focuscooling
hot spots elimination

DX REAR RACK COOLERS

Heat removal at source

Take the best of the Rear Rack Coolers and DX system

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The Silent Enemy of Efficient Cooling: Airflow Issues & hot spots

Data Centre hot spots can cause equipment failure and system outages. Data Centre management can take several actions to avoid or eliminate hot spots. But some of these result in short term fixes with an energy penalty and other actions may even create further hot spots.

Many hot spots appear due to hot exhaust air recirculation inside or around the rack, that's why improving rack airflow management plays an important role in fixing hot spots. A proper solution for airflow management become an easy and cost effective tool for hot spot elimination.

Heat removal at source

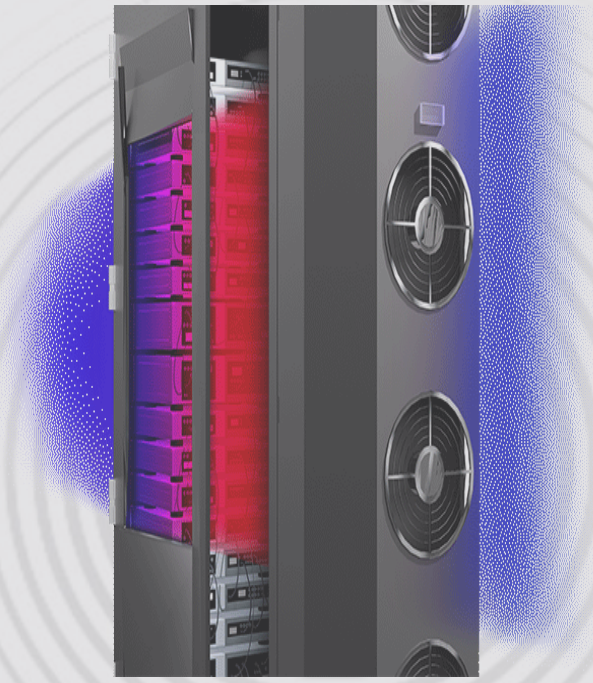
DX Rear Rack Coolers.

The perfect combination of the advantages of the Rear Door Coolers (high efficiency hot spot elimination, etc.) with the advantages of the FGas refrigerant Direct Expansion systems.

Cost effectiveness even for a single rack in comparison vs Chilled Water Systems that requires at least 25 racks to be affordable

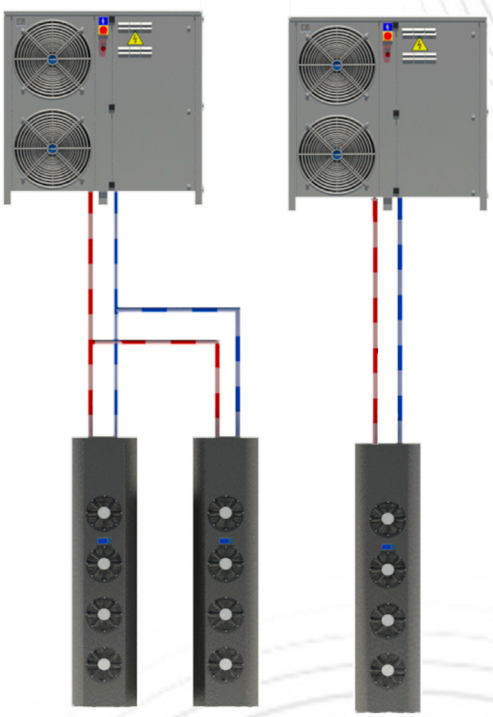
Waterless system inside of the DC room

A simple & modular Installation



DX coil reduces the temperature of the output hot air

Scheme and Principle of the System



Liquid Refrigerant
Vapor Refrigerant

The Rack Cooling module is secured to the rear door of the rack via an intermediate transition frame. This Unit is equipped with a DX (refrigerant) coil in order to reduce the temperature of the discharged hot air. Inside of the coil the refrigerant (FGas) turns into vapour. Due to the location of the coil, which is very close to the heat source, the hot and cold air do not get mixed and the thermodynamic process is therefore very efficient.

