sEnergy EMS™ Dynamic Cooling Optimization with ActiveCFD® in a Data Center Infrastructure Management Platform
With the optional Dynamic Cooling Optimization module of sEnergy EMS you can take control of your cooling infrastructure to dynamically match the output to the prevailing heat load. Manage your operating expenditure by reducing wasted or unnecessary cooling capacity.

- Built-in intelligent control schemes for On/Off operation, temperature setting, humidity setting, VFD and EC fans
- Automatically turn off cooling units when they are not needed, based on the measured conditions inside the white space; turn units back on when required
- Automatically regulate temperature and humidity settings of individual cooling system units to ensure that the required conditions at server intakes are maintained

Automatically control to ASHRAE-recommended temperature and humidity at the server intakes, or control to your own SLA

Control cooling units individually according to their influence zones on the floor

Ensure that units not are fighting one another other in terms of humidificaton and de-humidification

Since all major hardware communication protocols are supported, most major makes and models of cooling equipment can be integrated into the sEnergy EMS platform

Control economizers according to predefined conditions in the white space and the outside air temperature and humidity

sEnergy is another innovative technology from Nortek Air Solutions, a provider of critical infrastructure for the world’s leading data centers through cooling solutions that meet the efficiency, redundancy and scalability requirements of data centers. The innovations behind those solutions include our patented FANWALL TECHNOLOGY® systems, direct/indirect evaporative free cooling units, air- and water-side economizers and advanced controls.
Server Monitoring and IT Power Optimization

The optional IT Power Optimization module enables server-level monitoring and power capping; helping to achieve typical results such as significant energy savings and capacity optimization, as well as to reduce over-provisioning, and delay investments in new server equipment.

**Monitoring**
- Real-time monitoring of actual power and inlet temperature data aggregated to rack, row, room or by user-defined physical or logical groups
- Receive alerts based on custom power and thermal events
- Power estimation engine for legacy servers lacking a power monitoring function
- Display server asset tag and serial number for HP, IBM and Dell
- Cisco rack and UCS® Support

**Control**
- Intelligent and patented group policy engine
- Supports multiple concurrent active power policy types at multiple hierarchy levels
- Accepts workload priority as policy directive
- Allows scheduling of policies including power capping, by time of day or/and day of week
- Maintains group power capping while dynamically adapting to changing server loads
- Intel® Node Manager 2.0 support for memory power limiting and dynamic core allocation

**Trending**
- Log power and thermal data
- Track historical performance
- Query trend data using filters

**Scalability**
- Manages tens of thousands of servers

**Security**
- Secured APIs
- Secured communication with managed nodes
- Encryption of all sensitive data

**Save on Hardware Costs**
- Replace or minimize number of wireless sensors
- Replace intelligent power strips
- Reduce complexity of separate infrastructure, cabling, etc.

**Auto-Discovery and Tracking**
- Automatically discover servers within a range of IP addresses
- Keep track of servers – know when they are taken out of, or brought into, service
Seamless Integration of IT and Facility Operations

From the server and IT rack in the white space, to the upstream power and cooling infrastructure, sEnergy has you covered. sEnergy EMS integrates all the tools needed to effectively manage IT and facility operations from one convenient and consistent interface.

Modular Architecture

The sEnergy EMS rich and extensive feature sets are implemented in modules that work seamlessly together. Start with a core set of modules if you wish, then add modules and scale up as your need grows.

Hardware-Neutral Platform

In addition to the out-of-box capability to monitor and control your cooling infrastructure, sEnergy EMS offers a hardware-neutral platform to interface with any equipment that supports the standard protocols SNMP, Modbus®, BACnet, or RS485. Instantly discover BACnet and SNMP devices in your network, then pull in objects you wish to use for monitoring and supervisory control.

Work With Your Existing BMS

sEnergy EMS can be deployed to work in conjunction with your existing building management system (BMS) through a variety of data exchange formats and software protocols.
Instantly discover all BACnet and SNMP devices installed in your facility and pull in objects you wish to monitor or use for supervisory control. Quickly configure Modbus devices and RS485 networks.

- Monitor and control most equipment assets in the white space and around the facility including air handlers, computer room air conditioning (CRAC) units, chillers, pumping loops, and fan arrays.
- Quickly create sophisticated control schemes to maintain a desired performance or take individual equipment through custom duty cycles.

High-Visibility Dashboard Overview
- At-a-glance insight into the current operating status of your data center, including key performance indicators such as PUE, DCIE, Energy Use, Energy Cost, Rack Space, etc.
- “Single-pane-of-glass” overview of all your remote sites at once, allowing you to compare the performance of several sites.

