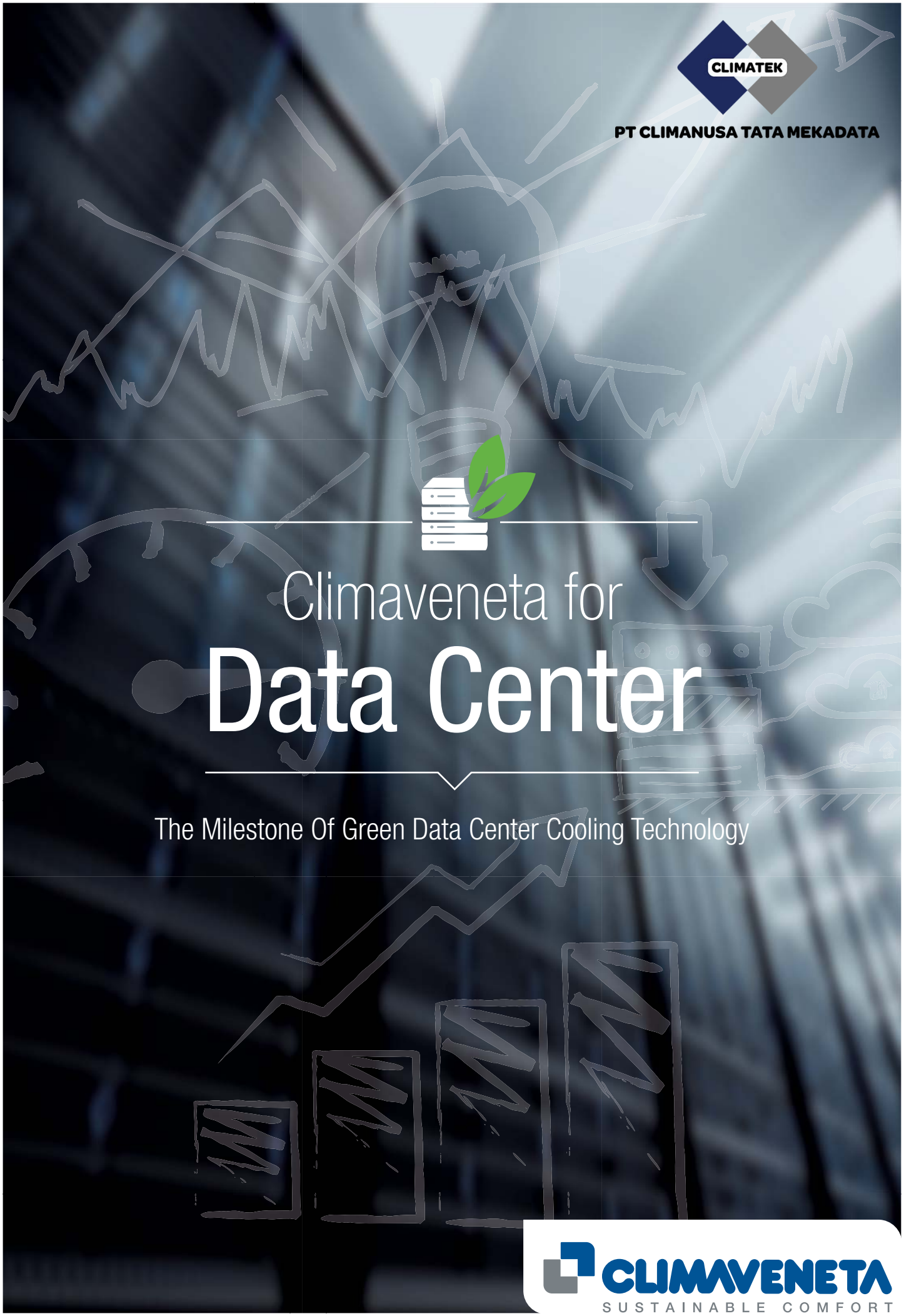
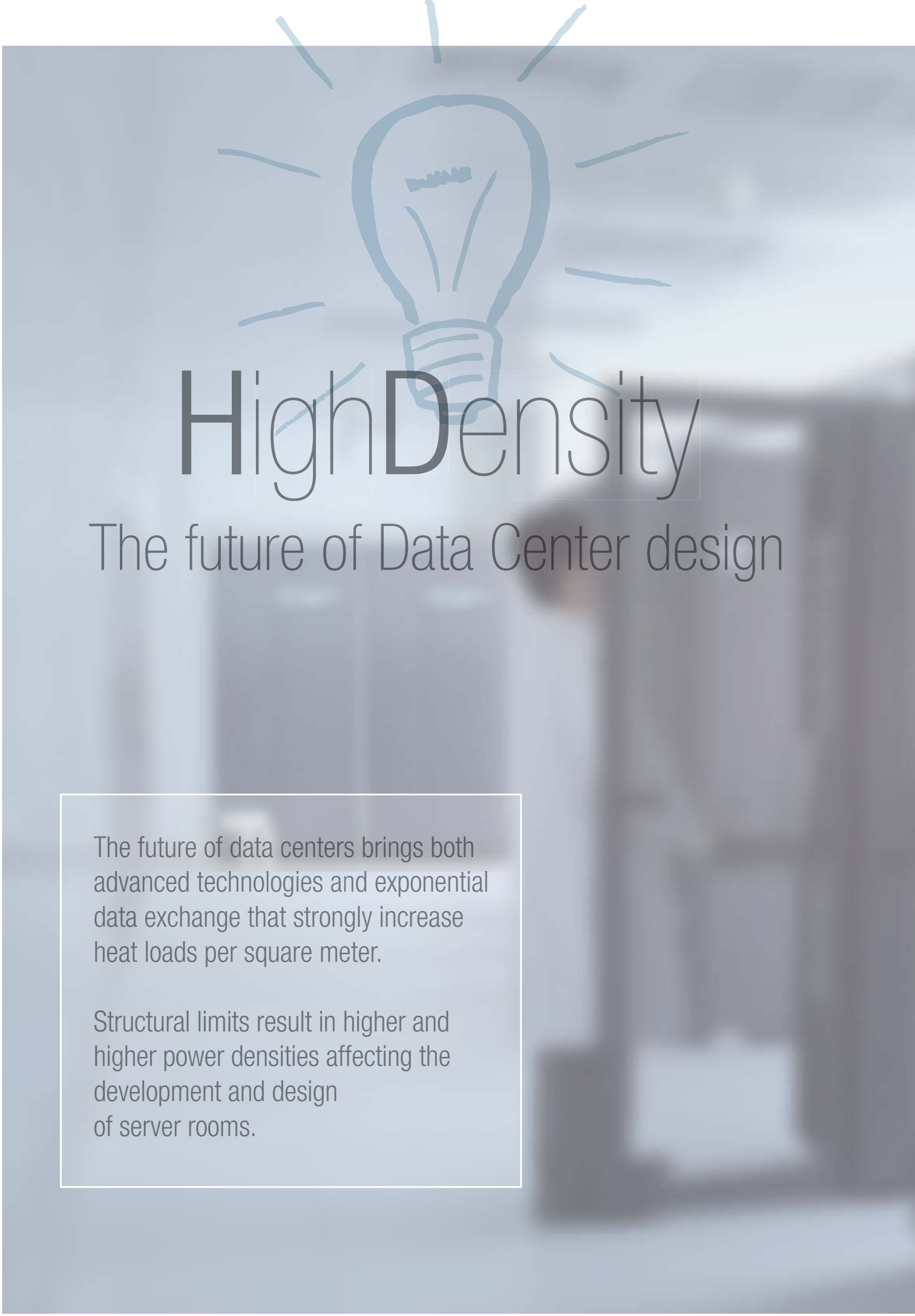

CLIMATEK
PT CLIMANUSA TATA MEKADATA
Climaveneta for
Data Center
The Milestone Of Green Data Center Cooling Technology
CLIMAVENETA
SUSTAINABLE COMFORT



HighDensity

The future of Data Center design

The future of data centers brings both advanced technologies and exponential data exchange that strongly increase heat loads per square meter.

Structural limits result in higher and higher power densities affecting the development and design of server rooms.

Energy efficiency is crucial in data centers that require the latest cooling technologies to ensure the reliability and high performance of these critical applications.

Server usage in both upgraded and newly designed data centers will, over time, lead to increasingly higher performance that eventually will result in higher density power loads.

The data center environment is critical and requires a guarantee of reliability, device safety and modularity.
Preparing for the modular infrastructure evolution, the IT room has several standards, classifications and certifications to comply with.

The key factor that must be continuously improved is energy efficiency to cope with more demanding OPEX requirements, and the global footprint, which greatly affects CAPEX.

