

EC Containment Cooling® Product Brochure

Maximize efficiency and IT flexibility while providing a perfectly controlled IT environment

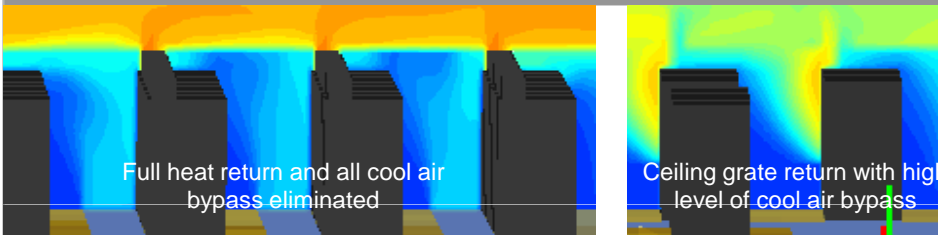
Most data centers are not equipped to handle the cooling requirements for high-density IT equipment. Learn why Opengate EC effectively controls the thermal environment for all types of IT equipment.

One system automates rack, row and room heat containment to provide an entire simplified cooling circuit



Scalable
Quick Deployment
Ultra-Efficient
High-Density Cooling

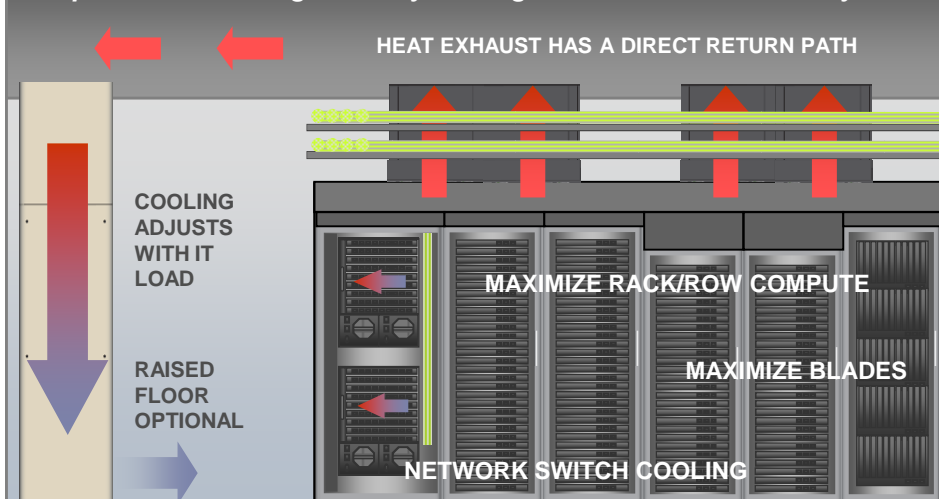
Room thermal modeling illustrates a normalized thermal environment compared to excessive bypass of cool air



An Opengate Containment Cooled Data Center

Opengate systems contain 100% of the heat and create an entire cooling circuit. This automated cooling distribution system allows high-density rack deployment while establishing a perfectly controlled IT environment.

Graphic illustrates high-density cooling automation and flexibility



Take the Intelligent Path™ ...

WWW.PRAIRIEHVAC.COM

PRAIRIE  **HVAC**

204-257-4822

Why Choose Opengate?

Stabilize IT intake air temperature to within a few degrees of the supply air temperature at all points in your data center

Reduce the total data center fan power.

Eliminate pressure on server fans for improved server efficiency

Adjust cool air delivery to IT demand as the airflow demand in the data center dynamically changes

Companies Choosing ...

