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Legrand | Ortronics is the leader in passive airflow control,

with patented physical infrastructure solutions that properly manage heat and airflow. In addition to the traditional racks and cabinets that are the backbone of Ortronics® physical support solutions, Legrand | Ortronics now offers Mighty Mo® Air Control containment solutions. Together, Ortronics physical infrastructure and containment products provide complete thermal management solutions to direct heat and airflow in the data center, resulting in improved cooling that significantly increases energy savings.

Passive air control provides the most energy efficient, cost-effective method of improving airflow and maintaining proper temperature in the data center.

Layer ZERO™

Mighty Mo Air Control is part of Layer Zero®.

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THE BENEFITS OF

AIRFLOW CONTROL & COLD AISLE CONTAINMENT

Maintaining separation between the hot and cold aisles is a crucial aspect of best practice airflow design. The Mighty Mo® Air Control containment solution enhances the separation of the hot and cold aisles by containing and directing cold air where it is needed. This passive system improves airflow and optimizes thermal management without adding active cooling equipment, avoiding additional energy costs for cooling.

The Air Control system provides additional protection and performance benefits for your network. Containment extends the life of active equipment like switches and servers by reducing the heat load, boosting performance and preventing pre-

mature equipment burn-out. This separation of cold supply air and hot exhaust also increases the tonnage output and efficiency of CRAC units.

Very simply, Mighty Mo Air Control solutions provide more cooling with less energy by containing and directing the cold air to where it is needed.

Features and Benefits

- Reduce costs by raising your data center set points
- Increase CRAC output and efficiency
- Harness thermal dynamics to increase the effectiveness of cold aisle isolation
- Multiple customizable configurations available to suit any data center - legacy or new builds
- Compatible with raised or non-raised floors
- Meet the physical, thermal, electrical and optical requirements of ASTM, UL and NFPA fire retardant requirements
- Designed to release in the event of a fire, allowing full operating range for fire sprinklers

MEASURED SUCCESS

CFD ANALYSIS

Flood Cooling is the most common approach today to data center cooling. This process fills the entire data center with air that meets the intake needs of all active equipment. The problems associated with cooling the whole room to the same general temperature are that it creates:

- Lower than necessary set points
- Higher than necessary humidity set points
- Partial use of rack space, since the higher rack units are above recommended equipment temperatures
- Excessive fan use to create air movement throughout the room

These things all result in higher than necessary costs.

To demonstrate the benefits of concentrated cooling, Legrand | Ortronics conducted a Computational Fluid Dynamics (CFD) analysis on a typical data center to determine the energy savings impact of Mighty Mo® Air Control products, starting with the raised floor and ending with full containment.

BASELINE DATA CENTER

The baseline data center is 9,000 square feet, with typical kW or heat load ranging from .5kW network racks to 6kW server racks. The baseline model features cabinets that are both parallel and perpendicular to the five operating CRAC units, with hot and cold aisles, as well as isolated equipment. There are some rows set up for cold aisle containment and some ancillary areas where flood cooling will be adequate. Other common situations include an area without a raised floor, cabinets up against a wall or column and CRAC units that are not symmetrical.

The AC load was selected to represent what is typically found in legacy data centers. **In this image, the blue circles illustrate cold air flooding into the hot aisle, showing an oversupply of cold air. However, the red circle points out where the cold aisle is receiving hot air, demonstrating that there is no clear separation between the hot and the cold.**
Five of the cabinets are still showing intake temperatures in excess of 80 degrees; potentially damaging the equipment.

All active equipment intakes have been entirely cold air contained, making it possible to shut off two CRAC units.

CONTAINED DATA CENTER

Looking at the contained data center you can see that all of the supply air areas are well under 78 degrees and fall within the ASHRAE intake specifications. While the exhaust side still shows extreme temperatures, this is a desired result and will increase the CRAC units' efficiency.

All active equipment has been entirely cold air contained, including isolated cabinets far from a CRAC unit. The Mighty Mo® Air Control cold aisle containment made it possible to shut off two CRAC units while still maintaining appropriate intake temperatures and increasing the efficiency and tonnage output of the remaining 3 CRAC units.