Virtualisation, Cloud Computing and Internal Redundancy also greatly contribute to server room development with many powerful and concentrated servers creating racks exceeding 40kW in less than one square meter (or 10 square feet).

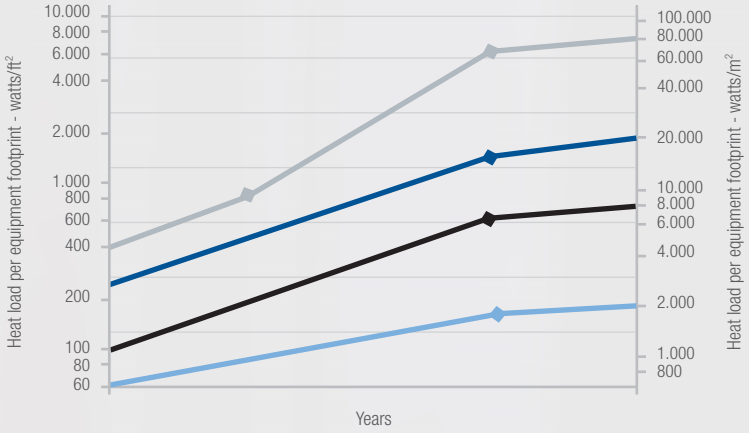
Cooling such loads is a serious challenge for the air conditioning industry and only solid technological innovations backed by R&D and experienced staff can provide the right solutions.

The answers lie in the use and combination of the most sophisticated technologies such as MAGNETIC LEVITATION and FULL ELECTRONIC MODULATION cooling equipment.

As a race car needs an experienced driver, high tech components require superb design capacities as well as a deep understanding of the application's requirements.

Climaveneta has a full range of cooling solutions that include state of the art, efficient and reliable cooling technologies for ICT environments.

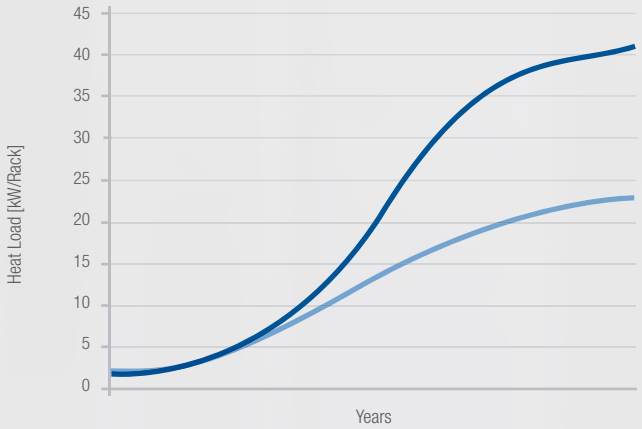
Product Heat Density Trend Chart



- Communication equipment (frames)
- Workstations (standalone)
- Servers & disk storage systems (1,8 - 2,2m tall)
- Tape storage systems

Microproccessor performace growth, even though compensated by increased efficiency, lead to the growth of power generated density.
The evidence is such that, to represent the phenomenon, a logarithmic scale is necessary.
(Source: Uptime Institute)

Thermal Load Trend by ASHRAE



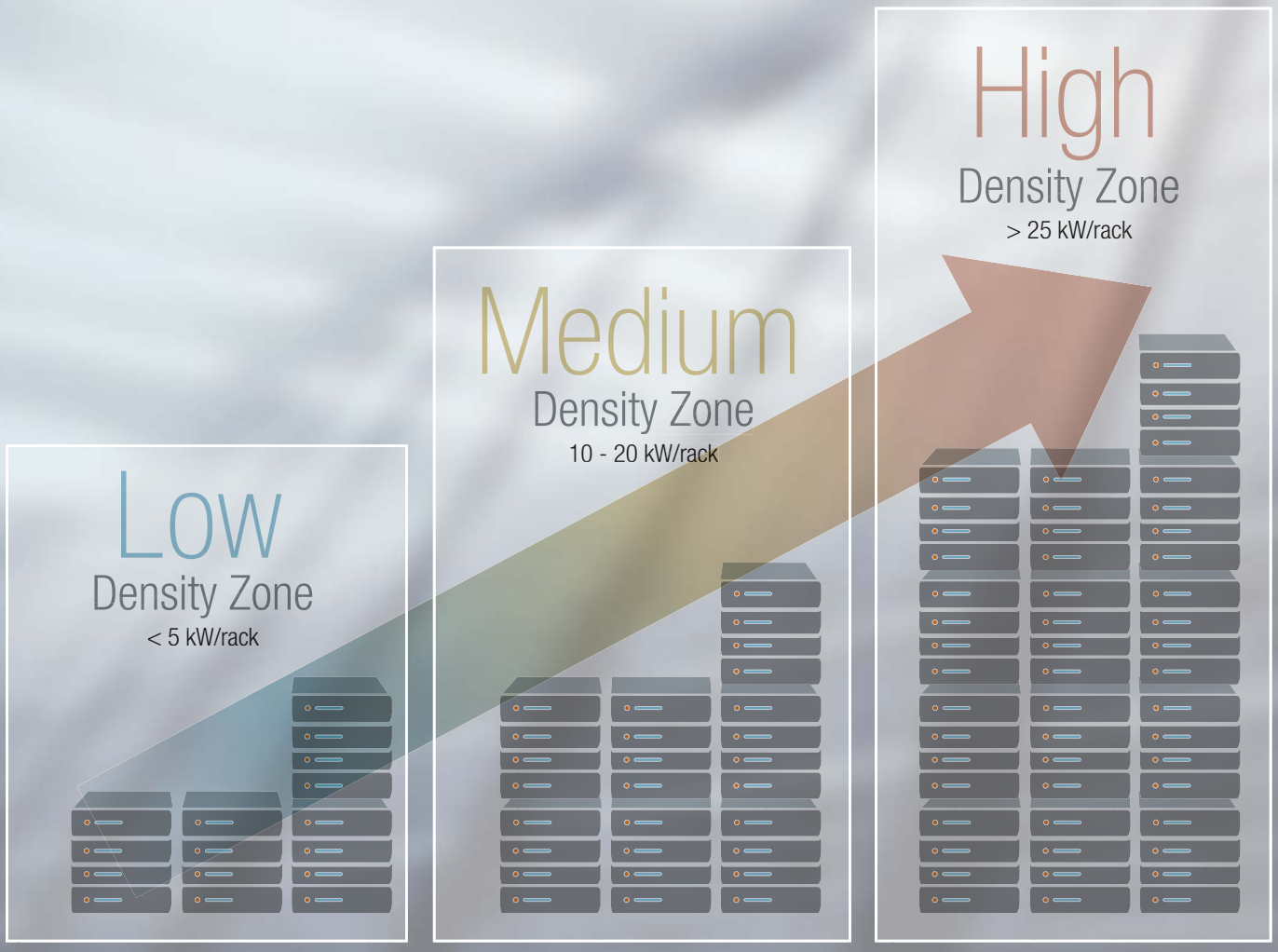
- Computer Servers - Blade
- Server

Progressive diffusion of incoming virtualisation and BLADE SERVERS characterised by increasing power in limited volumes, leads to the unrelenting growth of loads which consequently increases thermal power per m².

The best way is

Modulating Cooling

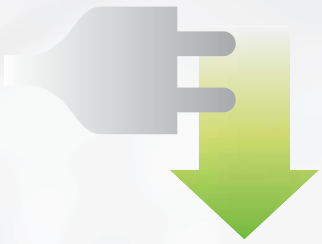
according to actual data center heat loads
and instantaneous working conditions



Building an enhanced model

for data center efficiency

Based on a 40-year experience in providing high efficiency cooling solutions, Climaveneta's solutions:

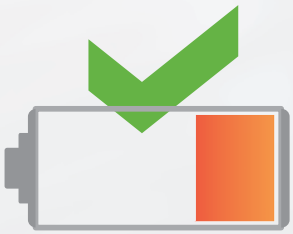


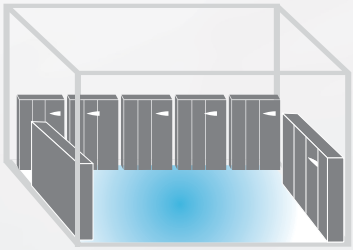
Reduce operating costs

The growing energy demand in modern data centers implies that every energy improvement allows for a significant reduction in OPEX (operating costs). In infrastructures working 24 hours per day, 365 days per year, over an average of 10 years, this accounts for the largest proportion of overall costs.

Use the available power capacity in the best way

Many facilities, especially in crowded urban areas, cannot install more servers because power feeds are at capacity. In these situations the key option is to improve the energy performance of the whole data center.