Oracle, Army Corp of Engineers, AG Canada and General Dynamics are a few that have selected Opengate systems to simplify data center cooling and maximize energy efficiency

Opengate systems allow rapid return on investment - typically less than 3 months

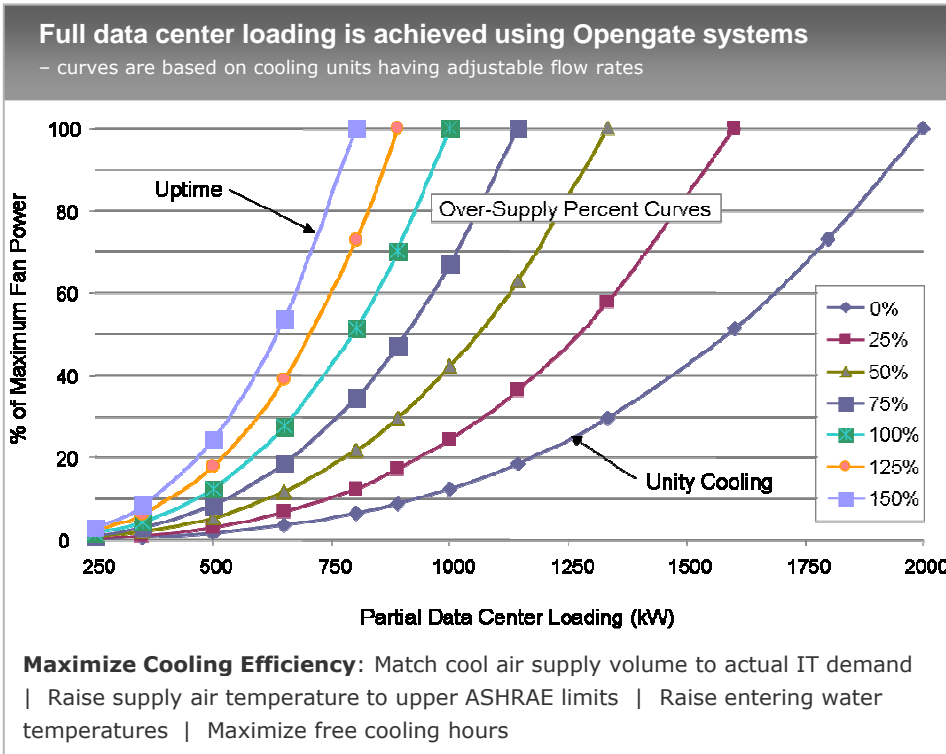
Owners and operators are keeping costs at a minimum while delivering an effective and efficient facility

Opengate systems are quickly deployed, automate the cooling circuit and provide the greatest efficiency to improve cash flow for IT operations -

PRODCUT SPECIFICATION
EC7001E | JUNE 2010

Ultra-Efficient Data Center Cooling Circuit

Gain control of the data center floor and achieve 100% cooling utilization for zero waste cooling. Without zero waste – a data center full loading is never achieved. See the planned 2 megawatt data center example below ...



Ultra-Efficient Cooling

Achieve 100% cooling utilization for zero waste cooling and the lowest PUE

- Raise supply air temp
- Raise entering water temp
- Maximize free cooling hours

Deploy more IT racks without heat issues and intelligently manage data center growth

Full data center loading is achieved using Opengate Containment Cooling

Redundancy Features

Dual Input: 120-240 VAC, 50/60 Hz, IEC C14

Power Bus to Fan Cartridges: 120-240 VDC Rectified

Dual Bridge: No single point of failure to Fan Cartridge

Regulation: Pressure based closed-loop PID

Override Protection: 100% fan speed fault response

System Alarms: Fan Cartridge, A/B Feed Error, External Sensor Disconnect

Environment Alarms: Cooling Limits, Temperature Limits, Humidity Limits

Network: HTTP / HTTPS / SNMP / DHCP

Regulatory: UL, cUL 60950, CE, FCC Class A

Typical Fan Power Savings by Reducing AC units

30 Ton AC Unit Fan Energy:

Consumes 7 kW Of Fan Power At Full Speed

30 Ton AC Unit Sensible Capacity:

100 kW Of Sensible Cooling Capacity For IT Load

Typical Data Center Over Provisioning Of Cool Air:

2-2.5X Cool Air Over-supply Based On Updated Uptime Institute Studies

Typical 2-2.5 Times Over Supply Fan Energy Wasted:

7-10 kW Of Additional AC Unit Fan Energy Wasted For 100 kW Of IT Load

Opengate System Fan Energy For 100 kW Of IT Load

700 Watts Of Fan Energy Used

Fan Energy Savings By Reducing AC Units With Opengate Systems:

6.3 kW To 9.3 kW Per 100 kW Of IT Load

Take the Intelligent Path™ ...

