CONTEG DATASHEET

TOTAL SOLUTIONS FOR DATA CENTERS

CONTAINED COLD AISLE

CONTEG, spol. s r.o.
Headquarters:
Na Vítězné pláni 1719/4
140 00 Prague 4
Czech Republic

Tel.: +420 261 219 182
Fax: +420 261 219 192

Production plant:
K Silu 2179
393 01 Pelhřimov
Czech Republic

Tel.: +420 565 300 300
Fax: +420 565 533 955

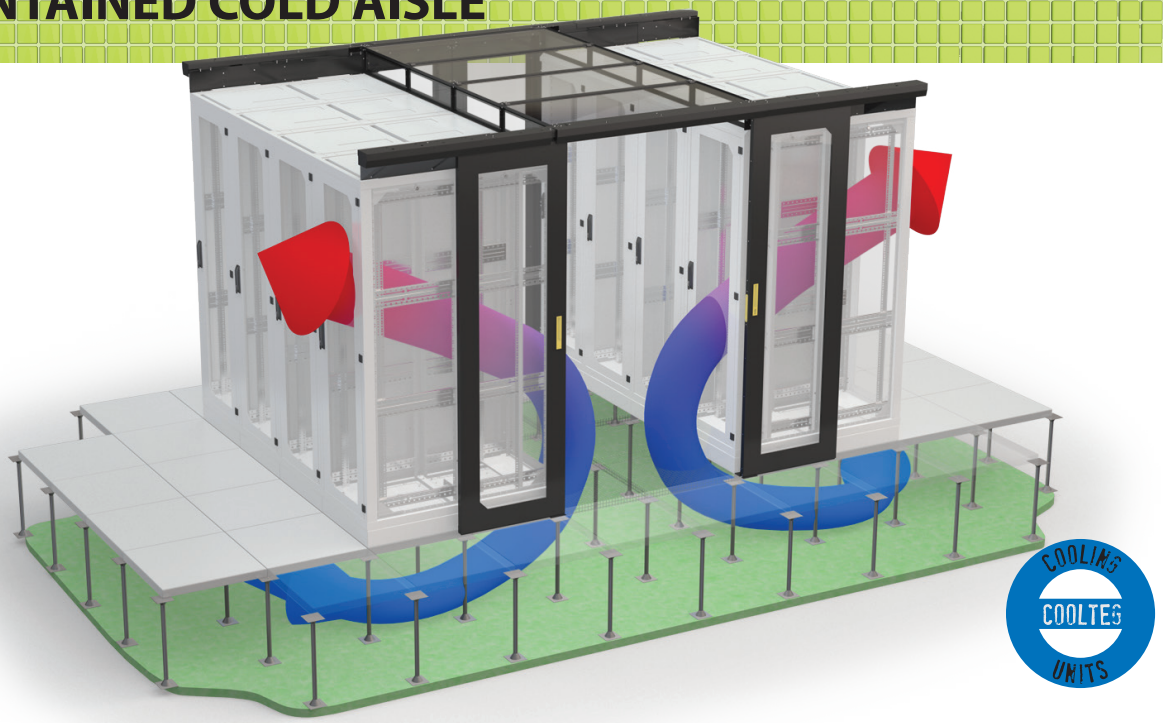
conteg@conteg.com
www.conteg.com

Local Branches/Offices

Austria:	+43 170 659 0115
Benelux:	+32 477 957 126
Eastern Europe / Nordics:	+49 172 8484 346
France / Italy / Maghreb:	+33 686 074 386
Germany / Switzerland:	+420 724 723 184
India:	+91 991 6950 773
Middle East:	+971 4445 2838
Russia / CIS:	+7 495 967 3840
Saudi Arabia:	+966 594 30 13 08
Ukraine:	+380 674 478 240

conteg@conteg.com
www.conteg.com

1.2 CONTAINED COLD AISLE



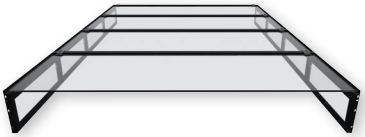
The Conteg Contained Cold Aisle solution physically separates cold and hot zones. One of the potential drawbacks of the no-containment Hot/Cold Aisle approach is the possibility of warm air recirculation due to insufficient static pressure within the raised floor or a lower than optimal ceiling clearance preventing adequate stratification of warm air. Of course, whether this actually occurs or not depends on many variables; however when facing this type of design challenge, it makes engineering and financial sense to form a physical barrier between cold and warm air streams.