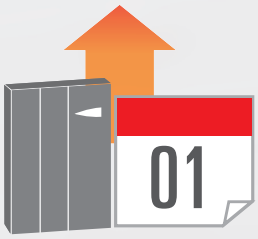


Optimise areas

A green, energy efficient approach to data centers has positive implications also for optimising space. It allows more effective use of the data center, concentrating cooling units along the walls, reducing waste due to cooling dispersion and delaying the need of building new rooms.

Increase sustainability

Growing digitalization and consequent energy consumption transform data centers into a very critical application regarding TEWI. Intelligent energy management is crucial not only for profitability but also for sustainability.



Ensure reliability and extended lifetime

Reliability is a key word when it comes to infrastructures of IT operations. Good server operation mostly depends on a perfect 24/7 cooling system. This ensures that servers are not exposed to potentially dangerous warm air that can result in thermal stress which decreases the IT equipment lifetime.

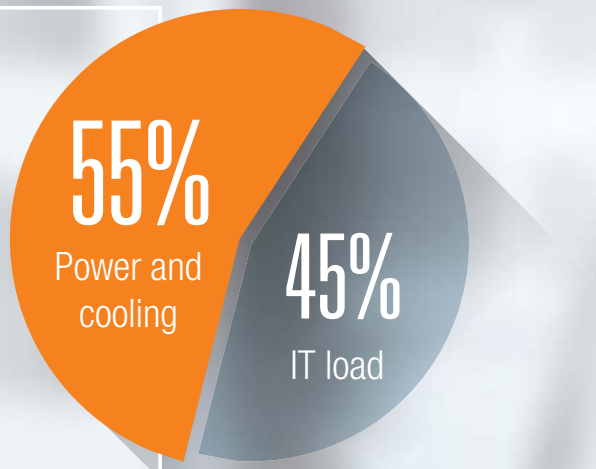
Measuring Efficiency to improve it

The awareness of data center requirements and the commitment to improve their energy efficiency has led to the development of dedicated indeces for these applications. All Climaveneta solutions are developed to optimise these metrics, allowing for a transparent evaluation of the real benefits offered by our approach to HD.

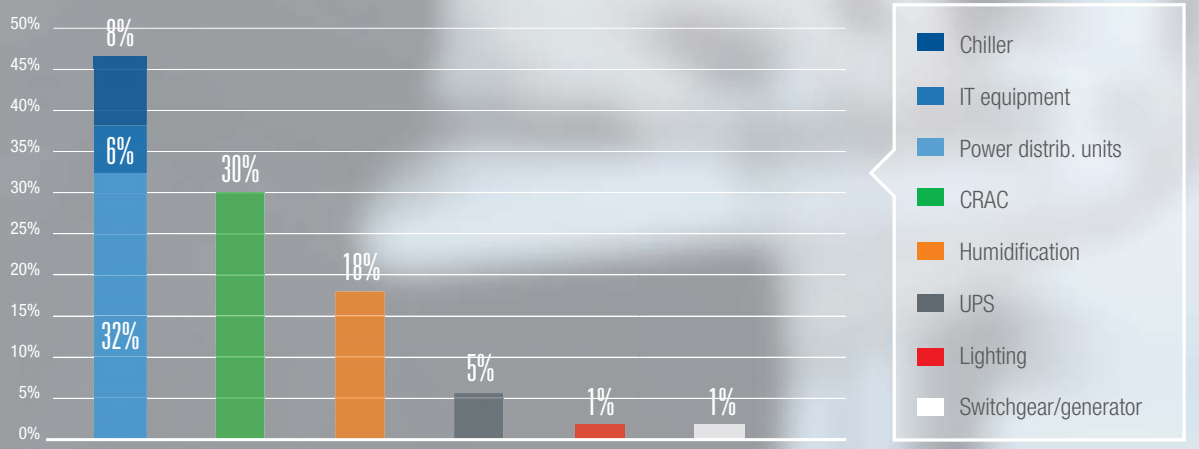
Data center cooling & power load consumption

Power and cooling represent the lion's share of the energy consumed in a data center, although they are not directly linked with the value adding operations of the data center.

Accurate measurements of heat loads are the essential base for highly efficient green data center design.



Data center power consumption by apparatus

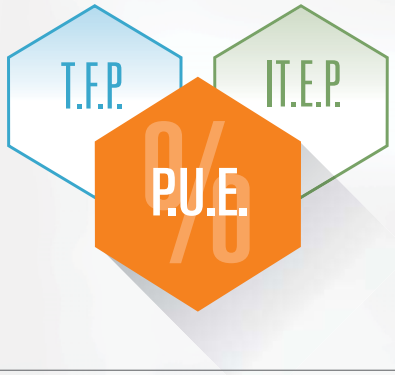


CAPEX
Capital Expenditure

The data center is a valuable asset for a company. All expenses relating to the infrastructure, especially high-tech solutions, remain within the company by adding value and extending the life span of the data center.

OPEX
Operating Expenditure

Running costs of a data center operating 24 hours a day, 365 days a year for an average of 10 years, are crucial for those who must manage it. Even a small saving becomes very significant over time. This justifies even very high initial investments and justifies an anticipated system refurbishment, aimed at improving their efficiency.

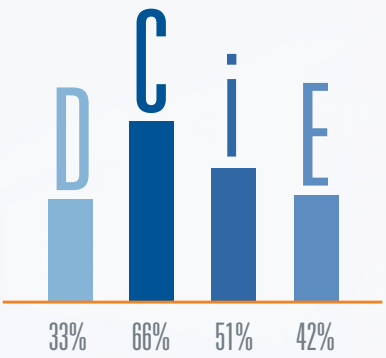


PUE Percentage of effectiveness = Total Facility Power / Equipment Power

It considers the overall energy efficiency of the data center, measured as the ratio between total absorbed power and the power needed by the servers. As only energy used to transfer data creates value for the data center, a ratio close to 1 would represent the condition of optimum efficiency. Most data centers have a PUE between 2 and 3, excellent values are between 1,2 and 1,5.

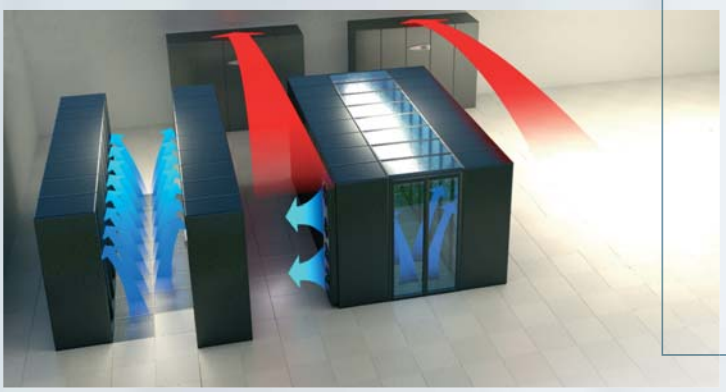
DCiE = 1/PUE x 100

Reciprocal of PUE, DCiE shows the % of power absorbed by IT infrastructure, compared to the overall data center consumption. Values close to 33% are usual for traditional data centers. DCiE of 66% reflects a very high energy efficiency.



Climaveneta approach to perfect Data Center cooling

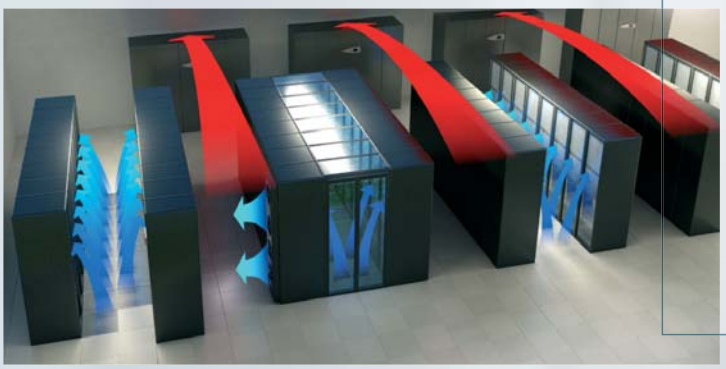
Driven by increased data exchange, rising power densities and heat levels, data center design has changed dramatically over time. Cooling devices should therefore evolve together with data center changes ensuring:



High flexibility

Over the years, data center design has been continuously changed from the original design, including important changes in terms of:

- Shape & architecture
- Computing capacity
- New technologies, always adopting the latest rack and server solutions
- Heat dissipation



Great Scalability

Data centers require scalable design to:

- Manage different heat loads for different areas
- Manage an increasing heat load over time
- Accomodate new areas to be cooled

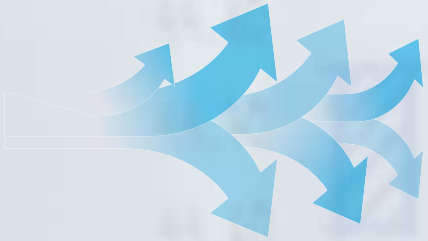
Climaveneta best practices

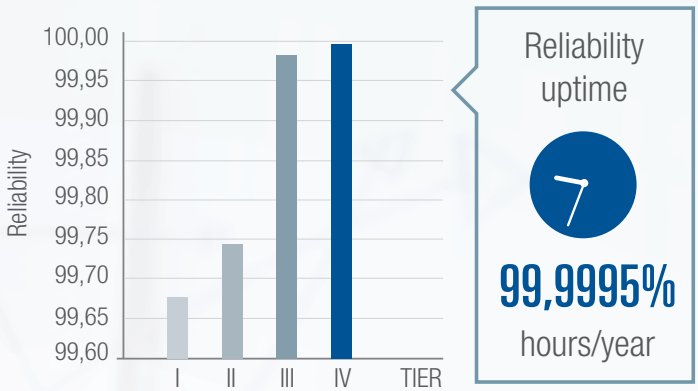
Extensive research in this application has resulted in some best practices, which are a must for an efficient data center.