A combination of Mighty Mo aisle containment products was used:

- Air Disrupters slowed the subfloor air to allow proper permeation through perforated tiles
- Air Plugs and Air Blanking Panels blocked holes between the hot and cold aisles, as well as between the subfloor and main room to prevent cold air leakage
- Air Curtains and Air Cap solidified the separation of the hot and cold aisle
- The Air Booth spot cooled isolated cabinets and racks

MIGHTY MO®

AIR CONTROL SOLUTIONS

To improve data center cooling efficiency it is crucial to separate and contain cold air and provide hot air back to the cooling units. CRAC unit efficiency is achieved when hot air is returned to the unit. Mighty Mo Air Control products significantly reduce cooling requirements by creating a physical separation between the cold and hot air. They provide a contained supply of cold air to equipment, dramatically reducing active equipment energy consumption. Mighty Mo Air Control products can be used to reduce the amount of cold air lost through unoccupied areas of equipment in hot and cold aisle environments, as well as balance the underfloor pressure and reduce air leakage.

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AIR PLUG & AIR DISRUPTER

Mighty Mo® Air Plug

Air Plugs are used to fill in cable openings in the raised floor or any gaps where airflow needs to be blocked. Air Plugs are soft, compressible and safe to use around all types of cable, including fiber optic cable.

They are made from Sandel™, a fireproof material. Sandel originates from sand, contains no asbestos and is non-combustible at any temperature. The Air Plugs are available in several sizes to cover most any opening and are easily installed by simply squeezing the plug and placing it in the opening to be filled. All plugs have a height of 5".

PART NO.	DESCRIPTION
OR-MMAPL0404	Air Plug, 5" x 4" x 4", black
OR-MMAPL0606	Air Plug, 5" x 6" x 6", black
OR-MMAPL0612	Air Plug, 5" x 6" x 12", black
OR-MMAPL0618	Air Plug, 5" x 6" x 18", black
OR-MMAPL0624	Air Plug, 5" x 6" x 24", black
OR-MMAPL0909	Air Plug, 5" x 9" x 9", black
OR-MMAPL0914	Air Plug, 5" x 9" x 14", black
OR-MMAPL0918	Air Plug, 5" x 9" x 18", black
OR-MMAPL0924	Air Plug, 5" x 9" x 24", black
OR-MMAPL1212	Air Plug, 5" x 12" x 12", black
OR-MMAPL1218	Air Plug, 5" x 12" x 18", black
OR-MMAPL1224	Air Plug, 5" x 12" x 24", black
OR-MMAPL1414	Air Plug, 5" x 14" x 14", black
OR-MMAPL1616	Air Plug, 5" x 16" x 16", black
OR-MMAPL1620	Air Plug, 5" x 16" x 20", black
OR-MMAPL1624	Air Plug, 5" x 16" x 24", black
OR-MMAPL1818	Air Plug, 5" x 18" x 18", black
OR-MMAPL2024	Air Plug, 5" x 20" x 24", black
OR-MMAPL2424	Air Plug, 5" x 24" x 24", black

Mighty Mo Air Disrupter

The Air Disrupter is a curtain designed to modify the air velocity under a raised floor. Low pressure areas above perforated tiles are often a result of air rushing past the tile opening at too great a speed. By strategically placing the Mighty Mo Air Disrupters under the raised floor, air velocity is greatly reduced and more air is allowed to permeate through the tiles, ensuring a consistent supply of cool air to each rack or cabinet.

The Mighty Mo Air Disrupters are made from the fireproof material Sandel.

PART NO.	DESCRIPTION
OR-MMADIS0624	Air Disrupter, 6"H x 24"W, black
OR-MMADIS1224	Air Disrupter, 12"H x 24"W, black
OR-MMADIS1824	Air Disrupter, 18"H x 24"W, black
OR-MMADIS2424	Air Disrupter, 24"H x 24"W, black

MIGHTY MO®

AIR CURTAIN SYSTEM

The Air Curtain containment system includes hanging panels, sliding doors and swinging doors – all designed to eliminate the mixing of hot and cold airflow.

Hanging Vinyl Panels

Fire resistant vinyl panels hang from aluminum tracks mounted to the drop ceiling grid above the racks and cabinets. This curtain forms a barrier between the hot aisle and cold aisle. The aluminum tracks are connected to the ceiling grid by fusible links that release and drop to the floor when temperatures go above 135°F, ensuring that the fire sprinkler pattern is not interrupted. Normal fire suppression systems engage at 158°F.

The Hanging Vinyl Panel System is sold in kits that include all the necessary hangers, track and panels to cover your specific area. The vinyl panels are the length of the aluminum track and overlap at the track seams. Each panel has two inches of additional width on each end to overlap and create one continuous partition.

The tracks are available in clear anodized aluminum.