With the Conteg Contained Cold Aisle (CCA) solution, a containment system is used to physically separate cold air from hot exhaust by forming a cold plenum space that prevents hot and cold air from mixing, thereby eliminating hot-spots. The cold air is supplied into the contained aisle through perforated tiles from the raised floor or produced locally by CoolTeg units, which are installed directly in the row of cabinets as an integral part of the aisle. The standard width of the CCA is 1.2 m (two perforated tiles) or 1.8 m (three perforated tiles). Other widths are available - 1.0 and 2.4 m. CCA can be deployed with standard swing doors or dual leaf sliding doors. Using the Contained Cold Aisle solution is highly recommended to maximize the cooling efficiency and minimize the energy consumption of the entire data center.

The system is designed to work with the RSF/RDF/RHF/RSB/ROF rack series, the basis of Conteg's data center solutions. It supports racks that are 42U, 45U or 48U high.

Roof

The modular roof sections are bolted onto the top of the racks to prevent the mixing of cold air and warm exhaust air. The roof parts are 400, 600, 800, 900 and 1100 mm long. The roof panels are made of 6 mm thick clear polycarbonate panels that allow light to spill into the contained aisle. This material is non-flammable according to the local codes. Our solution allows an extinguishing system to be installed to the aisle.



By using the roof, the cold air is "trapped" in the contained aisle. The roof also efficiently blocks the hot air from re-entering the aisle.

Door sections

CCA entry is through one or two doors that are either 1200 mm or 1800 mm wide. The door is a very important component of this contained aisle solution. There are two solutions – a sliding or swing door. Both types consist of two doors (wings). A standard sliding door consists of a mechanical opening system (each door wing is independent) and can be equipped with a dual synchro system (both door wings move simultaneously) or with an automatic system with electric control. Sliding doors are made from aluminium.

As standard, the dual leaf swing door is mechanical and can be equipped with an Automatic door handle system. A blank panel could be used instead of a door to close one side of the contained aisle.

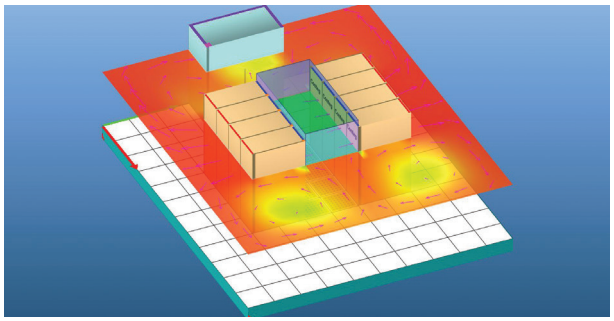
Sliding doors allow access to the contained aisle. They can be equipped by mechanical, dual synchro or automatic handling systems.

CONTAINED AISLE - MODULAR SOLUTION

The Modular Contained Aisle system is the ideal solution when rows of racks with different heights or even gaps (when some racks are missing) need to be to contained. The system is based on self-supporting construction with clear polycarbonate panels on the top of the roof. Vertical side sections of the roof feature PVC foil strips. These strips can be easily cut to the required length. The Modular Contained Aisle can work with standard dual leaf swing doors or with PVC foil strips (see below) instead of standard doors. This solution can be used with cabinets that are 2300 mm or 2500 mm tall. Do not hesitate to contact us for more information.

COOLING

In the Contained Cold Aisle design, cold air is produced by a central cooling system with perimeter-mounted CRAC/CRAH units. The raised floor is used as a cold air handling plenum and the cold air enters the aisle via perforated floor tiles. If for any reason the raised floor cannot be used, the cold air can be produced locally by in-row CoolTeg units that can be installed directly in the row of racks. This solution is currently very popular as it can address very high heat loads and is energy efficient.