Climaveneta solutions are designed to perfectly fit with this approach.

Optimised air flow management

Optimised air flow design, directing cold air through the raised floor to form cold aisles in front of the rack air intake.





Reliable operation

RELIABILITY - TIER Classification
(by Uptime Institute) **defines the acceptable downtime per data center.**

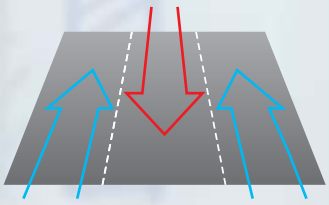
- TIER I: 99,671%
  (28,8 hours downtime)
- TIER II: 99,741%
  (22,7 hours downtime)
- TIER III: 99,982%
  (1,58 hours downtime)
- TIER IV: 99,995%
  (0,44 hours downtime)

Redundancy is the typical way to increase uptime. In facing the cooling problems only smart solutions can avoid the disaster of shut-down while limiting CAPEX and OPEX. Reliability must look at a full 360° view.

	TIER I	TIER II	TIER III	TIER IV
Number of Delivery Paths	Only 1	Only 1	1 Active 1 Passive	2 Active
Redundancy	N	N + 1	N + 1	S + S or 2 (N + 1)
Aisle Containment	No	No	No	Yes
Concurrently Maintainable	No	No	Yes	Yes
Fault tolerance to Worst Event	None	None	None	Yes

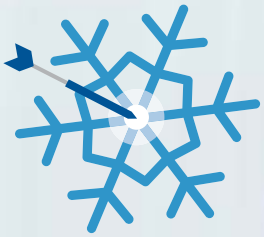
Hot and cold aisles

Hot & cold aisles address layout air-flow to the servers to ensure a constant temperature. Working conditions become more stable and the efficiency of the whole cooling system increases.



Localised cooling

Dedicated localised cooling directly targets hot spots as well as integrating the hot & cold aisle.



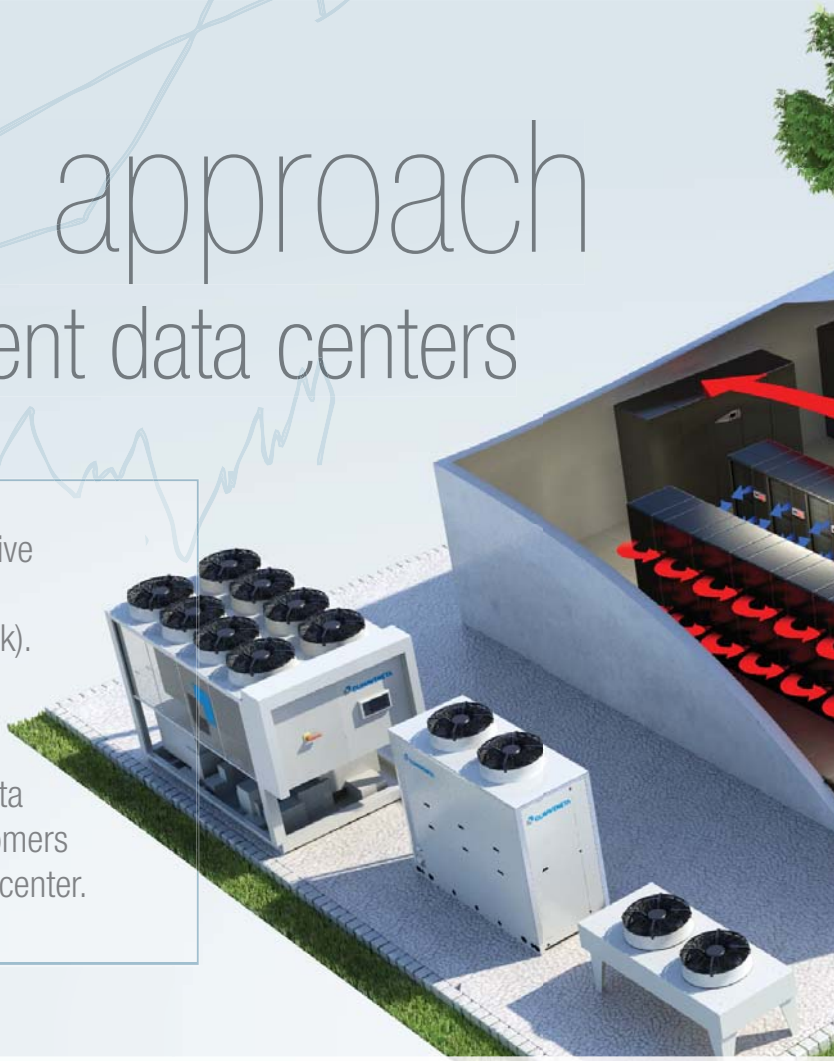
Highest efficiency with water cooled systems

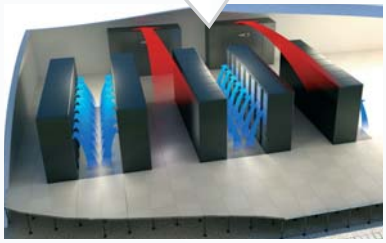
Optimised hydronic solutions for HPAC combine energy efficiency with flexible performance and utmost reliability.

Dedicated approach
for highly efficient data centers

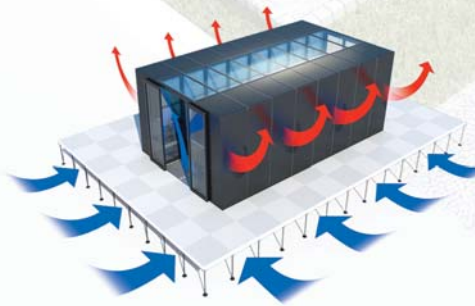
Climaveneta HPAC solutions are adaptive cooling systems based on actual data center heat load requirements (kW/rack).

Designed to achieve unparalleled efficiency perfomance and total reliability, the wide range of Climaveneta high precision solutions provides customers with the answer for every kind of data center.



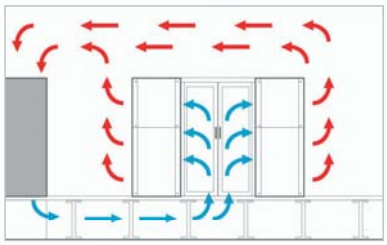


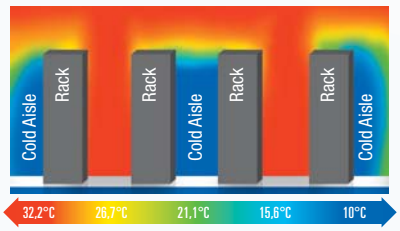
Low
density zone
< 5 kW/rack



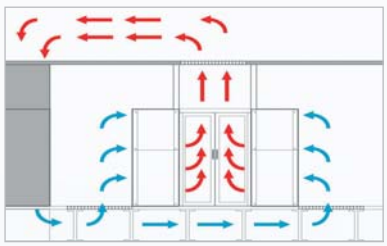
Hot/Cold aisle

An easy, fast and long-lasting solution; the hot & cold aisle is the basic and essential concept that drives the layout of all data denters.

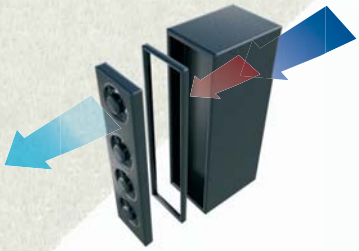




- Through the raised floor, air can be easily delivered exactly where required (in front of the rack) allowing easy management of redundant cooling units.
- Flexible design, providing maximum freedom in accommodating new rack distribution or even major infrastructure changes.
- Lowest CAPEX allows more investment in more productive equipment.



