

# IT COOLING PRODUCT OVERVIEW

▶ CLOSE CONTROL AIR CONDITIONERS

▶ EVAPORATIVE COOLING SYSTEMS

▶ AIR CONDITIONERS FOR HIGH DENSITY RACKS AND BLADE SERVERS

▶ UNITS FOR SIMULTANEOUS AND INDEPENDENT PRODUCTION OF HOT AND COLD WATER

▶ DATA CENTER INFRASTRUCTURE

▶ CHILLERS

▶ TELECOM SOLUTIONS

▶ CONTROL, SUPERVISION AND OPTIMISATION SYSTEMS

▶ ANCILLARY PRODUCTS

## NEW GREEN REFRIGERANT SERIES

**R1234ze** G04 SERIES

**R513A** G05 SERIES

**R454B** G06 SERIES

# RC IT COOLING'S MISSION



With over 50 years experience in the HVAC industry, RC has been a major player widely recognized for its leadership in IT Cooling solutions. Building on this strong legacy, Mitsubishi Electric Hydronics & IT Cooling Systems SpA has decided to turn RC into the Group's specialized brand for data center cooling

## Worldwide distribution and service network

Over 50 years of experience

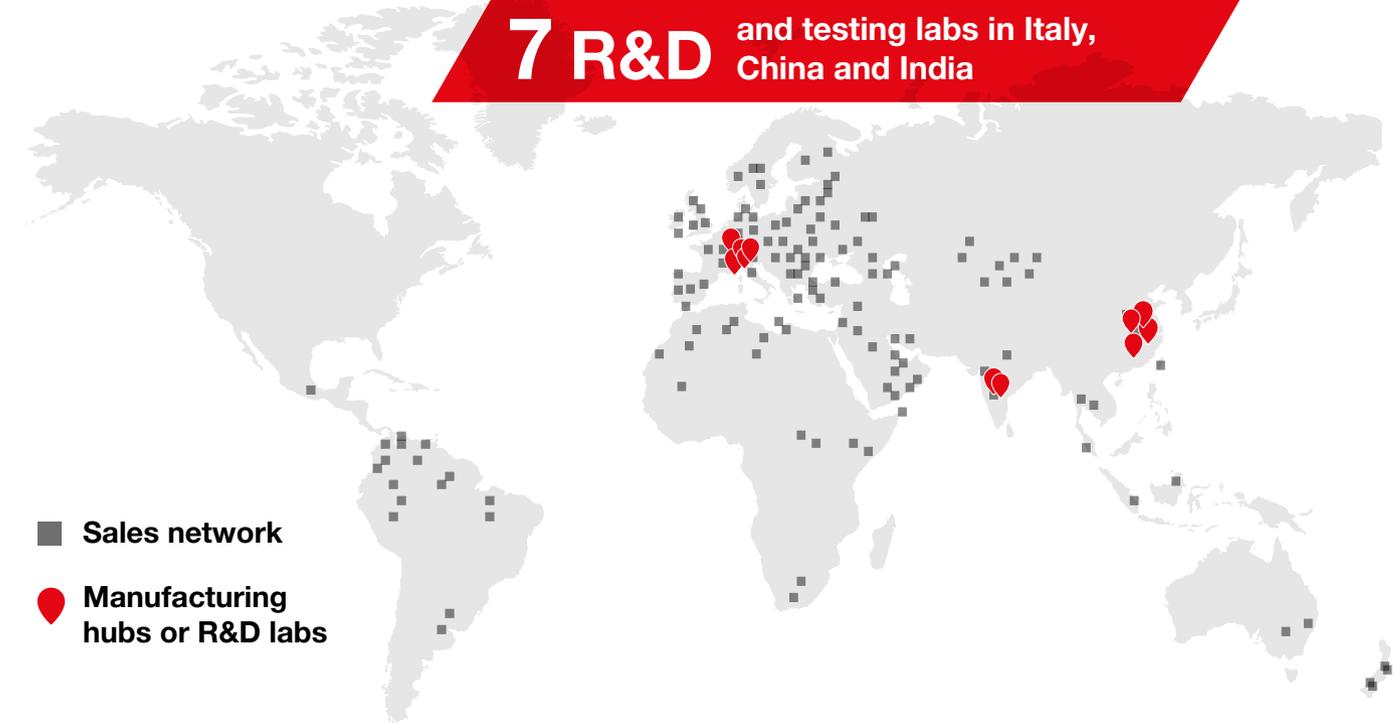
Dedicated products & specialized solutions

Vast portfolio of proprietary & patented technologies

12 specialized manufacturing hubs

7 R&D and testing labs in Italy, China and India

- Sales network
- Manufacturing hubs or R&D labs





The result is a brand new business organisation providing the most complete product range, which combines the best technologies, solutions and innovations from RC and Climaveneta.