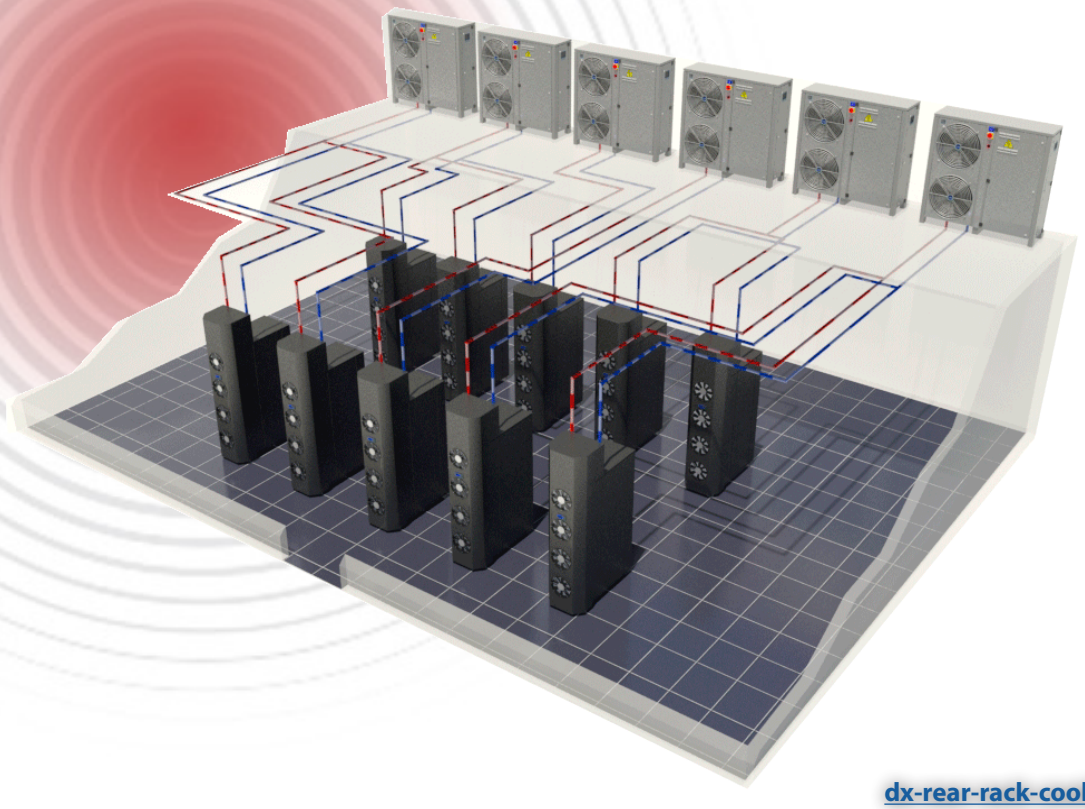
The temperature of the coil is similar to the ambient room temperature, so the thermal heat load is neutralized.

The heat energy is transported through the refrigerant pipework and expelled by an Outdoor Unit. In this outdoor condensing unit, vapour turns into liquid and the refrigerant completes the cycle by going back to the Rear Rack Cooler.

Air Cooled and water cooled condensing systems are available to suit the site specific requirements.

Each self-contained Rack Cooler adapts to the real-time specific load, thus avoiding an excess or lack of cooling.

The system independently controls and monitors temperature.



Components of the system

In addition of our bespoke solutions, our DX rear rack coolers are composed of standar units.

Indor Unit

The Indoor Unit is placed in the rear part of the rack for all models and manufacturers.
It neutralizes the thermal load generated by returning the air in the same conditions as inlet air in the rack.

Main features:

- Different refrigerants are available: R134 & CO_2 (R744).
- Variable speed fans for thermal load adaptation to optimized energy consumption.
- Redundancy options upon request (battery, control...).
- "Hot replacement" on the main components (fans, etc).
- Thermal capacity from 5 to 30 KW.