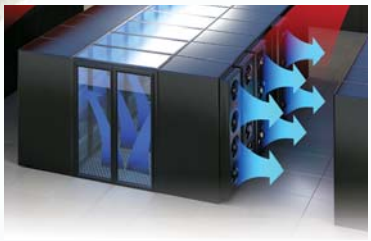
Medium
density zone
10-20 kW/rack



High
density zone
> 25 kW/rack

Aisle Containment

AISLE CONTAINMENT prevents the HOT & COLD air from mixing in the upper section of the racks, guaranteeing homogeneous air flow.



- No mixing between Hot & Cold air streams in order to avoid energy waste.
- Additional 15% energy saving depending on the data center layout.
- Quick and easy solution with low initial investments.
- Complete integration with existing perimeter CRAC units.
- Immediate energy benefits.

Aisle Containment +
Localised Cooling to manage hot spots

CCD (Climaveneta Cooling Door) & CRC (Climaveneta Rack Cooler) guarantee ideal integration to manage HOT SPOTS caused by new blade servers, providing extra local cooling exactly where it is needed.

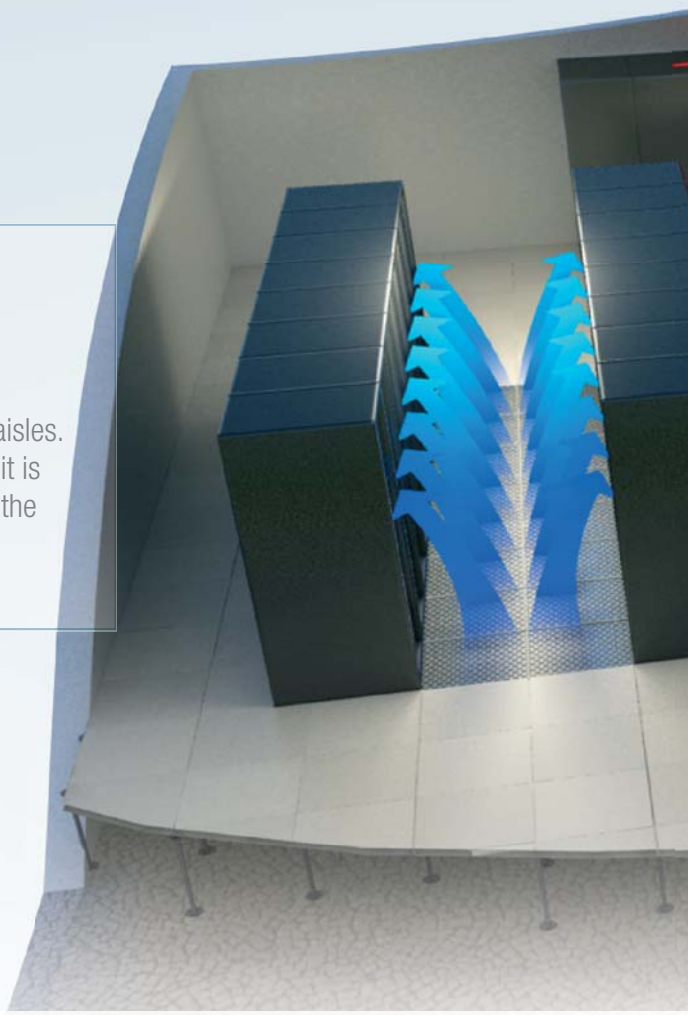
- Extra cooling only where required.
- Direct expansion inverter type or Chilled water system for complete cooling system flexibility.
- Modulating Air flow thanks to EC high efficiency fans. The fans adapt to the thermal load detected by sensors positioned in the hot and cold aisle. This increases efficiency and reduces air stratification.
- Perfectly compatible with most racks and ready for extension of the cooling system.

CLIMAVENETA

Low
density zone
< 5 kW/rack

Hot/cold aisle

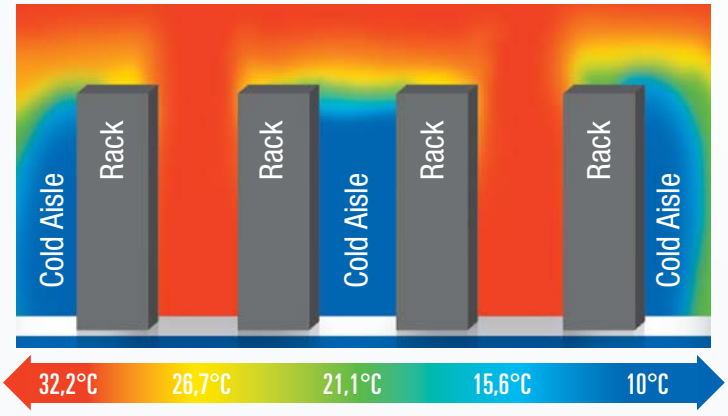
Data centers are specifically designed to create hot and cold aisles. Cold air is delivered through the floor or ducts exactly where it is needed and hot air returns to the HPAC units, thus improving the set point and the overall energy efficiency of the system.



This system allows:

- **High efficiency**
- **Perfect redundancy**
- **Quick and easy expansion**
- **Low initial investment**

The hot and cold aisle solution overcomes the limits of a traditional approach where cooling aims to maintain stable room conditions, forgetting to focus on the racks requirements.

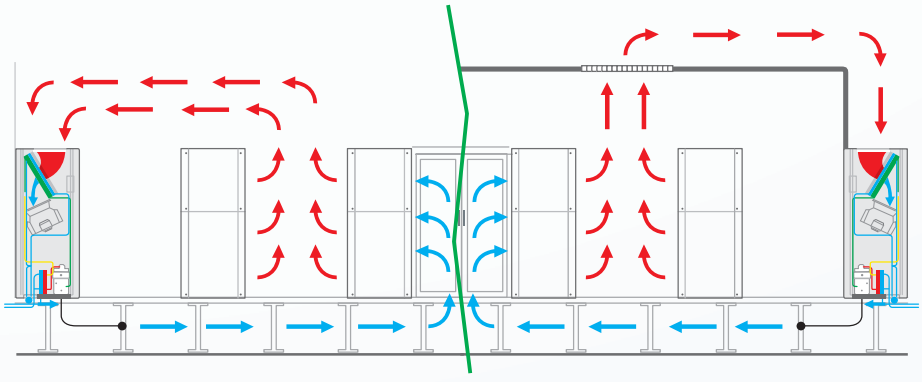


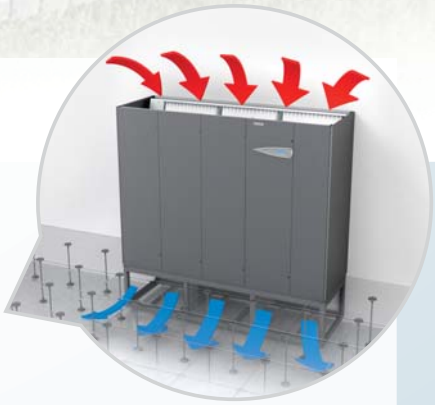
In the last decade the data center design has dramatically changed. Years ago data center design was not driven by heat loads, so server distribution in the room was driven by other needs leading to only one reference room temperature. This used to be from 18°C to 24°C and it was an accepted standard throughout the world. As soon as server heat generation increased, it became clear a more rational distribution of heat was necessary; this resulted in the Hot & Cold Aisle concept.

The arrangement of rack servers according to this logic allows delivery of cold air-flow exactly where it is needed - i.e. typically in front of the racks, greatly reducing the chances of cold and hot air mixing. This system increases the efficiency of the cooling system by 20% if compared to traditional layouts.

On the other hand, this new concept requires two levels of temperatures to be properly defined.The optimisation of these temperatures leads to greatly improved working conditions.

Constant air flow and pressure management systems





At the same time, the use of a raised floor has demostrated the clear advantage of distributing air where needed with negligible energy consumption. Those who designed very high raised floors could ensure extended life of their fast changing data centers.

