

CASE IN POINT

# Data Centers: Beating the Heat

*Using a single system for cooling and humidification  
drives costs down and efficiency up*



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## Case in Point

A very large international data center required cooling and humidification of its 7 large server farms throughout New York State.

Here's the thing about data centers: while they come in vastly different sizes and configurations and fulfill a huge array of end needs, they all generate a lot of heat – and keeping them cool can cost a huge amount of money.

In fact, energy is the greatest expense at large data centers, often costing far more than the building, hardware, and wiring within it.

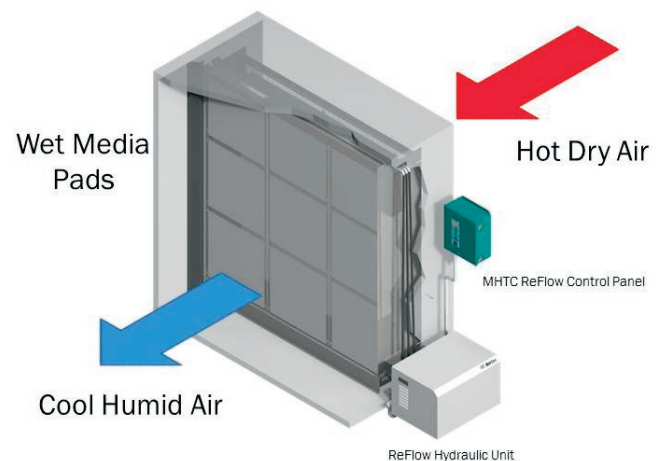
If not addressed efficiently, these very concentrated heat loads can lead to costly equipment failure and downtime. Additionally, computer manufacturers often mandate ideal humidity ranges for their equipment to help prevent static discharges that can damage sensitive circuits. This makes precision humidity control as vital to data centers as efficient cooling.

### When One is Better than Two

All of this adds up to a mission critical need for rigorous control of data center cooling and humidification. Evaporative media humidifiers/coolers are the ideal answer to both problems: they very efficiently provide humidity while consuming minimal electricity. They also contribute to the building cooling load, reducing the dependence on mechanical cooling – all in a single system.

### Evaporative Humidifier/Cooler Perfect Fit for Data Centers

After scrutinizing the options, Nortec's data center client chose the MHTC ReFlow, Nortec's most energy efficient evaporative media humidifier/cooler.



## Challenge

Use as little energy and water as possible to dramatically reduce energy costs

## Solution

Nortec MHTC Reflow evaporative media humidifier/cooler (12 units commissioned with a planned total of 72)

Total Control System for precision control and communication with building automation systems

## Customizations

By-pass damper to further reduce cost and pressure drop while enhancing control

Smaller duct module to reduce total number of units required

## By the Numbers

Met target humidification load of 375 lbs/hour per unit

Offset mechanical cooling by 398,625 BTU/hour per unit

Drawing just 0.71 kW, the fully self-contained MHTC Reflow is ideal for data center applications, as it very efficiently provides highly controllable humidity while consuming a bare minimum of electricity. In addition, water evaporating from the media extracts sensible heat from the airstream generating “free” cooling by as much as 22°F (12.5°C).

The data center also opted for the MHTC Reflow’s Total Control system, to provide a complete two-way interface with the buildings’ automation systems, plus smart water management capabilities to minimize water waste, while ensuring hygienic operation.

## Custom Features Drive Down Costs Even Further

To further optimize the system, Nortec worked closely with Integrated Environmental Solutions and the project engineer to custom design a bypass damper. The bypass damper reduces costs by providing more precise control over humidification, extending the media life, minimizing pressure drop, and removing the need for a mist eliminator.

In addition, a reduced duct size was used to more accurately size the system to the application. This decreased water requirements and optimized efficiency.

*By 2012 the cost of power for a data center is expected to exceed the cost of the original capital investment.\**



## MHTC Reflow System Highlights

- ▶ High performance and low energy usage
- ▶ Hygienic operation
- ▶ Free evaporative cooling
- ▶ Safe, high-performance polyester media
- ▶ Complete packaged system
- ▶ Industry first external recirculation module
- ▶ Available Total Controller system

\* Quick Start Guide to Increase Data Center Energy Efficiency, U.S. General Services Administration and U.S. Department of Energy’s Federal Energy Management Program ([http://www1.eere.energy.gov/femp/pdfs/data\\_center\\_qsguide.pdf](http://www1.eere.energy.gov/femp/pdfs/data_center_qsguide.pdf))

Evaporative media coolers/humidifiers are becoming an acknowledged, proven solution to today's increasingly stringent energy requirements in data centers and other facilities with high heat gain. Contact us today to learn more.

## Why Nortec?

Nortec specializes in the design and production of superior humidification systems. We create the most appropriate solutions to meet our customer's specific needs in the most efficient and cost effective way. To this end, we draw upon our extensive experience to develop an ever growing range of products manufactured to our stringent ISO 9001:2008 certified quality standards that will provide our customers with maximum reliability, minimum maintenance and a choice of energy sources.

Only Nortec offers systems operating with electrode steam, resistive steam, subsonic air nozzles, high pressure nozzles, steam injection, steam exchange, evaporative or gas-fired technology.



**USA** 826 Proctor Avenue, Ogdensburg, NY 13669

**Canada** 2740 Fenton Road, Ottawa, Ontario K1T 3T7

**1.866.NORTEC1**  
**nortec@humidity.com**