To determine the size of the Hanging Vinyl Panel System required you will need the following measurements:

- Linear feet – this is the length of aluminum track needed to create a rectangle around the aisle to be contained. Kits are available from 1' to 6' long and can be connected to one another for larger installations.
- Drop down length (in inches) – this is the length of the vinyl panels from the aluminum track to the top of the racks and cabinets or floor. Available lengths are from 29" to 182" high.

Mighty Mo® Air Curtain, Hanging Vinyl Strip Doors

PART NO.	DESCRIPTION
OR-MMACNS98X12	Vinyl Strip, 98"H x 12"L
OR-MMACNS98X24	Vinyl Strip, 98"H x 24"L
OR-MMACNS98X36	Vinyl Strip, 98"H x 36"L
OR-MMACNS98X48	Vinyl Strip, 98"H x 48"L
OR-MMACNS98X60	Vinyl Strip, 98"H x 60"L
OR-MMACNS98X72	Vinyl Strip, 98"H x 72"L
OR-MMACNS110X12	Vinyl Strip, 110"H x 12"L
OR-MMACNS110X24	Vinyl Strip, 110"H x 24"L
OR-MMACNS110X36	Vinyl Strip, 110"H x 36"L
OR-MMACNS110X48	Vinyl Strip, 110"H x 48"L
OR-MMACNS110X60	Vinyl Strip, 110"H x 60"L
OR-MMACNS110X72	Vinyl Strip, 110"H x 72"L
OR-MMACNS122X12	Vinyl Strip, 122"H x 12"L
OR-MMACNS122X24	Vinyl Strip, 122"H x 24"L
OR-MMACNS122X36	Vinyl Strip, 122"H x 36"L
OR-MMACNS122X48	Vinyl Strip, 122"H x 48"L
OR-MMACNS122X60	Vinyl Strip, 122"H x 60"L
OR-MMACNS122X72	Vinyl Strip, 122"H x 72"L
OR-MMACNS146X12	Vinyl Strip, 146"H x 12"L
OR-MMACNS146X24	Vinyl Strip, 146"H x 24"L
OR-MMACNS146X36	Vinyl Strip, 146"H x 36"L
OR-MMACNS146X48	Vinyl Strip, 146"H x 48"L
OR-MMACNS146X60	Vinyl Strip, 146"H x 60"L
OR-MMACNS146X72	Vinyl Strip, 146"H x 72"L
OR-MMACNS182X12	Vinyl Strip, 182"H x 12"L
OR-MMACNS182X24	Vinyl Strip, 182"H x 24"L
OR-MMACNS182X36	Vinyl Strip, 182"H x 36"L
OR-MMACNS182X48	Vinyl Strip, 182"H x 48"L
OR-MMACNS182X60	Vinyl Strip, 182"H x 60"L
OR-MMACNS182X72	Vinyl Strip, 182"H x 72"L

Mighty Mo Air Curtain, Hanging Vinyl Panels

PART NO.	DESCRIPTION
OR-MMACNP29X12	Vinyl Panel, 29"H x 12"L
OR-MMACNP29X24	Vinyl Panel, 29"H x 24"L
OR-MMACNP29X36	Vinyl Panel, 29"H x 36"L
OR-MMACNP29X48	Vinyl Panel, 29"H x 48"L
OR-MMACNP29X60	Vinyl Panel, 29"H x 60"L
OR-MMACNP29X72	Vinyl Panel, 29"H x 72"L
OR-MMACNP56X12	Vinyl Panel, 56"H x 12"L
OR-MMACNP56X24	Vinyl Panel, 56"H x 24"L
OR-MMACNP56X36	Vinyl Panel, 56"H x 36"L
OR-MMACNP56X48	Vinyl Panel, 56"H x 48"L
OR-MMACNP56X60	Vinyl Panel, 56"H x 60"L
OR-MMACNP56X72	Vinyl Panel, 56"H x 72"L
OR-MMACNP98X12	Vinyl Panel, 98"H x 12"L
OR-MMACNP98X24	Vinyl Panel, 98"H x 24"L
OR-MMACNP98X48	Vinyl Panel, 98"H x 48"L
OR-MMACNP110X12	Vinyl Panel, 110"H x 12"L
OR-MMACNP110X24	Vinyl Panel, 110"H x 24"L
OR-MMACNP110X48	Vinyl Panel, 110"H x 48"L
OR-MMACNP122X12	Vinyl Panel, 122"H x 12"L
OR-MMACNP122X24	Vinyl Panel, 122"H x 24"L
OR-MMACNP122X48	Vinyl Panel, 122"H x 48"L
OR-MMACNP146X12	Vinyl Panel, 146"H x 12"L
OR-MMACNP146X24	Vinyl Panel, 146"H x 24"L
OR-MMACNP146X48	Vinyl Panel, 146"H x 48"L
OR-MMACNP182X12	Vinyl Panel, 182"H x 12"L
OR-MMACNP182X24	Vinyl Panel, 182"H x 24"L
OR-MMACNP182X48	Vinyl Panel, 182"H x 48"L