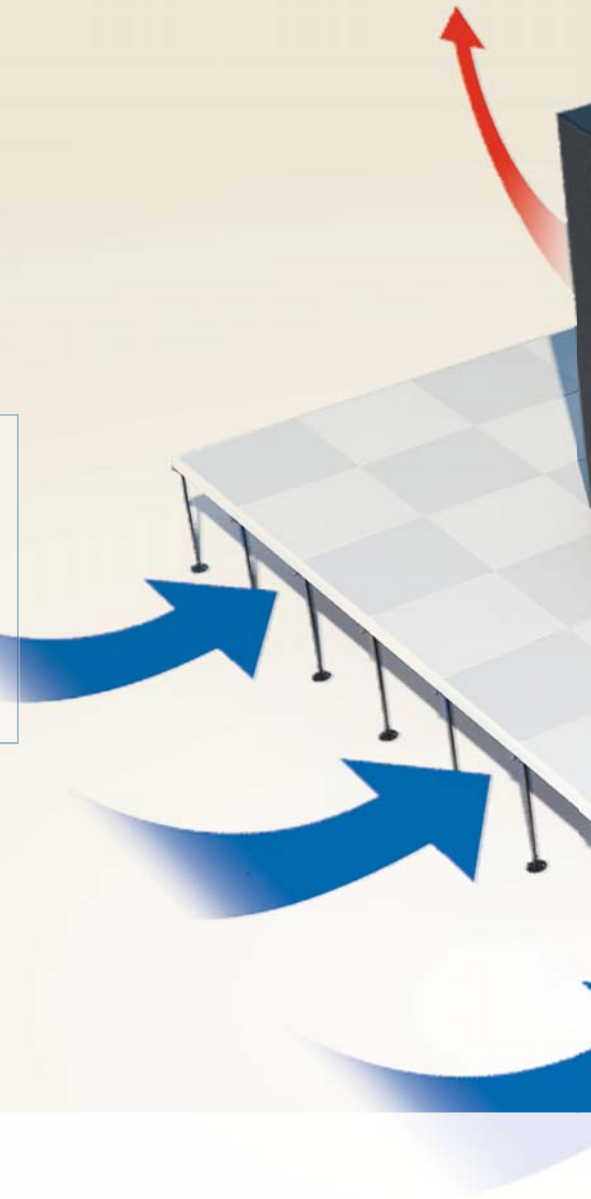
But such growth includes an increase of racks, data and power cabling and other ancillary services that almost completely fill the raised floor void, resulting in unexpected effects in air distribution. The best way, and sometimes the only way, to cope with this is to keep constant pressure in the floor void; this is fundamental to keep the required air distribution.

What appeared to be a complicated problem to solve is now removed by the new Climaveneta pressure system. All HPAC units can be connected to several pressure sensors and the air control system automatically manages airflows in order to keep steady ambient conditions for the servers. The feature can be customised as Constant Air Pressure or Constant Air-Flow.

Medium
density zone
10-20 kW/rack

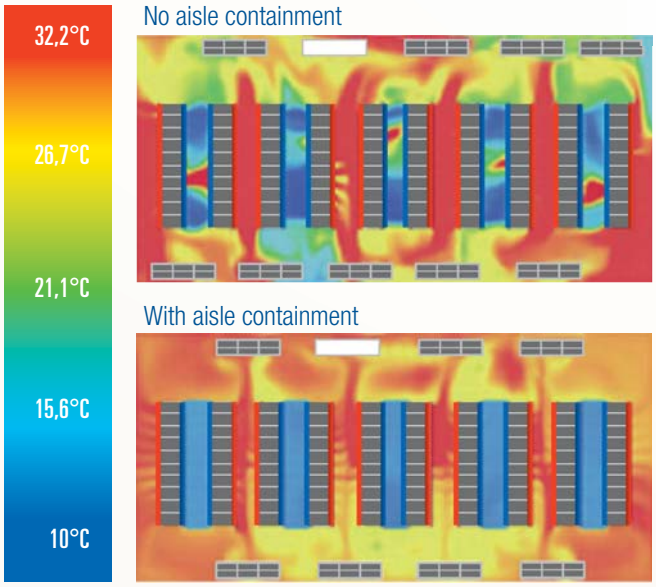
Aisle containment

When hot and cold aisles are not enough to prevent air mixing, Aisle Containment ensures a perfect and homogeneous airflow to the server inlet.



This system allows:

- **significant improvement in efficiency**
- **tight control of conditioned air feeding the servers**
- **the addition of more servers in less volume**



The image above shows an excellent example of the advantages in terms of hot and cold flow separation obtained through aisle containment.

Aisle containment

In medium/high density applications the presence of hot and cold aisles is not enough to prevent the mix of supply and return air.

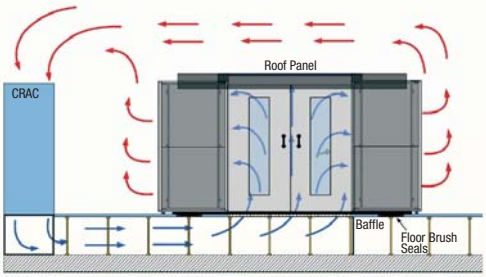
This mix results in air flow with a temperature that reduces the performance of the data center. If such air goes to the servers and it is warmer than expected the servers may stop working due to overheating.

If mixed air goes to the cooling system and it is cooler than air coming out from the servers, heat exchange is reduced and then global efficiency is affected.

Therefore it is necessary to provide a physical separation for the two airflows.This is achieved by using aisle containment, which is a simple and cost effective solution: it guarantees the servers are fed with the cold air and the cooling system is more efficient.

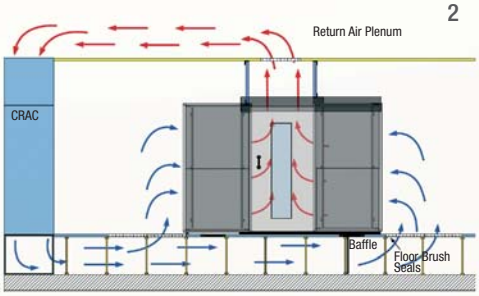
Cold Aisle configuration

1



Hot Aisle configuration

2



Climaveneta Aisle Containment

The decision regarding usage of aisle containment needs to be analyzed on a project basis as it is affected by different factors such as: room dimensions, shape, heat load and density, cooling technology, redundancy provisions and more.

In practice Climaveneta provides two methods for aisle containment:

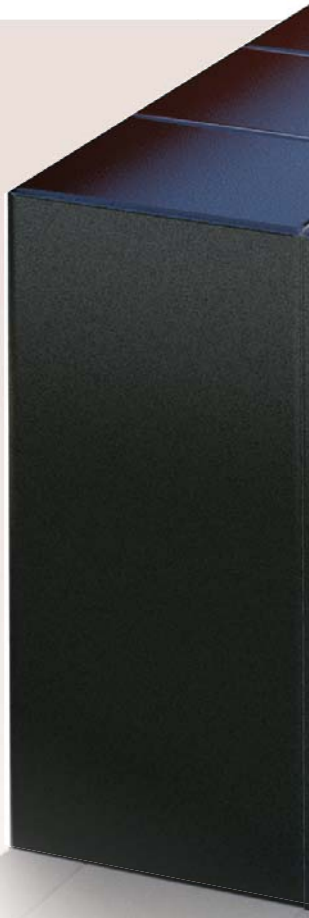
1 **Cold Aisle Containment,** which provides tight control to the cold air feeding the servers.

2 **Hot Aisle Containment,** which confines hot discharge air from servers to one zone.

Both the Hot and Cold Aisle Containment Systems provided by Climaveneta represent the perfect solution to:

- **Increase energy efficiency** thanks to a complete separation of hot and cold air streams
- **Easily expand your data center** if required by the layout of the environment
- **Perfectly integrate with different cooling technologies:**
  - Inverter
  - In row units/ Enclosure units
  - Cooling door units
- **Optimise the available space**
- **Adapt easily with or without raised floor design**

High
density zone
> 25 kW/rack



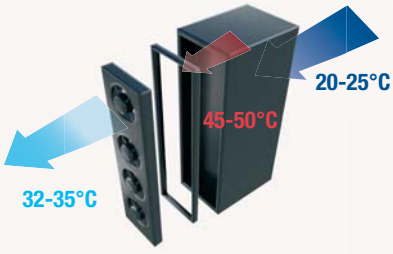
Aisle containment
+ Localised Cooling

This solution must accomodate the most critical heat load densities. Here hot-spots cannot be avoided without Climaveneta's localised air conditioners which are the best answer for dealing with hot spot management, providing extra local cooling exactly where it is needed.