Outdoor Unit

The Outdoor unit is placed outside the building to expel the heat into the atmosphere. The electrical cabinet and all its equipment are included.

Main features:

- Different refrigerants are available: R134 & CO_2 (R744).
- Inverter Technology.
- Floating condensation option order to increase energy efficiency when outdoor conditions permit.
- Variable Speed Fan to optimize consumption of the condenser fan.
- Indoor and Outdoor versions.
- Redundancy in compressors, etc.

Variables monitored

- Cooling capacity (15 to 400KW)

Remote Management

It is possible to monitor the main variables of the system locally by means of a Building Management System (BMS) display.

Our standard integration is via Ethernet through a server. It is possible to manage and control the system within a standard program such as Microsoft Explorer, Google Chrome...
Different security levels are supported for users, maintenance, manufacturers, etc.
The Indoor Unit is located at the rear of the rack for all models and manufacturers.
It neutralizes the thermal load generated by returning the air to the same temperature as the inlet air in the rack.

Ideal for a wide range of situations

HOT SPOTS CURES

As the Rear Door Coolers neutralize the thermal loads of the racks, any hot spot in a legacy Data Center will be eliminated with a minimum disturbance.

HIGH DENSITY RACK COOLING

Up 30 kW per rack cooling can be achieved using the standard units (600mm, 42U), even higher duties can be reached in bespoke solutions.

UPDATING 'LEGACY' DATA CENTRES

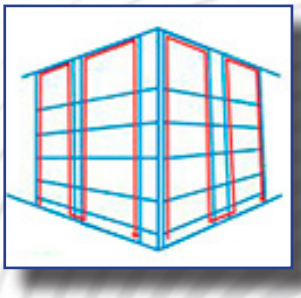
As the installation of the Rear Door Coolers needs a minimal amount of work inside the Data Centre room and can work in combination of existing refrigeration systems, is a perfect solution to update legacy Data Centres.

STAGED INSTALLATIONS WHERE INTIAL LOADS ARE SMALL AND INFRASTRUCTURE BUDGETS CONSTRAINED

As the installation can be split in several partial installations, the cooling system can be installed at the moment it is required (and gives a profit) in comparison with Chilled Water solutions where almost the entire expenditure is necessary from day one.

SMALL TO MEDIUM SCALE DATA CENTRES WITH RESTRICTED SPACE FOR LARGE VOLUMES OF WATER & PIPEWORK

Sometimes, the need for a massive water reservoir inside of the Data Centre building is not viable or has great cost impact in the building structure.

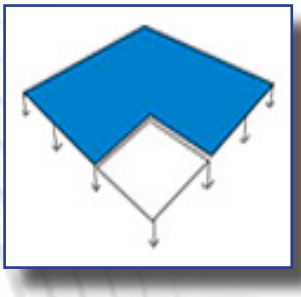


NO ENCLOSURE & HIGH DENSITY

As the cooling coil is placed only 30 mm from the heat source, there is no need for a 'hot aisle' enclosure
Different configurations are available which can reach between 15 kW and 30 kW.

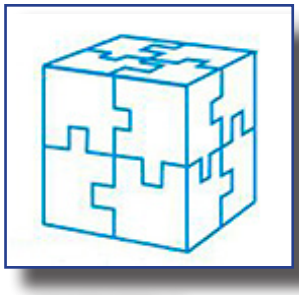
HIGH EFFICIENCY

The system is very efficient because:
* Cooling is applied directly at the heat source
* Use of refrigerant instead of water (single refrigerating circuit without heat exchangers)
* Variable speed compressors which adapts capacity to the thermal demand and the outdoor conditions
*100% sensible cooling (no waste of energy in humidification and de-humidification)



NO RAISED FLOOR

As the refrigerant pipes are in the upper side of the Rear Door Coolers:
* There is no need for a raised floor in order to achieve proper air flow.
*The clearance of the raised floor can be used for other systems (electrical, etc.)



COMPATIBLE

The Rear Door Coolers are equipped with a transition frame so that they can be adapted to all rack manufacturers and models existing in the market.

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