WWW.PRAIRIEHVAC.COM

PRAIRIE  **HVAC**

Quick Facility Integration & Reporting

Quickly deploy racks and rows, install in minutes and quickly trim ceiling around entire row. Add racks to rows, extending as needed. Multiple rack heights and sizes only effect Containment Cooling position and exhaust duct length. Connect to power and system automatically operates to factory set parameters. Connect to network and simply browse to device to set-up email, SNMP and alarm thresholds.

Host Controller Attachment to Chassis



Connect dual power, network, remote sensors



Place host & fasten



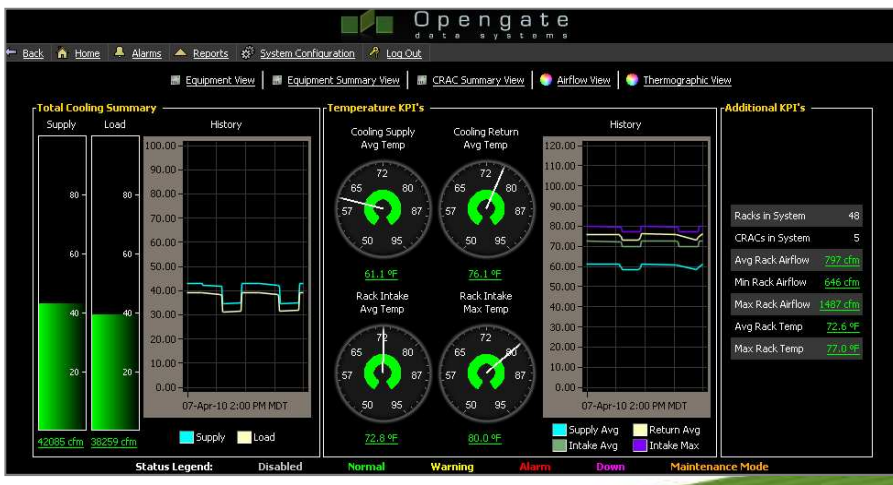
Insert redundant fan cartridges

Integrated Reporting Software

The screenshot shows the 'Alarm Thresholds' configuration page. It includes sections for 'System Alarm/Fault Notifications' with checkboxes for 'Email' and 'Traps' for various alerts like 'A/B Feed Error', 'Fan Cartridge Error', and 'Disconnected External Sensor'. Below this is a table for configuring specific alarm thresholds.

Source	Type	Threshold	E-mail	Traps
Capacity	High Alarm	97	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	High Warning	90	<input type="checkbox"/>	<input type="checkbox"/>
Fan End of Service Warning	High Alarm	40000	<input type="checkbox"/>	<input type="checkbox"/>

To automate cooling delivery with intelligent aggregation and organization of cooling load and aggregate all other facility power, cooling and environment data; deploy the Opengate Unity Cooling control software system



Versatile for All IT Equipment

Cool ultra-efficient servers which are designed closer to their thermal limits, blades and even multiple large network switches placed in racks

Automatically scale to any IT equipment type including side flow network switches

No Supplemental Cooling

Eliminate the need for supplemental cooling, allow fewer cooling units and keep water/Glycol at the perimeter of the facility

Cooling unit redundancy is applied to the entire data center space - not at the row level

One System - Fully Compatible

One system scalable for any rack density up to 30 kW and independent of precision cooling vendor, rack vendor or management software platforms

Systems have been installed with the following; Dell, EMC, HP, Oracle Exadata, Cisco, IBM, Sun, APC racks, Eaton Foreseer, Data Aire, Stulz, Liebert, Electrorack, NER, Wrightline and Chatsworth

Contact an authorized Opengate Integrator or Unity Cooling Partner on the latest system compatibility

Take the Intelligent Path™ ...