This system allows:

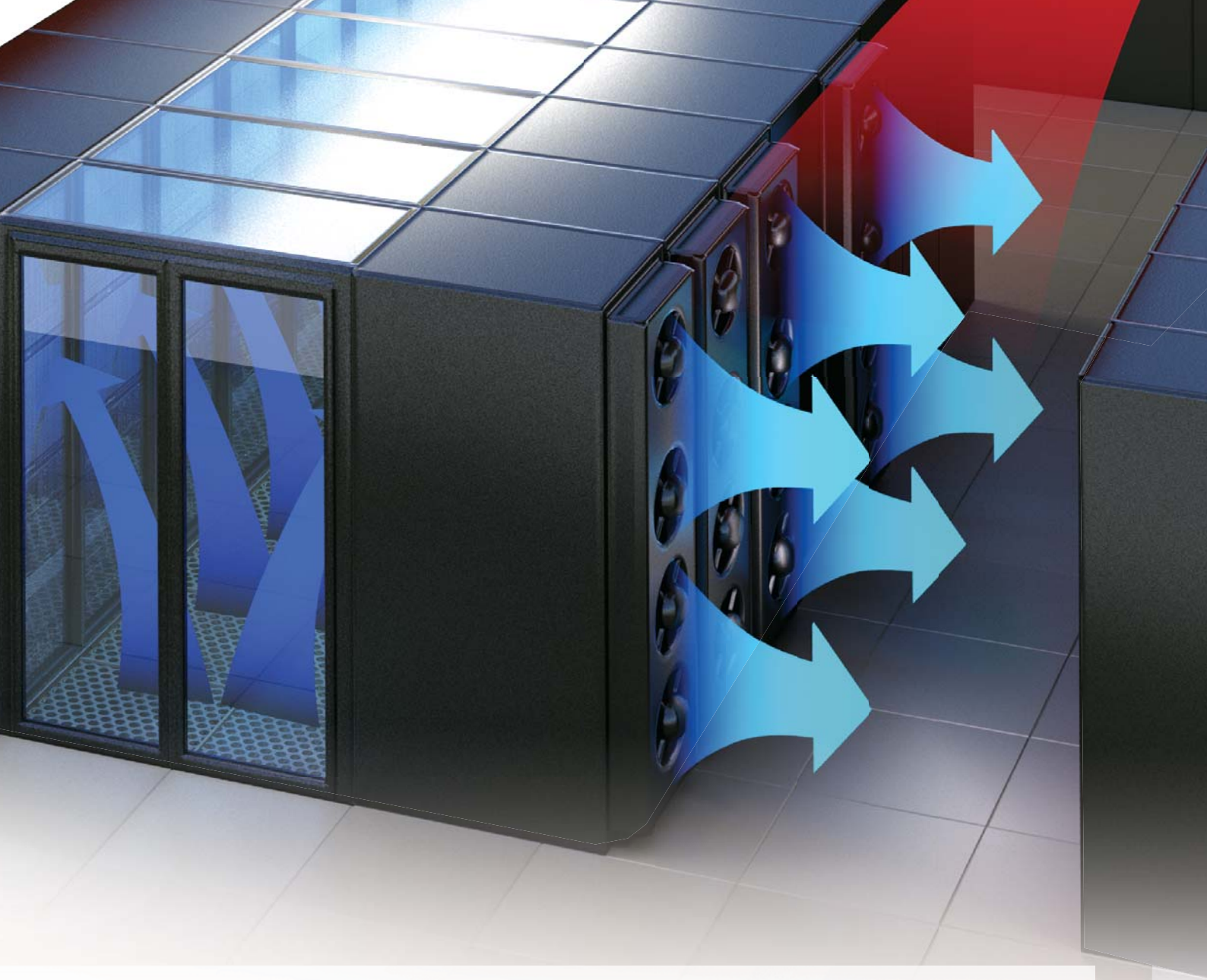
- **Maximisation of the internal capacity of the infrastructure**
- **Elimination of hot spots**
- **Minimum floorspace occupancy**

Climaveneta solution: CCD Cooling Door + CRC Rack Cooler



CCD
Climaveneta Cooling Door

- **Additional cooling capacity** thanks to chilled water coil available in both single & double circuit
- **Zero footprint**
- **Adaptable for almost all racks**
- **Top energy efficiency** with electronically controlled fans modulated to actual needs
- **Dynamic air stratification management**
  Tight control of the rack temperatures thanks to 8 independent sensors
- **Flexible connections**
  From the top and from the bottom depending on the customer's choice and on raised floor availability
- **Ready to operate with latest generation chillers** featuring **magnetic levitation** and **free-cooling** technologies.



CRC

Climaveneta Rack Cooler

- **Large savings due to the limited air volume, scalability & modularity**
- **Optimal solution for single rack**
- **100% redundancy**

A solution for each system

CRCX: Direct Expansion
- DC inverter compressor
- New generation EC brushless fans
- Capacity from 4,7 to 68,3 kW

CRCC: Chilled Water
- New generation EC brushless fans
- 3-way modulating valve
- Capacity from 16 to 74,7 kW

CRCD: Dual Fluid
- DC inverter compressor
- 100% back-up
- Capacity from 4,5 to 16,7 kW

CRCF: Free Cooling
- DC inverter compressor
- New-generation EC brushless fans
- Capacity from 4,6 to 17,5 kW
- 60% of the year in the free cooling mode

Climaveneta approach

to green data center cooling

Active redundancy

A real **active redundancy** achieved through the adoption of innovative **EC PUL** fans together with Inverter DC brushless compressors (on direct expansion units) and an advanced algorithm for balancing the heat loads among the **Accurate** units (including those units that usually remain in stand-by).

Smart Thermal Energy Management

An innovative **heat recovery system** which allows Climaveneta to synergistically match both the cooling sources of the data center with the heating requirements inside the building, by moving the heat from the data center to other areas inside the building.

1 Magnetic levitation

Unbeatable efficiency, silent operation and reliability. Climaveneta can deliver the experience of the world's latest technology in refrigeration: centrifugal compressors with magnetic levitation of electric rotor that reaches 50.000 rpm. ESEER can reach the threshold of 15 kW of cooling capacity per every 1 kW of electric power.

2 Free cooling

Active FreeCooling

Perfectly in line with an eco-friendly strategy to deliver premium efficiency levels, Climaveneta adopts an advanced free cooling system to exploit the cooling potential of outdoor air to cool the data center.
Available as direct and indirect free cooling this solution uses external air whenever the temperature is lower than room or water temperature.

3 Eco-friendly refrigerants

r HFC R-410A
r HFC R-134A

Both R-410A and R-134a represent the most advanced choice in refrigerant technology: they clearly contribute to making the ICT GREEN since they comply with environmentally friendly policies and provide enhanced cooling efficiency.

4 Adaptive set point

Adaptive SetPoint

An advanced algorithm that instantaneously detects the real thermal load of the indoor units and then conveys this information to the outdoor chillers, strongly increasing their operation.
- Dynamic variation of the chillers set point and water flow
- Adoption of the free cooling mode (when possible)
- Adoption of the ACTIVE REDUNDANCY system to better exploit stand by-chillers

5 Low noise environment & energy saving

VAIR Variable Air Flow

6 Short loop air volume, 100% scalable and modular

100%

7 Additional full sensible cooling capacity

SHR=1

8 Aisle containment for highest efficiency

9 Electronic expansion valve

EEV ELECTRONIC EXPANSION VALVE

The Electronic Expansion Valve allows ultimate compressor working conditions in order to achieve the most efficient performances and to avoid dangerous downtimes.

10 Electronic controlled fans

VAIR Variable Air Flow

NEW GENERATION EC FANS
The high efficiency EC fan reduces both noise levels as well as energy consumption, and assures a variable air flow at part loads. Operational costs are reduced by -15% if compared to traditional EC-Fans, and 25% if compared to plug fans.

EC FANS ALSO IN THE REMOTE CONDENSERS
The use of EC technology even on the remote condenser fans assures a further average reduction of noise levels by 10%, together with a strong energy consumption reduction by 45% when compared with traditional condensers with AC technology.

11 Electronic inverter driven compressor

INVERTER DRIVEN COMPRESSOR

Modulating the cooling capacity results in a major increase of energy efficiency: EER can rise from the typical 2,7 to 5,2 and more!

Redundant unit will not be a dead investment as it will be on duty at extremely partialised loads thus granting cooling capacity with greater efficiency.

i-ACCURATE represents the ultimate MILESTONE in data center cooling, providing a FULLY ELECTRONICALLY CONTROLLED HPAC UNIT

HPAC range

Climaveneta HPAC solutions for green data center include

Close control air conditioners

ACCURATE

Direct expansion close control units

COOLING · RE-HEATING · HUMIDIFICATION · DEHUMIDIFICATION · SCROLL · EC FAN · Active FreeCooling · HFC R-410A

AX
Air cooled
4,9 - 95,4 kW

AD
Air cooled, dual fluid
23,7 - 98,8 kW

AF
Free Cooling
24,9 - 102 kW

AW
Water cooled
5,2 - 99,3 kW

AT
Water cooled, dual fluid
24,9 - 101,9 kW

ACCURATE 2.0

Chilled water close control units

COOLING · HEATING · RE-HEATING · HUMIDIFICATION · DEHUMIDIFICATION · CONTROLLER · EC FAN · Active FreeCooling

AC
Chilled water
6,00 - 225 kW

AC EXPANDED
Chilled water, expanded version
49,5 - 234,5 kW

AB
Chilled water, double circuit
31,1 - 148,2 kW

AB EXPANDED
Chilled water, double circuit, expanded version
36,6 - 153,2 kW

i-ACCURATE

Direct expansion close control units with full DC Inverter technology

SCROLL · EC FAN · HFC R-410A · INVERTER DRIVEN COMPRESSOR · VAIR Variable Air Flow · EEV ELECTRONIC EXPANSION VALVE

i-AX
Air cooled
4,3 - 151,8 kW

i-AD
Air cooled, dual fluid
6,7 - 124,4 kW

i-AT
Water cooled, dual fluid
7,4 - 130,2 kW

i-AW
Water cooled
4,7- 159 kW

i-AF
Free cooling
7,4 - 130,2 kW

a wide range of units both for perimeter and rack cooling from 4,5 to 235 kW

Rack cooling solutions

CCD Cooling Door

Chilled water cooling door unit,
from 26,6 to 39 kW

Suitable for 600mm wide racks.