Extensive Drill-Down with Exact Details
- Drill down to a dynamic floor plan or to a 3D walk-through model of the facility to show exact details about any individual equipment asset.
- Show key performance indicators for an individual equipment asset, such as intake and exhaust temperatures, power consumption, air flow bypass, or cooling efficiency.
- Instantly view the historical performance of individual equipment assets from the time of their installation to the present.
sEnergy EMS Offers One-of-a-Kind, Real-Time CFD

The always-on ActiveCFD solver incorporates your environmental and power measurement data and continuously analyzes your IT room to offer suggestions or take control of optimizing your cooling infrastructure. Identify the very minute areas of the room that might need improvement based on cooling inefficiencies in individual racks and servers, parasitic recirculation flows, wasted CRAC capacity, or hot spots.

Transform your monitoring infrastructure from a few discrete sensors to a “cloud” instrumentation environment that shows what is happening in every inch of your data center using a convenient and easy-to-understand pictorial format.

• Save money on wasted cooling capacity
• Pinpoint hot spots as they occur and quickly find a solution
• Increase the reliability and uptime of your data center

You can run what-if scenarios to quickly preview the consequences of making any major and minor decisions with actions such as:
• Installing new server equipment
• Shutting off a CRAC unit or an air handler to save energy costs
• Raising CRAC temperatures to save energy
• Turning down variable speed drives (VFD) to reduce energy usage
• Installing containment systems
• Installing spot coolers or secondary heat exchangers in hot spots

Wireless Sensor Network

The ActiveCFD wireless sensor solution is designed for easy integration with facility monitoring and management systems. The convenient wireless design helps reduce installation costs associated with hard-wired sensors and systems.

• Low-cost wireless monitoring solution combining temperature, humidity, power, motion, and dry contact measurements in one easy-to-deploy package
• Quick and easy installation
• Easily scalable
• Allows for adjustable signal strength
• Environmental control
sEnergy EMS Extensive Modeling Capabilities

The optional sEnergy ActiveCFD module includes extensive modeling capabilities:

- Structural elements, internal walls, doors and windows
- Ducting
- Blanking panels
- Block-off regions
- Wire cages
- Inside and outside the room
- Equipment located on the roof
- Cable pathways
- Patch panels

With the rapid model setup feature, you can read in assets from a spreadsheet or drag-and-drop equipment assets from the sEnergy graphical library.

You can also create and analyze multiple offline configurations and compare projected performance to the current baseline.

This module also allows you to model any size and design of facility:

- Slab floor
- Raised floor
- Overhead delivery
- Modular data center

Available Wireless Sensors

Temperature
Temperature / Humidity
Current / Power: 15A CT, 40A CT
Analog: 4-50mA, 0-5v, 0-10v
Digital: Dry contact
Motion
Data Center 2.0: Convergence of IT and Facility Functions

The constant growth in complexity and power density of IT infrastructure necessitates continued convergence of IT and facility operations. To maintain uptime and achieve the highest efficiency, the system as a whole needs to be viewed holistically.

This insight requires a high degree of visibility across both IT and facility organizations and the roles within. That’s why we built the most advanced enterprise DCIM platform from the ground up, with a singular focus on maintaining optimum efficiency across the entire power chain, from the server plug to the utility grid.
Seamless Integration for Complete Visual Insight

The sEnergy EMS program integrates all the tools needed to manage IT and facility operations from one convenient and consistent interface. All stakeholders—from IT and facility operators to data center managers, facility managers, and C-Level executives—gain complete visual insight into the data center’s daily operations and performance. sEnergy EMS provides many features that allow informed decisions to be made around availability, maintenance, energy efficiency, equipment changes and capacity planning.

Dashboard Overview – High level dashboard overview that can show the key performance indicators for the entire site, such as PUE, DCiE, RCI and other metrics.

3D Walk-through Model – Structured drill-down from the dashboard overview to a detailed walk-through, 3D model of the facility, showing the status and key performance indicators of subsystems and components.

Effortless Capacity Planning – sEnergy EMS continuously analyzes and projects your remaining capacities in space, power, and cooling which are displayed among the key performance indicators on the dashboard. Use the touch-button what-if analysis tool to instantly preview the effects of deploying new servers or cooling equipment.

Change Management – Built-in configuration management tools allow you to build a complete alternative configuration of your facility in software, forecast the performance compared to the current baseline, then manage and track the deployment.

Proactive Monitoring with the ActiveCFD Module – The optional ActiveCFD (computational fluid dynamics) can transform your monitoring infrastructure from a few discrete sensors to a “cloud” instrumentation environment that can help monitor every inch of your white space.