WWW.PRAIRIEHVAC.COM

PRAIRIE **HVAC**

System Connections and Redundancy

Opengate's cooling distribution systems is modular and intelligent; capable of rack power, cooling and environment monitoring integration

Build with Confidence

Why adjust to hot spots when you can normalize the entire data center?

- Supply air at 76F

- Intake air less than 78F

Achieve Unity Cooling® and Maximize Free Cooling

Maximize Rack and Room Density with ...

- Zero Waste

- Zero Heat Issues

Cool with zero waste and achieve best in class PUE

Deploy More IT with Confidence

... In Data Centers

... In Racks

... In Small Spaces

Unity Cooling®
Automated Cooling
Circuit Control &
Management

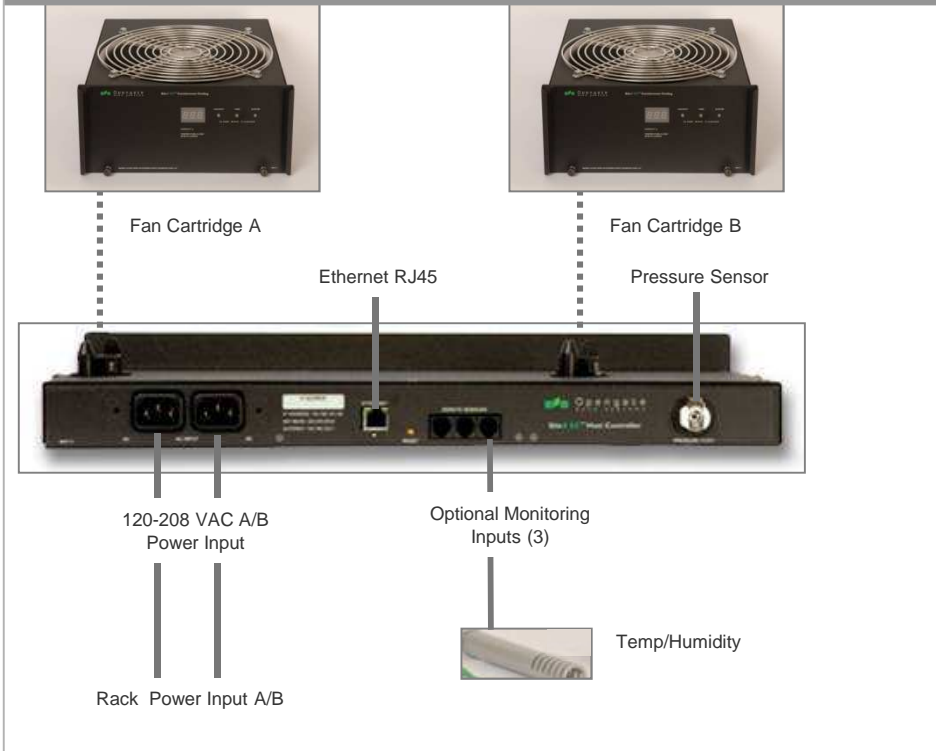
SiteView™
Data Center
Management System

IT-Row™ Cooling
Automated Row Heat
Containment

SwitchAir™
Network Switch
Cooling

SiteX Rack Power
Intelligent Rack Power
Distribution

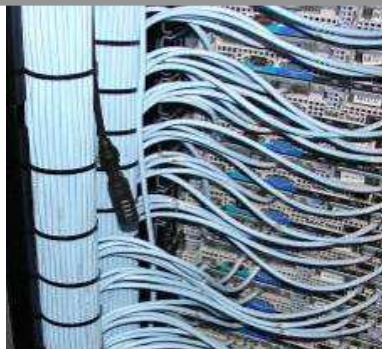
System Connections - Modular & Intelligent hot-swap devices



View inside rear door – host connections & pressure sensor placement



Containment Cooling system
view looking inside rear door



Zero pressure sensor placement
shown at server exhaust

Take the Intelligent Path™ ...

WWW.PRAIRIEHVAC.COM

PRAIRIE  **HVAC**