

**motivair**<sup>®</sup>  
COOLING SOLUTIONS



**ChilledDoor**<sup>®</sup>  
Rack Cooling System

OUR BUSINESS IS COOLING YOURS<sup>®</sup>

[motivaircorp.com](http://motivaircorp.com)



# COMPREHENSIVE COOLING FOR YOUR DIGITAL WORLD



## **CUSTOMIZABLE MODELS**

100% Heat  
removal



## **COOLING CAPACITY**

Removes up to  
75kW per rack



## **MADE IN USA**

Global HQ in  
Buffalo, NY



## **RACK AGNOSTIC**

Fits any industry  
standard server rack



## **BUILT-IN SCALABILITY**

Allows for future  
growth.

The Motivair ChilledDoor<sup>®</sup> Rack Cooling System targets the critical cooling requirements of today's modern server rack designs. As technology continues to advance, traditional methods of cooling racks such as CRAC/CRAH, containment, hot/cold aisles, and in-row systems have become less appealing as densities increase.

The Motivair ChilledDoor<sup>®</sup> Rack Cooling System is an active heat exchanger that is mounted directly to the rear panel of any standard server rack. It is capable of removing server densities up to 75kW per rack. A comprehensive set of environmental variables are constantly monitored to ensure that the ChilledDoor<sup>®</sup> is actively adjusting to conditions inside the data center.

By removing the heat load at its source, Motivair's ChilledDoor<sup>®</sup> system ensures that all heat being generated by the servers is neutralized before it leaves the cabinet. The result is a "Heat Neutral" white space. Traditional cooling methods are eliminated, the data center cooling footprint is reduced, raised flooring is no longer necessary, and overall data center efficiencies can be increased by up to 90%. Because the ChilledDoor<sup>®</sup> works in tandem with the IT hardware fans, the fan's power consumption and the internal operating temperature decreases, resulting in increased energy savings and longevity of the IT equipment.

The Motivair ChilledDoor<sup>®</sup> system operates above the ambient dew point, which eliminates the possibility of condensation near critical electrical equipment.

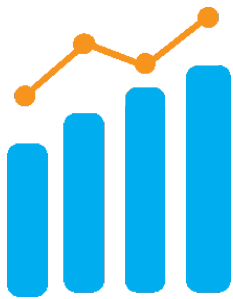
# ACTIVE RACK COOLING.

## Redefine Your PUE.



### ULTRA EFFICIENT

EC fans dynamically adjust to compensate for changing densities. Capable of removing up to 75kW per rack.



### SCALABLE

Designed for single unit buildup and interchangeable models allowing for future growth.



### RACK AGNOSTIC

Designed for use with any industry standard server rack. Ideal for retrofits or new facilities.

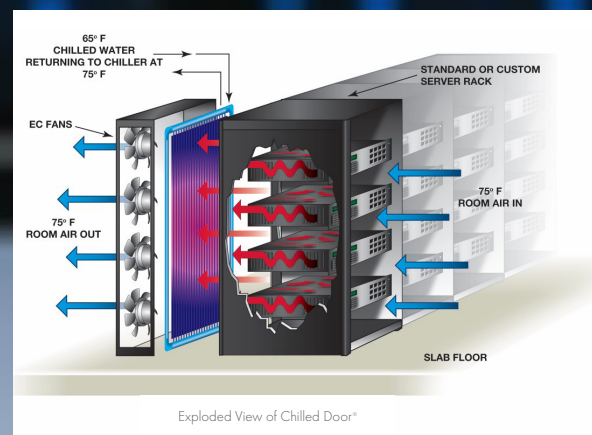
## HOW IT WORKS

Motivair ChilledDoors<sup>®</sup> can be fitted to the back of any standard or OEM server rack. ChilledDoors<sup>®</sup> have been designed to remove heat generated by the IT equipment directly at its source, preventing hot air from entering the white space. This ensures optimal thermal and energy performance.

Room air is pulled into the cabinet via the ChilledDoor's<sup>®</sup> EC fans. The room air picks up heat as it passes through the servers and then enters the ChilledDoor's<sup>®</sup> high efficiency heat exchanger. The heat is transferred to the coolant inside the heat exchanger and sent out to the chilled water source (see exploded view example). The ChilledDoor<sup>®</sup> then exhausts cool air back to the room at a predetermined set point. The ChilledDoor<sup>®</sup> monitors the server air temperature or pressure, ambient room temperature, entering water temperature, and leaving air temperature, allowing it to actively adjust to changes at the rack level. By doing this it creates a "heat neutral" environment requiring only humidity control.