CRC Rack Cooler

Rack cooling solutions for high density rack management,
from 10 to 75 kW

CRCX: Direct expansion version
CRCC: Chilled water version
CRCD: Dual Fluid version
CRCF: Free cooling version

Remote condensers

Remote condenser with axial fans

BRE
7 - 187 kW

i-BRE
13,4-187 kW

Remote condenser with centrifugal fans

BREC M1D-M4F_B
16,1-108 kW

Dry coolers

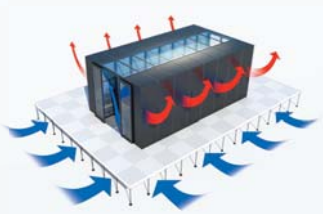
Dry Cooler with axial-type fan

BDC
8-210 kW

i-BDC
14-210 kW

Climaveneta infrastructures

CV RACK
High quality cabinets for protecting and housing servers



CV AISLE CONTAINMENT
Aisle Containment solution for high density applications

Management and control systems

In a policy of 'total communication', the Climaveneta HPAC range presents several interconnection solutions with the latest BMS systems.

Clima Guard
Monitoring and supervision device

Clima Center
Supervision device for monitoring the perimeter ACCURATE air conditioners

ClimaPRO
Chiller plant control and optimisation system

FREE COOLING SYSTEM

20-Year experience free cooling chillers

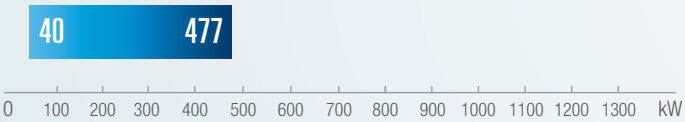
NECS-FC

Free Cooling chillers with scroll compressors, optimised for Data Center application.

FX-FC

Free cooling chiller with screw compressors: robust, reliable and highly energy efficient.

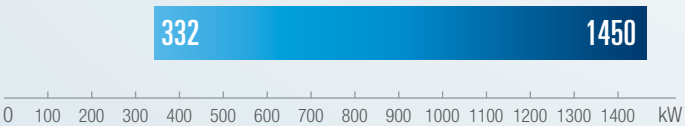
SCROLL



NECS-FC
Acoustic versions

B base version
SL super-low noise version

SCREW



FX-FC
Acoustic versions

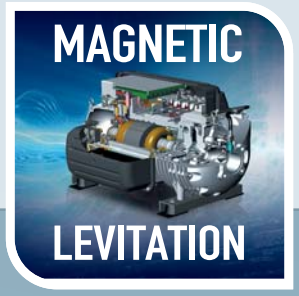
T Free cooling version
SL-T Super low noise version with free cooling

Management and control systems

A full range of controllers, supervision and metering devices complete the Climaveneta High Density Data Center Cooling solutions. They allow for enhanced efficiency, synergies among all the components and the system reliability.

Control Devices

Data center manager
Group and regulation device



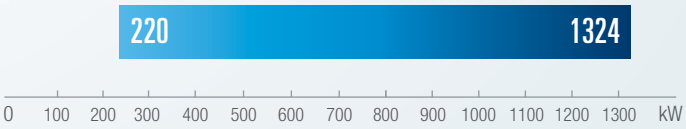
Chillers with magnetic levitation compressors

TECS VISION 2.0

Air and water cooled chiller with magnetic levitation compressors: the World's Most Advanced Technology in the refrigeration industry.

UP TO 15 ESEER

CENTRIFUGAL



Acoustic versions

SL-CA	Super Low noise version, Class A of efficiency
XL-CA	Extra Low noise version, Class A of efficiency
SL-CA-E	Super Low noise version, very high efficiency, Class A enhanced

Monitoring devices

Dedicated monitoring software for complex cooling plants including multiple redundancies.

FWS3000

Measurement & Verification devices

Essential for
True PUE Metering !

DEMETRA

“ Experience is by far the best proof ”

Sir Francis Bacon
British Philosopher (1561 - 1626)

Vodafone Data Center

2013 - Italy

Investor: Vodafone
Application: Data Center
Plant type: HPAC System

Cooling capacity: 510 kW
Installed machines: 9x i-AX 50, 4x i-AX 29
Close Control air conditioner

Project

Vodafone was to undertake the refurbishment of the IT room, with the consequent energy performance upgrade of an important MSC situated in Southern Italy. In this context, new data center openings are rare, while restructuring and improvement of existing facilities is widespread.

Challenge

Data center refurbishments are very delicate from the engineering point of view and require great system flexibility in order to fit the needs of replacing and positioning the equipment while simultaneously allowing the site to function properly.

Solution

For the southern site the designer has selected 13 close control units, 3 of them are redundant, for a total cooling capacity of 400kW. The server room is cooled by 8 units all equipped with inverter compressors and divided into 4 under air delivery and 4 front air delivery units.

Additionally, there are 5 under air supply units with direct free cooling plenum, installed in a technical corridor.
The ability of Climaveneta, a European specialist in both HVAC and HPAC, ensured the prefect integration of the inverter technology with direct free cooling plenum with great advantages in terms of large energy savings.

More than 1000 projects all over the world

Bouygues Telecom - Bobigny
Several applications in France

Investor: Bouygues
Data Center

Cooling capacity: 2630 kW
Installed machines: 99 x i-AX Close Control Units of different sizes and models

Nuovo Pignone
2013 Florence - Italy

Data Center

Plant type: HPAC System
Cooling capacity: 400 kW
Installed machines:
5x i-AX, 4x CRCX-I, 4x i-HCAT

E-tv Headquarters
2014 Cape Town - South Africa

Office building
Hydronic System
Cooling capacity: 1870 kW
Installed machines:
2x NECS-D/SL, 6x i-AF,
1x MANAGER 3000

RTE - Réseau Transport Electricitè - SENP
2013 Montigny Le Bretonneux France

Data Center
Plant type: HPAC System
Cooling capacity: 312 kW
Installed machines:
12x CRCC Rack Cooler Units

Telefonica Data Center
2014 Bogotà - Colombia

Data Center

Plant type: HPAC System
Cooling capacity: 1240 kW
Installed machines:
7x i-AXU 130, 1x i-AXU 29,
2x i-AX 150 Close Control Units

Megacenter
2012 Medellin - Colombia

Investor: Claro
Data Center

Plant type: Hydronic System
Cooling capacity: 1330 kW
Installed machines:
10x i-AX Close Control Units

Climaveneta solutions for data center cooling, with their unbeatable advantages in terms of efficiency, quality and reliability, are already the preferred choice in the most challenging and prestigious projects, all around the world and with many major brands.

Cisco Systems Vimercate
2013 Milan - Italy

Office Buildings
Total cooling capacity: 4505 kW
Total thermal capacity: 459 kW
Installed units:
1x TECS2/SL-CA, 2x TECS-W,
1x ERACS2-WQ, 2x FOCS/SL,
1x FX-FC, 1xClimaPRO,
4xAC close control unit

Novartis WSJ 340
2013 Basel - Switzerland

Investor: Novartis
Data Center
Plant type: HPAC System
Cooling capacity: 92 kW
Installed machines:
12 x AC Close Control Units

SINNET Internet Data Center
2013 Beijing - China

Data Center
Plant type: HPAC System
Cooling capacity: 4370 kW
Installed machines:
15x AC 90, 10x AC 221, 4x AX 90
Close Control Units

SBB
2013 Zurich - Switzerland

Investor: SBB
Application: Data Center
Plant type: HPAC System
Cooling capacity: 1588 kW
Installed machines:
46x AC (009 - 050) Close Control Units

Nya Karolinska Hospital
2013 Stockholm - Sweden

Healthcare / Hospitals

Plant type: HPAC System
Cooling capacity: 270 kW
Installed machines:
11x AT Close Control Units

Range International Information Group Data Center
Langsfang - China

Data Center
Total cooling capacity:
12700 kW
Installed units: 24x AC 221,
18x AC 25, 5x air cooled chillers

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