RECOMMENDED RACK SERIES

Rack	Description	Read more
PREMIUM Server RSF	PREMIUM rack series, highly configurable with load rating up to 1500 kg	36
PREMIUM Cabling RDF	PREMIUM rack series provides maximum compatibility with Targeted Cooling solutions and is developed for cabling support; load rating up to 800 kg	32
PREMIUM Heavy RHF	PREMIUM rack series provides ultra high load rating up to 1500 kg	28
OPTIMAL ROF	OPTIMAL rack series, highly configurable with load rating up to 800/1100 kg, for racks that are 1200 mm deep – 1100 kg	45

- Front vented door (83% perforation rate) with multipoint swivel handle lock (universal key)
- Rear vented door (83% perforation rate) with multipoint swivel handle lock (universal key)
- Removable sheet steel side panels with lock (universal key)
- Two pairs of 19" vertical sliding extrusions
- Top and bottom openings for cable entry
- Adjustable feet as standard; recommended plinth or plinth with filter (not included)

Protection rating IP20, load rating ROF & RDF - 800/1100 kg, RSF – 1 500 kg, (for ROF racks 1 200 mm deep – 1 100 kg), RHF – 1 500 kg, color black RAL 9005 (optionally light gray RAL 7035). For detailed technical information on RSF, RDF, RHF and ROF racks please refer to pages 27 & 45.

Code [1]
RSF-42-60/10T-WWWWA-2EF-H
RSF-45-60/10T-WWWWA-2EF-H
RSF-42-60/12T-WWWWA-2EF-H
RSF-45-60/12T-WWWWA-2EF-H
RSF-42-80/10U-WWWWA-2EF-H
RSF-45-80/10U-WWWWA-2EF-H
RSF-42-80/12U-WWWWA-2EF-H
RSF-45-80/12U-WWWWA-2EF-H

Code [1]
RDF-42-80/10C-WWWWA-2H5-H
RDF-45-80/10C-WWWWA-2H5-H
RDF-42-80/12C-WWWWA-2H5-H
RDF-45-80/10C-WWWWA-2H5-H

Code [1]
ROF-42-60/100-WWWWA-205-H
ROF-45-60/100-WWWWA-205-H
ROF-42-60/120-WWWWA-20A-H
ROF-42-80/10C-WWWWA-205-H
ROF-45-80/10C-WWWWA-205-H
ROF-42-80/12C-WWWWA-20A-H

Code
RHF-42-60/100-WWWWA-2EF-H
RHF-42-80/10P-WWWWA-2EF-H

[1] *All racks in black; 48U height available; for gray – simply change H in the end of the code to B*

RELATED PRODUCTS

Related products	Description	Read more
CoolTeg cooling unit	Recommended cooling for high and very high-density contained cold aisles	102
Contained Aisle – door	Encloses cold aisle ends while providing access to the cold aisle interior	111
Contained Aisle – roof	To seal top of aisle between opposing racks to prevent cold and warm air from mixing	111
Automatic door handle	ADH makes access into the aisle easier as well as increases safety	111
Cable entries	Products for passage of cabling/pipes through raised floor with minimal loss of air pressure	138
Modular plinths	Replace adjustable feet and use as stabilizing and aesthetic element	135
Air separation frames	Prevent by-pass airflow between frame and 19" extrusion to optimize cooling of equipment	112
Brackets	Needed when vertical PDU installation into rack is planned	126
Blank panels	Prevent cold and hot air return through unused 19" U-positions	112

BASIC COLD AIR CONTAINMENT DESIGN GUIDELINES

- 42U to 48U – 600 mm or 800 mm wide cabinets – 1000 mm or 1200 mm deep cabinets
- Air separation frames – 50 mm to 200 mm deep
- Air containment system – 1200 mm or 1800 mm standard ; 1000 or 2400 mm wide upon request
- 83% vented front and rear door
- Double brush grommets for cable entries
- Blanking panels for all vacant equipment mounting locations in cabinets
- Monitoring containment and environmental conditions in the cabinet

Note: There are many variations of this configuration to include ones for non-raised floor facilities, hot or cold air containment, and configurations that utilize primary or supplemental CoolTeg cooling units