Mighty Mo Air Curtain, Hanging Vinyl Corner Panels

PART NO.	DESCRIPTION
OR-MMACNCP29X12	Vinyl Corner Panel, 29"H x 12"L
OR-MMACNCP56X12	Vinyl Corner Panel, 56"H x 12"L
OR-MMACNCP98X12	Vinyl Corner Panel, 98"H x 12"L
OR-MMACNCP110X12	Vinyl Corner Panel, 110"H x 12"L
OR-MMACNCP122X12	Vinyl Corner Panel, 122"H x 12"L
OR-MMACNCP146X12	Vinyl Corner Panel, 146"H x 12"L
OR-MMACNCP182X12	Vinyl Corner Panel, 182"H x 12"L

MIGHTY MO®

AIR DOORS

Mighty Mo® Sliding Aisle End Door

The Sliding Aisle End Door installs at the end of the row. The door frame is constructed of extruded aluminum and supports clear acrylic sliding doors, bridging an aisle up to 84" wide. The door is shipped fully assembled to make installation easier. Simply tilt the door into place, bolt it to the floor and attach the turnbuckles on the top of the door to the top of the end rack or cabinet. The no-threshold design allows unfettered access to the contained aisle. The frames are available in clear or black anodized aluminum.

PART NO.	DESCRIPTION
OR-MMADRS80X89DL	Air Door, Sliding, 80"H x 89"W, dual 24"W doors, clear
OR-MMADRS80X89DL-B	Air Door, Sliding, 80"H x 89"W, dual 24"W doors, black
OR-MMADRS80X89LH	Air Door, Sliding, 80"H x 89"W, single 36"W door, left, clear
OR-MMADRS80X89LH-B	Air Door, Sliding, 80"H x 89"W, single 36"W door, left, black
OR-MMADRS80X89RH	Air Door, Sliding, 80"H x 89"W, single 36"W door, right, clear
OR-MMADRS80X89RH-B	Air Door, Sliding, 80"H x 89"W, single 36"W door, right, black

Mighty Mo Hinged Aisle End Door

The Hinged Aisle End Door is also constructed of extruded aluminum and clear acrylic and has the same ease of installation as our sliding door.

The door can be purchased with a left hand or right hand opening and has a swing radius of 3 feet. The frames are available in clear or black anodized aluminum.

PART NO.	DESCRIPTION
OR-MMADRH80X56LH	Air Door, Hinged, 80"H x 56"W, left hand open, clear
OR-MMADRH80X56LH-B	Air Door, Hinged, 80"H x 56"W, left hand open, black
OR-MMADRH80X56RH	Air Door, Hinged, 80"H x 56"W, right hand open, clear
OR-MMADRH80X56RH-B	Air Door, Hinged, 80"H x 56"W, right hand open, black

Mighty Mo Frame Panel

The Frame Panel is used to create containment when one row of racks or cabinets is not the same length as another row. It creates a right angle from the aisle end door to the rack or cabinet of the shorter row, effectively closing the row and preventing the mixing of hot and cold air. Each frame support is two feet wide to match the size of the standard floor tiles. The frames are available in clear or black anodized aluminum.

PART NO.	DESCRIPTION
OR-MMADRF80X24	Air Door, Frame Support, 80"H x 24"W, clear
OR-MMADRF80X24-B	Air Door, Frame Support, 80"H x 24"W, black

MIGHTY MO®

AIR PANEL ROOF

Mighty Mo Air Panel Roof

The Air Panel Roof is an aisle cover system that attaches to the top of the racks or cabinets to create a barrier that prevents hot air and cold air from mixing. The roof frame is constructed of heavy gauge aluminum that supports translucent drop away panels. These panels are molded of heat sensitive ceilume polyvinyl chloride plastic. The panels shrink when exposed to heat and drop out of the supporting frames, ensuring there is no interference with the operation of the overhead automatic sprinklers. The panels can also be removed for easy access when overhead maintenance is needed.
The frames are available in clear or black anodized aluminum.

PART NO.	DESCRIPTION
OR-MMAPR56X80	Air Panel Roof, 2"H x 55-1/2"W x 79-1/2"L, clear
OR-MMAPR56X80-B	Air Panel Roof, 2"H x 55-1/2"W x 79-1/2"L, black

Contact customer service for additional sizes.