Motivair ChilledDoors<sup>®</sup> are available with 2-5 fans providing maximum scalability and flexibility for future growth. The ChilledDoor<sup>®</sup> comes in multiple models, with varying heights and sizes, including the M4, M8, M12, M12-F, M14, M14-6, M15, M15-E, and M16. Motivair has the solution to meet all of your rack cooling needs today and in the future.

"Active" ChilledDoors<sup>®</sup> can be leveraged for greenfield or retrofit applications, including hot spots or efficiency upgrades. They are designed for high-efficiency cooling of complete data centers in an every-rack or every-other-rack configuration (please consult Motivair for every-other-rack designs). Because the ChilledDoor<sup>®</sup> is able to control an entire room, the user no longer has a need for traditional supplemental cooling solutions.



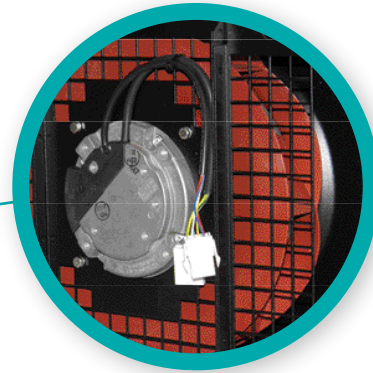
Exploded View of Chilled Door<sup>®</sup>

# Features



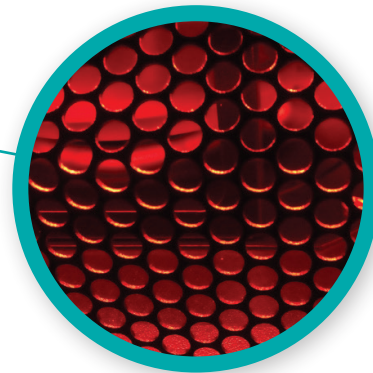
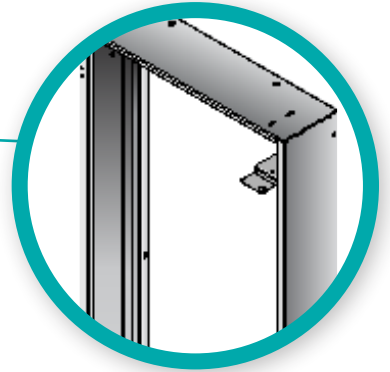
**PLC CONTROL SYSTEM**  
Simple navigation, adjustable set points and alarms provide you with individual ChilledDoor® setup, control, and monitoring.

**LOW PROFILE FOOTPRINT**  
Maximum cooling, compact design.



**HOT SWAPPABLE FANS**  
Allows for quick service replacement with no downtime.

**INTERFACE FRAME MOUNTING SYSTEM**  
Seamless integration with your server rack.



**LED STATUS INDICATOR**  
Provides your data center team with visual ChilledDoor® status.

# Motivair® ChilledDoor®

## TECHNICAL SPECIFICATIONS:

MODEL	M4	M8	M12	M12-F	M14	M14-6	M15	M15-E	M16
Available Height (Range)	42U - 60U	42U - 60U	42U - 60U	42U - 60U	42U - 60U	48U - 60U	48U - 60U	48U - 60U	48U - 60U
Available Width (Range)	600MM - 800MM (24" - 32")	600MM - 800MM (24" - 32")	600MM - 800MM (24" - 32")	600MM - 800MM (24" - 32")	600MM - 800MM (24" - 32")	600MM - 800MM (24" - 32")	750MM - 800MM (30" - 32")	750MM - 800MM (30" - 32")	750MM - 800MM (30" - 32")
Depth	13.3	13.3	13.3	13.3	15.7	15.7	15.7	16.8	17.5
Nominal Cooling Capacity (kW)*	12	30	45	55	65	70	70	70	75
GPM (Range)	0 - 23	0 - 23	0 - 23	0 - 23	0 - 23	0 - 23	0 - 23	0 - 23	0 - 23
Max Watts	840	840	840	840	2500	3000	2500	840	2500
Fan Quantity	2 - 5	5	5	5	5	6	5	5	5
Power Supply:									
230V/1PH/50-60HZ	S	S	S	S	S	S	S	S	S
208V/1PH/60HZ	S	S	S	S	S	S	S	S	S
277V/1PH/50-60HZ	NA	NA	NA	NA	O	O	O	NA	O

