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NORTEK™ DATA CENTER COOLING

ROA CASE STUDY

NORTEK DATA CENTER COOLING'S STATEPOINT® HYBRID FLUID COOLING PLANT IN DIGITIAL EDGE DATA CENTER

IN today's super-connected world, nearly every part of our lives is touched by data infrastructure. From micro transactions that happen hundreds of times every second in global financial institutions, to sharing photos of grandkids, data is how our world works and processes information. And our need for data processing and storage is ever-growing.

Modern servers and chip sets that store and process data are consuming more and more power, which in turn increases the thermal density of a data center. This upward trend is further intensified by the AI revolution the world is experiencing right now. Now more than ever, data centers require cooling solutions that are cost-effective, reliable, environmentally sustainable—and future-proof.

"We have designed a very unique data center here," says Jay Park, Chief Development Officer of Digital Edge, the largest data center in the Philippines. "There are conditions we cannot control, such as population growth or internet use. However, we can control our electricity and water usage by designing an efficient cooling system. And that's where we must push ourselves to be the best."

Digital Edge's Manila facility was named the most Innovative in Energy Efficiency, Southeast Asia, at the recent W.Media Asia Pacific Cloud & Data Center Awards. The Manila facility was also the first in Southeast Asia to achieve globally recognized sustainability certifications, including LEED Gold certification, and two globally recognized industry certifications; ANSI/ TIA-942-C certification for resilience, security and quality, as well as EDGE certification for green buildings.

A Revolutionary, Reliable, Technology

Digital Edge chose Nortek Data Center Cooling's StatePoint® Liquid Cooling Technology for their 10-megawatt data center in Manila. The hot and humid climate of the area posed unique challenges for a sustainable and cost-effective data center cooling solution that would provide reliable cooling now and into the future. Given the significant natural resource cost of data storage, the sustainability and profitability of the data center depended on the unrivaled efficiency of Nortek Data Center Cooling's StatePoint® Technology.

"It's extremely critical to make sure a data center can efficiently and effectively remove heat," explains Marc Hayes, Director of Business Development, Nortek Data Center Cooling. "When a data center fails to do this, it goes into various failure modes that reduce the facility's data processing capability. These failure modes can compromise the data being stored or data processes—as well as directly affecting the bottom line. That's why minimizing downtime is the main design goal of modern data centers. We take that principle to heart in every aspect of the design and quality of our cooling systems."

The cooling technology of Nortek Data Center Cooling's StatePoint® solution sets the bar for uptime through the elegant simplicity of its membrane exchanger design. "Traditional cooling systems consist of compressors, refrigerant, cooling towers, fans, pumps—which all require a lot of electricity," says Jay. "Nortek Data Center Cooling's StatePoint® Liquid Cooling Technology doesn't use all that. It is simply water in, water out. I almost think of it as a 'free' cooling system."

The absence of traditional coolers also minimizes the risk of unexpected breakdowns, providing better cooling reliability and more peace of mind.

"Nortek's solution doesn't have a lot of moving parts and pieces," says Marc. "A lot of complexity usually involved in data center cooling equipment is eliminated, thanks to how efficiently StatePoint® technology can target and supply Data Center-specific temperatures."

"Our key innovation in the patented StatePoint® membrane heat exchanger is how it harnesses the power of existing outdoor air conditions to supply chilled water to a data center almost for free, rather than using cold air to chill equipment as other economization-focused cooling systems do," explains Marc. "It maximizes the amount of water cooling that can be completed for free, by using the outdoor air environment to cool off water while minimizing mechanical cooling and the electricity it requires. It's a very elegant way to provide unrivaled efficiency using a very simplified hydronic system."

In the harsh, hot, and humid climate of data center locations such as Manila, Jakarta, Singapore, and other cities around the world, this evaporation technology is the only method that allows efficient water and power use to meet modern sustainability goals, achieving efficiencies and savings on both water and power.

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The Return on Air: Substantial Power and Water Savings

With Nortek Data Center Cooling's StatePoint® Liquid Cooling Technology, the Digital Edge data center has saved 35% to 50% on water usage, and 20% on power usage. Jay says, "This system has allowed our electrical design to save around two megawatts of electrical load, which is 17.52 gigawatts over a full year of operation." The data center also saves the equivalent of an Olympic-size swimming pool of water per year, and enough energy to power 1,500 U.S. homes.

Sustainable Simplicity For Today and the Future

The exponential growth in the world's demand on both data infrastructure and power infrastructure is exponentially accelerating. But electricity consumption and water consumption in a data center are unfortunately in direct conflict with one another. To save water use, more electricity must be used; and to save electricity, more water must be used.

The greatest advantage of Nortek Data Center Cooling's StatePoint® Liquid Cooling Technology is the ability to flexibly optimize for either water usage and/or power consumption, finding a balance between the two for a truly optimized system that ultimately minimizes the resource draw of the entire data center.

"We have the ability to very accurately home in on whether our customers want to focus on power usage or water usage during the design phase," says Marc. "We can ensure Nortek's solution is tailored to the data center's unique situation, needs, and goals, not only in the initial design, but also after the equipment is installed. That flexibility provides a great value to our customers."

Data centers aren't built to last a day. They're designed to last 10-15 years, during which they may see changes ranging from server technology upgrades with accompanying temperature increases, to water usage restrictions, to increased power costs. The data center buildings— and their cooling needs—are always changing. Yet Nortek Data Center Cooling's patented solution using StatePoint® technology provides a future-proof design. Without any equipment changes, it can be tailored using a new sequence of operations to optimize processes and storage for new conditions.

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Leading the Way for Cooling and Connectivity

Video "We're setting a new standard for the data center space," says Jay. "In all of Asia, there is a need to save electricity and water, yet traditional cooling systems are still used. We wanted to be the leader in the space."

Ultimately, the "Return on Air" Nortek Data Center Cooling's StatePoint® Liquid Cooling Technology provides is a big-picture return on investment. It includes impressive savings in power and water consumption, and offers the value and peace of mind of a future-proof and sustainable system that is simply elegant, and able to cool a data center over its entire life cycle.


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