

GOGREEN
solutions



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1 9 6 3 2 0 1 3

fiftycoolyears

Type

THE **X** REVOLUTION
in the precision air conditioning

 English

rcgroupairconditioning

OUR PLANET

Today, environmental respect is the core value and guideline to develop new technologies. The environmental sustainability makes its appearance in every sector through research techniques for the renewal of the resources of our planet Earth.

Mankind has the duty to defend and preserve the delicate balance of the Earth.

Sustainability for RC Group is the commitment of the present generations to leave to future generations

the same quantity and quality of resources especially.

Since 1997 (from the Kyoto Protocol) to today, the first aspect is the reduction of global warming, gradually limiting the use of HCFC refrigerants.

OUR MISSION

The high efficiency of the products, together with the study and design of tailored solution, translate into energy savings, and consequently in cost reduction.

RC Group solutions arise from synergies between RC Group hardware and software, through analysis and energy management.

Offering the system that satisfies both design requirements and environmental compatibility, we are able to calculate in advance the return on investment.

OUR SOLUTION

It is thanks to its experience that RC Group has been able to integrate and merge the design excellence, which distinguishes it for years, with the environment demands.

It was in fact created a number of solutions arising from the energy efficiency study.

GO GREEN SOLUTIONS

GO

Reliable
Ecologic
Evolved
Natural

The Artificial Intelligence of RC Group goes green with SPECTRUM, software able to turn a simple technical selection into a projection of the future, by allowing the choice of the most environmentally friendly and more economical solution. Thanks to RC Cloud Platform, the most modern form of remote control, the product reliability is always guaranteed.



Reliable



As pioneer of Free-Cooling technology since the early eighties and still not for everyone, RC Group has always placed an emphasis on the development of this technique. Another system at the base of energy-saving is the Glycol-Free, which allows the use of pure water instead of antifreeze solutions.



Natural

Evolved



Always in step with the continuous and rapid technological developments, RC Group uses the best components and cutting-edge techniques and tools, such as Inverter technology and software for the selection and management of the plants.

Ecologic



The focus on the latest regulations in the field of environmental sustainability and energy saving, led RC Group to adopt refrigerants with low environmental impact, making its products, as well as efficient, even friends of the environment.

THE “X” REVOLUTION IN THE PRECISION AIR CONDITIONING

Project **X TYPE** has been developed and realized according to the new, high ΔT temperature standards of the modern data center and with the objective to maximize the performance of the machine.

An innovative air conditioner with a revolutionary idea, structure and application, with the aim to reduce energy consumption, dramatically reduce maintenance costs, provide high reliability and continuous operation.

Around these values RC Group has developed the **X TYPE** project with a revolutionary double-stage cooling heat exchanger and the use of the state of the art in terms of components with high efficiency, in order to obtain the **lowest PUE index**.



OUTSTANDING ENERGY MANAGEMENT



REDUCED MAINTENANCE COSTS



UP TO 30 m² OF FILTER SURFACE



RELIABILITY FOR ZERO DOWN TIME



INNOVATIVE AND UNIQUE X-COIL



HIGH FLEXIBILITY OF PROJECT



NO WASTE OF WATER



MODULARITY

GO GREEN
solutions



X TYPE

The new series of Close Control Air Conditioners for chilled water feeding for installation in underfloor

Cooling Capacity: 52 ÷ 182 kW



FILTER SECTION

The section is divided into several boxes each containing two bag filters with G4 efficiency. The high filtering surface ensures a year of operation before replacement.

Available also with standard plain filters for a reduced height

AIR HANDLING SECTION

Innovative double stage "X" coil.
Low turbulence on air side.
Reduced pressure drops Vs a conventional coil.

FANS SECTION

New Plug Fans with EC electric motors and composite impeller of the latest generation, which guarantees a reduction of power consumption (ErP 2015 certification); The section is divided into several boxes each containing its own fan with safety net.

DOWNFLOW VERSION (Under)

Typical installation is on the perimeter.

The units are placed along the perimeter of the data center. Air suction from the top of the unit and air delivery in the underfloor void.

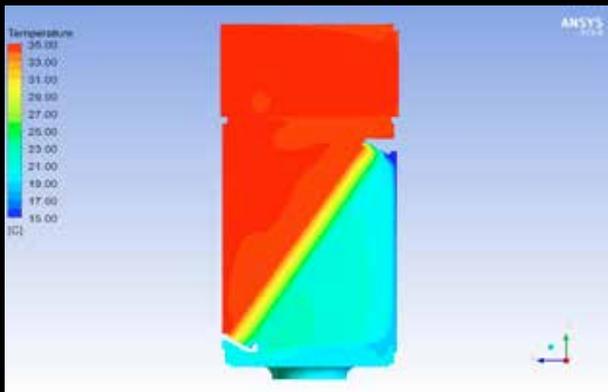
The air distribution is achieved by special tiles placed in front of the racks row, forming cold aisle for air diffusion. On the rear of the racks is expelled the hot air (hot aisle) then aspirated by the unit.