Dynamic Cooling Optimization – Out-of-the-box, sEnergy EMS is the only DCIM software with the built-in intelligence to take control of your cooling infrastructure. With this optional module, sEnergy EMS can actually help achieve it with advanced control algorithms that can continuously adapt your cooling infrastructure to the prevailing heat load.

IT Power Optimization – Powered by Intel® DCM, this optional component enables server-level power monitoring and power capping, which can lead to significant energy savings, reduced over-provisioning, and even delayed investments in new server equipment.

Advanced What-If Analysis – Use the touch-button what-if analysis tool to investigate interdependencies between critical components and subsystems and help avoid issues before they happen.

Automation and Process Efficiency – Create and dispatch daily, weekly, and monthly reports to selected individuals automatically. Create or customize as many report templates as you wish.

Colocation Tools – If you are a colocation provider, sEnergy EMS has a set of tools designed to facilitate your business relationship with your clients, from ensuring conformance to your service level agreement (SLA), to preparing reports customized to each client, to granting your clients virtual access to their own areas, and so much more.

Quickly drill down from a dashboard overview to walk-through 3D view with detailed status on individual components.
sEnergy EMS Provides the Benefits of a Unified Platform

Maintain Availability
- Get accurate information on current usage required to keep critical services running
- Track performance and then respond to events to ensure data availability
- Use failure impact analytics to understand dependencies between events and critical components and subsystems
- Implement condition-based maintenance to help avoid premature and unexpected operating issues

Maximize Efficiency
- Centralize IT and facility operations on one platform to foster cooperation across critical services
- Implement a holistic view on energy efficiency across the entire power chain from the server to the grid
- Implement dynamic cooling optimization to cut down on wasted capacity and help drive down OpEx
- Automate reporting and mundane tasks to free up resources for more critical facility functions

Optimize Capacity
- Optimize current capacity by accurate simulation of alternative scenarios based on real-time data
- Extend the life of existing infrastructure with accurate information on available space, power, and cooling
- Enhance planning with tools designed to build, analyze, and track changes in configuration
- Quickly and thoroughly investigate alternative configurations to increase capacity in the current facility
sEnergy EMS Asset Management in 3D,
Built on an Industrial Strength SQL Database

sEnergy EMS provides you with the ability to locate, identify, view, and manage all your IT and facility assets; quickly provision new equipment and confidently plan for future expansion. sEnergy EMS' asset management feature is built on an industrial-strength SQL database that is easily accessible with a variety of tools and methods, for compatibility with existing databases and third party libraries.

High Visibility Asset View
Asset view is accomplished in a virtual walk-through 3D model of your facility, accessible by multiple users on desktops, or with a browser running on handheld devices ranging from laptops to tablets to smartphones. Imagine walking right up to your IT rack, opening the door, and instantly taking an inventory and operating status of all the servers contained within—all from the convenience of your desktop or handheld device!

Auto-Discover and Track Assets
Automatically discover and keep track of your IT and cooling equipment assets. Know when your server or cooling equipment is put into or taken out of service. Click on a button to generate QR codes for all your assets using your own asset tags. Use the QR code with your hand-held device to pull up and monitor the status and properties of each equipment at location.

Manage It Your Way
sEnergy EMS is equipped with an extensive list of asset properties which you can customize and extend to suit your own requirements. Conduct asset searches according to any set of properties, built-in or custom. Create asset reports, or have the system automatically generate and send asset reports at your chosen periodic intervals.

Complete Life-Cycle Management
Get all the tools you need not only to manage your physical assets, but also to track an individual equipment piece’s performance metrics through its life-cycle from installation to decommissioning. Easily institute a planned maintenance program for your facility based on performance degradation.

Extensive Equipment Library
Take advantage of our extensive library of IT and facility equipment from all major manufacturers. Extend and customize the built-in library to suit your situation and facility. Quickly build and update the 3D model using a simple drag-and-drop action from the library.
To schedule a sEnergy EMS demo, please visit our website www.senergythermal.com, or contact us at info@senergythermal.com or call 603-217-5272.

Since Nortek Air Solutions, LLC has a policy of continuous product improvement, we reserve the right to change product specifications without notice. Nortek Air Solutions furnishes equipment pursuant to its then current Terms and Conditions of Sales and Limited Warranty, copies of which can be found under the Terms and Conditions and Warranty links at www.nortekair.com.

Nortek Air Solutions is a leader in innovative custom and engineered HVAC solutions for commercial, industrial and critical environments through our brands Governair, Huntair, Mammoth, Temtrol, Venmar CES, Ventrol and Webco. Nortek Air Solutions, LLC is a subsidiary of Nortek, Inc., a global diversified company whose many market leading brands deliver broad capabilities and a wide array of innovative, technology-driven products and solutions for lifestyle improvements at home and at work.