Tracer® chiller plant control for data centers

The expert approach to balancing efficiency, reliability and sustainability in mission critical spaces.

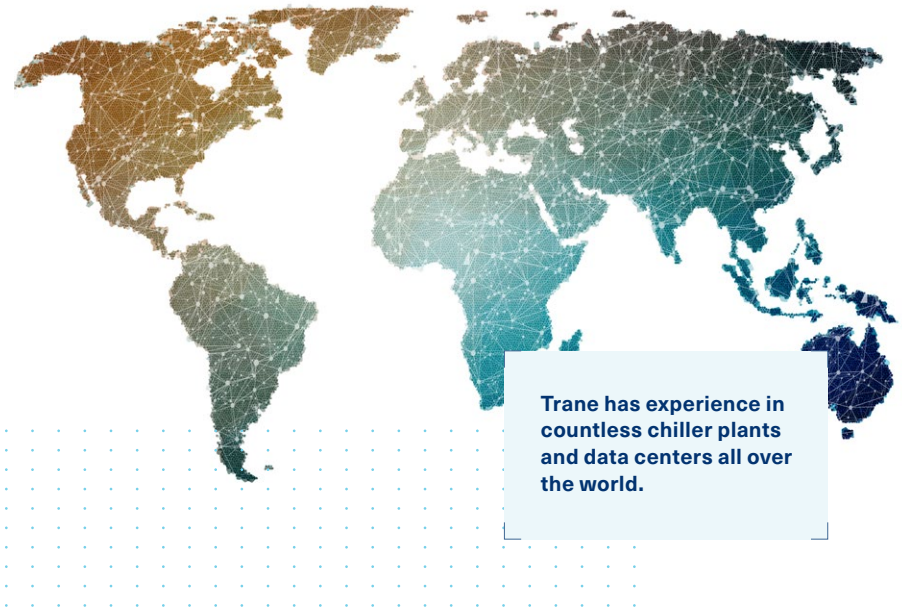
Managing data center heat is critical. It also consumes a lot of energy. That leads to high operating costs and may undermine your best environmental intentions. Because the stakes are so incredibly high, data centers invariably invest in high-performing HVAC equipment. Truth be told, performance in the real world also depends heavily on the control system, and the operator's skill set.

Now you can turn the complexities over to Trane. As an equipment manufacturer, controls company and HVAC system expert, no one is more qualified than Trane to optimize chiller plant performance in your data center.

Team Up with the Real Chiller Plant Pros

Data center cooling systems are complicated, with complex technologies in play. The chillers themselves are evolving to meet zero-downtime mandates while balancing energy concerns and power access. Programming systems today is a unique area of specialization, and it is critically important to do it right.

Tracer chiller plant control is extreme optimization enabled by Trane's Tracer automation system. Operational strategies and best practices are developed and tested by Trane experts based on over 100 years of HVAC experience. Yet they are flexible enough to serve *your* data center's needs — giving you peace of mind about reliability and energy efficiency.



Trane has experience in countless chiller plants and data centers all over the world.

Any data center can benefit.

All mechanical systems, regardless of the age and equipment manufacturer, process cooling or hybrid process/comfort functionality will experience drift over time. Energy usage and overall system performance suffer the further away a system moves from its as-designed state. Tracer chiller plant control uses HVAC optimization strategies that leverage operational data to make targeted adjustments to bring your system back to its optimal state. Virtually every data center chiller plant can operate better under Trane's expert guidance. HVAC system optimization should be a part of your mission-critical solution when:

- You want to improve the reliability of your chiller plant to ensure uptime
- The existing BMS/DCIM isn't effectively managing the cooling system complexities
- You need to get a better handle on energy cost management
- Operating a sustainable data center is becoming a bigger priority
- You are struggling to operate with reduced staff

Trane offers an easy, integrated approach to optimized performance.

What can you expect?

Energy improvements.

Data centers account for 1-1.5% of the total global electricity use[1] and HVAC can account for up to 40% of that usage within a facility[2]. An optimized cooling system can lower energy costs and reduce carbon emissions.

Less stress.

Downtime is a risk you can't afford. Equipment data enables you to see the warning signs and gain insights a standard BMS system can't provide. Tracer chiller plant control gives you added peace of mind.