A DETAILED CFD ANALYSIS FOR THE BEST

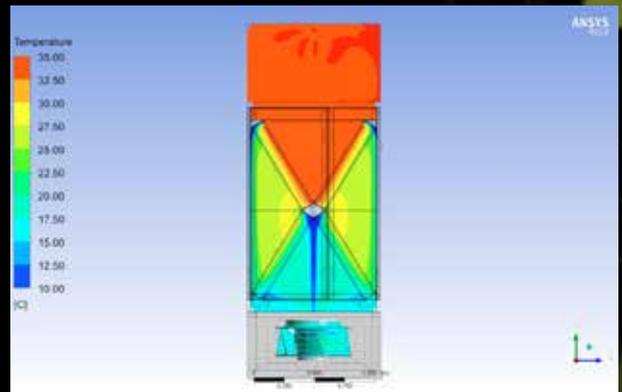
Mechanical design by a 3D software followed by a CFD analysis (Computational Fluid Dynamics) is a branch of fluid mechanics that uses numerical methods and algorithms to solve and analyze problems that involve fluid flows.

CFD analysis was used to compare **X TYPE** with the traditional precision A/C solution consisting of a 140 kW cooling capacity unit with single 8-row coil.

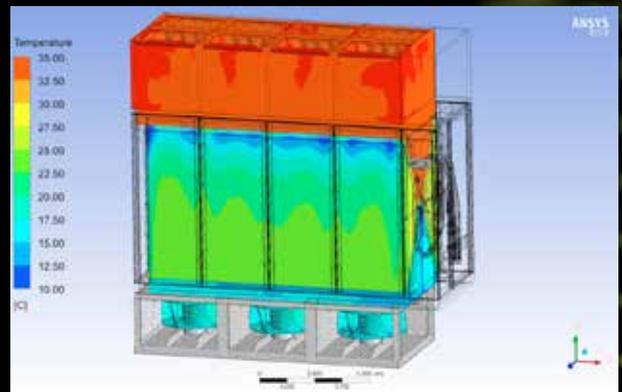
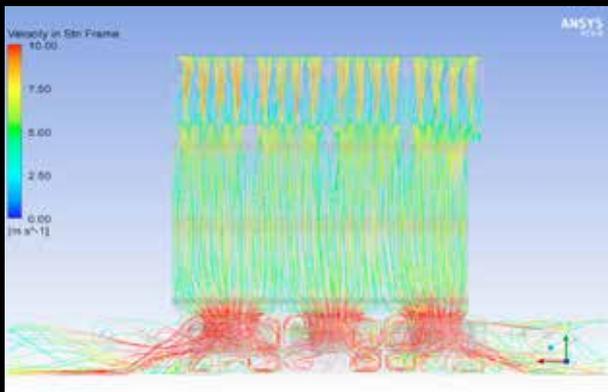
TRADITIONAL UNIT



X TYPE PROTOTYPE



CFD analysis of air flow and temperature of the prototype X TYPE



Result from this study / analysis was the construction of a prototype **X TYPE**, with a cooling capacity of 140 kW, characterized by an innovative lay-out to ensure the highest possible performance:

SYMMETRICAL HEAT EXCHANGER

TWO COOLING STAGES

NO PIPING IN THE HEAT EXCHANGER SECTION

SUPPLY FANS IN AXIS WITH THE HEAT EXCHANGER

PRESSURE DROPS MINIMIZED

INSIDE "X"