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MIGHTY MO®

AIR CAP

Mighty Mo Air Cap
Retractable Aisle Cover

The Air Cap is a flat, retractable roof system that attaches to the top of racks or cabinets. The Air Cap creates a barrier that prevents hot air and cold air from mixing. This retractable cover is held in place with thermal links that release the cover if temperatures go above 135°F. The fire resistant cover is spring loaded and retracts back into the metal cassette during a fire event. This ensures that the sprinkler pattern is not interrupted and prevents the cover from being exposed to the fire. Normal fire suppression systems engage at 158°F . The retractable feature also allows easy access when overhead maintenance is needed. The frames are available in black anodized aluminum.

PART NO.	DESCRIPTION
OR-MMACAP60X30	Air Cap, 60"W x 30'L, black
OR-MMACAP84X30	Air Cap, 84"W x 30'L, black

Contact customer service for lengths under 30 feet.

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AIR BOOTH

Mighty Mo Air Booth

The Air Booth is a three sided containment system that is placed directly over a perforated tile, in front of a rack or cabinet. This isolates the cold air provided from the perforated tile, creating a dedicated supply targeted specifically for the intake of active equipment within individual racks or cabinets. By providing exclusive access to cold air, the Air Booth spot cools high density and high powered equipment. The Air Booth is an effective containment system for isolated racks and cabinets.

The frames are available in clear or black anodized aluminum.

PART NO.	DESCRIPTION
OR-MMABTH802424	Air Booth, 3 sided, 80"H x 24"W x 24"D, clear
OR-MMABTH802424-B	Air Booth, 3 sided, 80"H x 24"W x 24"D, black
OR-MMABTH804824	Air Booth, 3 sided, 80"H x 48"W x 24"D, clear
OR-MMABTH804824-B	Air Booth, 3 sided, 80"H x 48"W x 24"D, black
OR-MMABTH807224	Air Booth, 3 sided, 80"H x 72"W x 24"D, clear
OR-MMABTH807224-B	Air Booth, 3 sided, 80"H x 72"W x 24"D, black

MIGHTY MO®

AIR ACCESSORIES

Toolless Snap-in Filler Panels

Ortronics toolless snap-in filler panels are used to fill open rack units in racks and cabinets where separation of cold air and hot air is required. They are designed to work with active equipment and Ortronics flat, angled or curved patch panels.

The toolless snap-in filler panels unique patent pending design allows them to snap into 19" EIA/ECA-310-E compliant tapped or square hole mounting rails. Because no field modification is required to fit a tapped hole, the panel can be remounted in a square hole in the future eliminating the need to stock two different types of panels.

PART NO.	DESCRIPTION
OR-BFPT-1RU-10	1.75"H x19"W, 1 rack unit, pack of 10, black
OR-BFPT-2RU-10	3.5"H x19"W, 2 rack units, pack of 10, black

Also available in white.

Mighty Mo Air Grille

The Air Grille is a ceiling vent that is installed above the hot aisle. This vent allows the hot exhaust air to pass into the plenum instead of recirculating throughout the equipment room.

PART NO.	DESCRIPTION
OR-MMAGCT2424	Ceiling vent, 24" x 24", pk of 30, white
OR-MMAGCT2448	Ceiling vent, 24" x 48", pk of 15, white

Mighty Mo CRAC Unit Air Extension

The CRAC Unit Air Extension mounts to the top of the CRAC unit and extends to the drop ceiling. The Air Extension then draws higher temperature return air from the ceiling, back to the CRAC unit, increasing cooling capacity and resulting in increased CRAC unit efficiency. The Air Extension can also be used in rooms without drop ceilings as well, acting as a snorkel to pull warmer air from above the CRAC unit to increase efficiency.

Mighty Mo Air Extensions are made of high grade aluminum and are manufactured to meet the individual requirements of your data center.

The prefix for the part number uses the following format:

OR-MMAE-	X	X X	X	-G	X X X X
Part Number Prefix	Height from top of CRAC to drop ceiling	Width of CRAC unit	Depth of CRAC unit	Color G = Cool Grey	Numerical Suffix

The height, width and depth are rounded to the nearest foot. The maximum height for an air extension is 8 feet. The width and depth are based on the rough dimensions of the CRAC unit.

The 4 digit numerical suffix will be assigned after the quantity and location of access doors and exact dimensions for your unit are determined.

Please contact your Legrand | Ortronics Representative or Technical Support to help configure your Mighty Mo Air Extension.

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