Performance assurance.

Our engineered sequences and intuitive user interface help to ensure the system continuously operates close to the original design. Trane's approach is based on knowledge and best practices gained through over 100 years of experience in chiller installations worldwide.

Improved productivity.

Applications developed by our chiller system experts and Trane service take most chiller plant management tasks off your staff's to-do list. Your employees can work more efficiently and focus on other tasks.

Seamless integration.

Managing your facility means having oversight to more than just your chiller plant. Tracer controls support multiple protocols to ensure coexistence with existing infrastructure. Our systems are designed to easily integrate into your DCIM.

[1] https://www.iea.org/energy-system/buildings/data-centres-and-data-transmission-networks
[2] https://www.energy.gov/eere/iedo/energy-efficient-cooling-control-systems-data-centers

Chiller Plant Optimization

Engineered Performance — with Flexibility

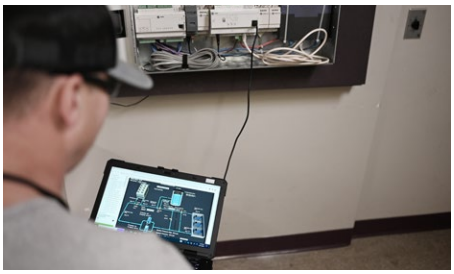
Tracer chiller plant control strategically manages the rotation, staging and sequencing of multiple chillers. Many functions are natively included, while custom sequencing can be used to round out job-specific needs. This approach can help deliver the perfect balance of proven sequences with job-specific customization, ultimately delivering sustainable results well after the initial commissioning of the plant. Explore the functions that make it possible for Trane to maximize equipment life and optimize energy use.

- **Chiller staging** — Defining the ideal number, combination and order of chillers to balance run time and efficiency across multiple units.
- **Pump pressure reset** — Minimizing pumping energy and improving valve control by properly controlling pump pressure.
- **Chilled water reset** — Establishing rules for when chillers can use warmer water to achieve the desired temperature settings to save energy.
- **Free cooling** — Running energy-consuming compressors less by using only the cooling towers when indoor and outdoor conditions are favorable.
- **Heat recovery integration** — Repurposing energy during periods of simultaneous heating and cooling by using heat recovery chillers to move waste heat from cooling spaces to areas that need heating.
- **Enhanced cooling tower staging** — Determining the right number of cooling towers to operate most efficiently under any circumstance.
- **Chiller/tower optimization** — Maintaining the optimal tower water setpoint to balance energy use between cooling towers and chiller compressors.
- **Thermal storage integration** — Leveraging installed Thermal Battery® ice storage systems to avoid high-cost, peak-demand energy use, and storing waste energy for use later.

Every project is slightly different. Your Trane team can adapt and modify our engineered solution to customize your outcomes.

A complete optimization solution

Optimizing your chiller plant for efficient electrified heating and cooling can play a major role in your decarbonization plans. Tracer chiller plant control is part of our full-service approach for achieving and maintaining efficient and effective building heating and cooling. Related products and services include:

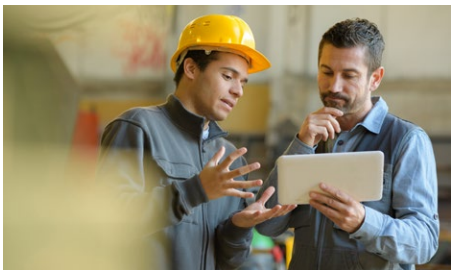


Tracer® SC+

Trane's powerful automation system integrates HVAC and building subsystems to provide better control over space conditions and energy efficiency. Tracer System Applications ensure best-possible performance while making it incredibly easy for operators to use.

Symbio® Unit Controls

Tracer SC+ is fed data through unit level controls. Symbio controls capture and translate a broad range of equipment-based points into the Tracer SC+ system controls, providing the basis for data-driven service.



Connected Services

Smart building technology enables us to monitor chiller plants remotely. With your permission, we can identify emerging equipment problems faster and notice unauthorized changes to controls programming. This is how Trane delivers system and security upgrades to your chiller plant, too.

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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