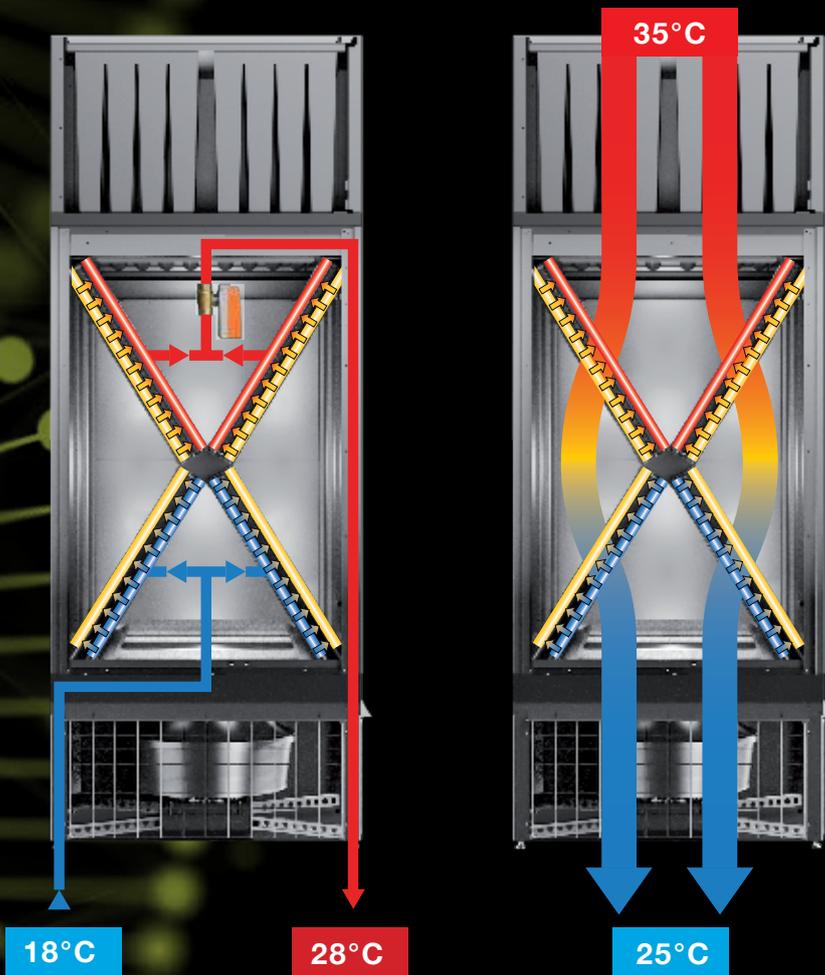
HIGH EFFICIENCY
RC Hi-Tech

The heart of **X TYPE** is the innovative **X** coil.

Compared with traditional coil systems, **X TYPE** has advantages in every respect.

WATER FLOW

AIR FLOW



A new lay-out specifically developed to provide high heat transfer and lower air side and water side pressure drops.

The heat exchange between air and water is much more effective thanks to a larger contact surface.

2-way motorized valve

Air return temperature probe

Air supply temperature probe

Chilled water inlet temperature probe

Chilled water outlet temperature probe



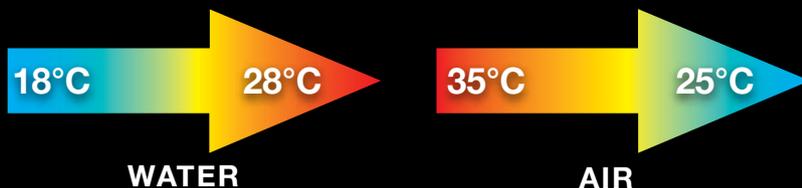
X TYPE has innovative operating conditions with **SHR=1** to maximize the performance of the machine.

Air return temperature: **35°C**

Air delivery temperature: **25°C**

Chilled water inlet temperature: **18°C**

Chilled water outlet temperature: **28°C**



WHY WE NEED A LOW PUE?

The data center is a structure that allows to centralize operations and IT equipment of a company, in which you can store, manage and disseminate the company data.

Data centers house the most critical systems of a company and it is fundamental to carry out daily activities continuously.

As a result, the safety and reliability of the data center and related information is a top priority. In the recent years, the data center has become "mission critical" in supporting the main technological trends.



EFFECTIVENESS IN ENERGY USE IN THE DATA CENTER

The energy efficiency of a Data Center is defined by the PUE (power usage effectiveness), an index that compares the total installed power in the infrastructure (IT equipments * Cooling + Back-up + others) with one used only by IT equipments for data processing. To have an efficient Data Center, the result should be close to 1.

