Liquid Cooling Data Center Technology

The StatePoint™ Liquid Cooling (SPLC) system, a patented innovation by Nortek Air Solutions, is an industry-first in data center cooling. This new cooling design makes data centers more efficient at cooling by employing new cutting-edge technology. It uses indirect air-liquid-air cooling with a liquid-to-air heat exchanger that cools water by having the water evaporate through a membrane separation layer that prevents cross-contamination between the water and air streams.

It captures the cooling developed directly in the water circuit as well as in the air flow, operating in multiple modes to minimize water and power consumption. With the addition of a pre-cooling coil, the system can maintain required cooling water temperatures in humid climates without supplemental condenser-based cooling (dependent upon design conditions/location/climate).

StatePoint Technology® enables this innovative solution to be delivered to any data center design regardless of location or climate, optimizing reliability and performance.
Next Generation of Data Center Cooling
- Advanced evaporative cooling technology
- Chilled water system that does not burden local water supplies
- High resiliency to scale formation and poor water quality for longer operational lifespans

Natural Way to Cool Data Centers
- Water used as primary cooling medium, not air (heat capacity of water is four times that of air)
- Patented membrane exchanger design allows some water to evaporate through membrane pores to cool the water
- Evaporative cooling produces cold water that cools inside air to achieve the cooling of servers
- Membrane keeps the cooling water circuit separated from the air stream

Advantages
- High levels of operating efficiency
- More efficient than direct evaporative cooling systems
- Power Usage Effectiveness (PUE) operation that is equal to or better than direct evaporative cooling systems
- Reduced water consumption: 20% in hot and humid climates and up to 90% in cooler climates
- Reduction in CAPEX requirements over traditional systems
- Eliminates need for mechanical cooling in a wider range of climate conditions

Air and Water Flow Combination
- Combination of air and water flow for high cooling performance in a compact exchanger
- Exchanger configured for both horizontal air flow or packaged conventional air handling units
- Eliminates chillers (under certain design conditions/location/climate) while providing more flexible cooling options

Flexibility
- Integrated control of supply water temperature and distribution pumping
- Simplification of external hydronic circuit requirements
- Cooling delivery connection to a variety of systems including fan coil walls, CRAH, air handlers, hot aisle enclosures, rear door heat exchangers, chip cooling and cold plates

Benefits
Gold Standard of Sustainability
- 20-30% less power usage
- 20-30% less water usage
- Less power during peak loads
- Humidity control
- Protection from outdoor contaminants
- Contains no refrigerants
- Lowered/reduced CO₂ emissions

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