\*Calculated at 35% RH and 75F Room Temp; Supply Temperature Range 55F - 65F water; 100% water

### FEATURES:

PLC with local HMI screen	S	S	S	S	S	S	S	S	S
Variable "EC" fans	S	S	S	S	S	S	S	S	S
Dual power supply (A/B)	O	O	O	O	O	O	O	O	O
Network remote monitoring/control	O	O	O	O	O	O	O	O	O
Individual fan fail sensing	S	S	S	S	S	S	S	S	S
Local visual/audible alarm	S	S	S	S	S	S	S	S	S
Leak Prevention System/Detection	S	S	S	S	S	S	S	S	S
Modulating Two-Way Valve	S	S	S	S	S	S	S	S	S
Common Alarm Relay	S	S	S	S	S	S	S	S	S
Top or Bottom Connections	S	S	S	S	S	S	S	S	S
Differential Pressure Control	O	O	O	O	O	O	O	O	O
100% Failover Mode	S	S	S	S	S	S	S	S	S
Overcool Mode	S	S	S	S	S	S	S	S	S
C14 Plug Type	S	S	S	S	S	S	S	S	S
Alternative Plug Types available	O	O	O	O	O	O	O	O	O
Rack Access (Key)	S	S	S	S	S	S	S	S	S
Rack Access (Code)	O	O	O	O	O	O	O	O	O

### FACTORY CERTIFIED SERVICES:

Installation	O	O	O	O	O	O	O	O	O
Start-Up	O	O	O	O	O	O	O	O	O
Commissioning Support	O	O	O	O	O	O	O	O	O
Extended Warranty	O	O	O	O	O	O	O	O	O
Preventative Maintenance	O	O	O	O	O	O	O	O	O

Open 19 and OCP compliant. S=Standard; O=Optional, NA= Not available; ETL, CSA, CE Certified  
Manufactured in the USA

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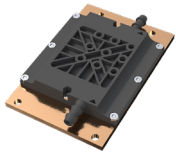
# **motivair**<sup>®</sup>

## COOLING SOLUTIONS



### **COOLANT DISTRIBUTION UNIT (CDU)**

A CDU provides the ability to deploy higher density, load diverse IT equipment in a smaller footprint while at the same time improving a facility's overall efficiency (PUE) and life expectancy. The CDU provides 100% sensible cooling up to 1.25MW, depending on the model. For use with the ChilledDoor<sup>®</sup> or other IT cooling systems.



### **DYNAMIC COLD PLATE™**

Motivair's Dynamic Cold Plate™ harnesses innovative fluid dynamics to redefine direct liquid cooling. Our patent pending technology enables robust performance without the use of skived microchannels. It allows CPUs and GPUs to operate at peak performance while reducing the possibility of cooling degradation and costly system failures.



### **SERVICE & MAINTENANCE PROGRAM**

Motivair<sup>®</sup> provides customer-focused service and support for your mission critical equipment. We offer site surveys, installation services, Level III Commissioning support, service agreements, and extended warranties on parts.



### **HEAT DISSIPATION UNIT™**

The Motivair HDU is connected directly to the computer cooling loop and sits adjacent to or proximate to the computer racks. Circulation pumps located inside the HDU move hot water from the computer system to the HDU's air-cooled heat exchanger. High-efficiency EC fans draw cool room air across the HDU's internal heat exchanger, removing heat from the computer cooling system. A high-powered PLC controls and monitors all aspects of HDU performance ensuring the HPC system can operate within thermal specifications and without dependence on a building water supply.



### **MODULAR DATA CENTER**

Backed by our ChilledDoor<sup>®</sup> and Coolant Distribution Unit (CDU) technology, our Modular HPC Data Center can accommodate power densities of up to 75 kw/rack in air cooled systems and 150 kw/rack for modern liquid-cooled supercomputers and HPC clusters. Each system can be equipped with Motivair's integrated Free-Cooling Chiller technology or warm water fluid cooling systems for maximum uptime and efficiency.

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