Cooling Made Simple:

- Fluid-based free cooling circuit
- Fluid cooler heat exchanger in parallel with the microchannel condenser coil
- Valve-controlled free cooling capacity



Trane – by Trane Technologies (NYSE: TT), a global climate innovator – creates comfortable, energy efficient indoor environments through a broad portfolio of heating, ventilating and air conditioning systems and controls, services, parts and supply. For more information, please visit trane.com or tranetechnologies.com.

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