DATA CENTER

500 kW

Total facility power



500 kW

500 kW

IT EQUIPMENT

500 kW

IT equipment power



PUE

500/500=1
MAX EFFICIENCY



1500 kW

Total facility power



1500 kW

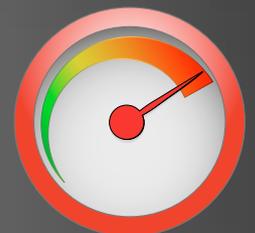
500 kW

500 kW

IT equipment power



1500/500=3
POOR EFFICIENCY

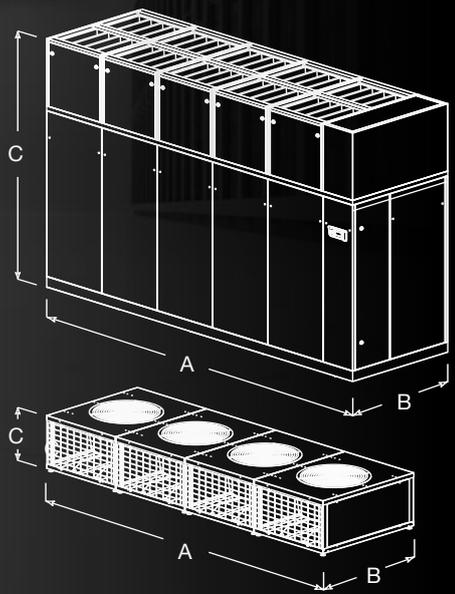


X TYPE FAMILY RANGE

Close Control Air Conditioners chilled water type
Cooling Capacity: 52 ÷ 182 kW

- 4 sizes
- $\Delta T 10^{\circ}C$
- X coil
- Bag Filters
- Variable air flow
- Variable water flow

EER up to 80
SHR ratio = 1



Model	T1 S	T2 S	T3 S	T4 S
Total Cooling Capacity (kW)	52,4	99,2	141,0	182,0
Sensible Cooling Capacity (kW)	52,4	99,2	141,0	182,0
EER	43,31	33,97	31,06	29,21
Handling section + Filter section dimension				
A (mm)	1620	2260	2900	3540
B (mm)	1100	1100	1100	1100
C (mm)	2375	2375	2375	2375
Fans section dimension				
A (mm)	1620	2260	2900	3540
B (mm)	1100	1100	1100	1100
C (mm)	525	525	525	525
Weight				
Total net weight (Kg)	494	765	1042	1330
Handling section net weight (Kg)	357	525	703	892
Filters section net weight (Kg)*	64	94	120	146
Fans section net weight (Kg)	73	146	219	292
Noise pressure level				
On air delivery (Lp1m)[dB(A)]	74,2	75,7	76,8	77,7
On air intake (Lp1m)[dB(A)]	63,1	67,2	68,3	69,0
On unit front (Lp1m)[dB(A)]	55,6	60,0	61,4	62,3

*Available also with standard plain filters for a reduced height
Characteristics referred to entering air at 35°C - 30%RH; chilled water temperature 18-28°C - 0% glycol
Noise pressure level ISO3744

WIDE RANGE OF ACCESSORIES

X TYPE has a wide range of accessories designed to maximize the performance of the unit.

- Software ADVANCED intelligent NET for IT Cooling, that maximizes the energy saving in Load Sharing
- Characterised control valve with sensor-operated flow
- Double power supply with automatic transfer switch
- M5, M6, F7 efficiency air filters.

RC CLOUD PLATFORM, the most advanced solution in unattended monitoring and remote management for an air conditioning plant.



THE PERFECT SYNERGY: X TYPE SYSTEM

The constant research carried out by RC Group has developed a system with unique and innovative performances, as result of the design of new liquid chillers series granting very high energy efficiency, able to communicate with **X TYPE** units through a sophisticated Artificial Intelligence.

HIGHEFFICIENCY

RC Hi-Tech

DELTA T-10

RC Hi-Tech



COOLNET.

Software to build and manage an INTELLIGENT NET for the highest energy saving in LOAD SHARING.

COOLNET

RC Ai Artificial Intelligence



X TYPE

Close Control Air Conditioners for chilled water feeding for installation in underfloor, divided into three sections.

UNICO TURBO FLGX

Air cooled liquid chillers in A-class energy efficiency with centrifugal oil-free compressors



INVERTER

RC Hi-Tech

CENTRIFUGAL COMPRESSOR TG310

A new compressor designed for green refrigerant **HFO1234ze** with accurate cooling and energy efficiency increased.



HFO1234ze

RC Hi-Tech



X TYPE system

The new system for Close Control Air Conditioning designed for very low PUE

RC CLOUD PLATFORM

is the most advanced solution for unattended plant monitoring and remote management, from everywhere in the world, through an easy web access. Dedicated apps for Android and iOS operating systems are available for the mobile network access.



MASTER PLANT SEQUENCER

is an intelligent local supervisory system designed as a master unit in a network of same or different type chillers connected in a single hydronic network for the production of chilled or heated water.



UNICO TURBO FLGX FREE

Air cooled liquid chillers in A-class energy efficiency with Free-Cooling system and centrifugal oil-free compressors



RC SPECTRUM

is the software for energy performance estimation of RC Group products. Provides PUE calculation, energy consumption and allows payback time of investment evaluation.



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