**RC IT COOLING**  
leading-edge cooling technologies and solutions for IT applications are designed to provide even the most challenging Data Center and Telecom projects with:



**Smart integration of the most advanced technologies**



**Reduced operating costs**



**Complete reliability and extended lifetime**



**Widest use of the available power capacity**



**Optimised footprint**



**Increased sustainability**

# Advanced technologies for efficient data centers.

RC IT Cooling leadership in data center cooling systems is backed by 50 years of experience in the smart integration of premium technologies for complex IT cooling projects.

## Magnetic levitation



An extended range of chillers with magnetic levitation centrifugal compressors from 200kW to 4MW, both air source and water source, available also in free cooling and evaporative free cooling versions, to deliver highest efficiency in every application.

## Active Free Cooling



An advanced free cooling system available both as direct and indirect free cooling (no glycol), to exploit the outdoor air to cool the data center.

## Smart Thermal Energy Management



An innovative heat recovery system that allows the smart use of rejection heat from the data center for comfort heating and other neighbouring applications.

## Active Redundancy



Real active redundancy delivered through the combined adoption of innovative EC PUL fans, inverter DC brushless compressors and a smart algorithm that balances heating load also among stand-by units.

## X-type System

# X TYPE

The revolutionary double stage design applied to the heat exchangers in order to achieve top level efficiency and pPUE levels down to 1,07.

## Evaporative Cooling



The latest AHR solution with 2-stage indirect adiabatic free-cooling section. pPUE down to 1,025.

## Adaptive set point



An advanced algorithm instantaneously detects the real thermal loads of indoor units and conveys this information to chiller, for selection of the most efficient operating mode (e.g. dynamic variation of chillers set points and operating mode, free cooling mode, active redundancy mode).

## Inverter Driven Compressor



The possibility to modulate cooling capacity results in increased efficiency as well as in the possibility to effectively implement smart management solutions such as active redundancy.

## New G04, G05 and G06 Series using green refrigerants



Following on vast experience in using green refrigerants, RC has already employed extensively green HFO refrigerants such as R513A and R454B in many ranges, in order to continue to be at the forefront with green best practices.

## V-AIR



High efficiency EC technology fans are extensively adopted for their advantages both in internal units as well as in remote condensers with energy reduction up to 15% compared to traditional EC fans.

# CLOSE CONTROL AIR CONDITIONERS



## Direct expansion close control units

<b>t-NEXT DX</b> with remote air cooled condenser	6,37 ▶	◀ 149	AIR COOLED AXIAL EC FAN
<b>t-NEXT DW</b> with built-in water cooled condenser	7,89 ▶	◀ 156	WATER COOLED AXIAL EC FAN
<b>t-NEXT DF DX</b> dual fluid / air cooled	12,2 ▶	◀ 136	AIR COOLED DUAL FLUID EC FAN
<b>t-NEXT DF DW</b> dual fluid / water cooled	11,2 ▶	◀ 145	WATER COOLED DUAL FLUID EC FAN
<b>t-NEXT FC DW</b> free cooling / water cooled	7,88 ▶	◀ 157	WATER COOLED FREE COOLING EC FAN
<b>i-NEXT DX</b> inverter compr./ with remote air cooled condenser	10,4 ▶	◀ 135	INVERTER AIR COOLED EC FAN
<b>i-NEXT DW</b> inverter compr./ with built-in water cooled condenser	11 ▶	◀ 140	INVERTER WATER COOLED EC FAN
<b>i-NEXT DF DX</b> inverter compr./dual fluid/air cooled	12,3 ▶	◀ 142	INVERTER AIR COOLED DUAL FLUID EC FAN
<b>i-NEXT DF DW</b> inverter compr./dual fluid/water cooled	12,3 ▶	◀ 147	INVERTER WATER COOLED DUAL FLUID EC FAN
<b>i-NEXT FC DW</b> inverter compr./free cooling/water cooled	11 ▶	◀ 140	INVERTER WATER COOLED FREE COOLING EC FAN

50      100      150 kW

## Chilled water close control units

<b>w-NEXT3</b> chilled water	6 ▶	◀ 26	CHILLED EC FAN
<b>w-NEXT3 DF</b> dual fluid	9 ▶	◀ 16	CHILLED DUAL COIL EC FAN
<b>w-NEXT DF</b> dual coil	7,03 ▶	◀ 234	CHILLED EC FAN
<b>w-NEXT DF</b> dual coil	13,6 ▶	◀ 140	CHILLED DUAL COIL EC FAN
<b>w-NEXT HD S/K</b> high density	14,3 ▶	◀ 183	CHILLED HIGH DENSITY EC FAN
<b>w-NEXT2 S/K</b> chilled water, 2-section	57,8 ▶	◀ 227	CHILLED EC FAN
<b>w-NEXT2 DF</b> chilled water, 2-section, dual coil	58,2 ▶	◀ 227	CHILLED DUAL COIL EC FAN

50      100      150      200 kW

## Close control units for low thermal load applications

<b>i-MTR2-G02-M0</b> full inverter / direct expansion	12 ▶	◀ 18	INVERTER EC FAN COOLING
<b>i-NEXT MTR PRECISE DX</b> inverter compr. / air cooled	11,1 ▶	◀ 16,6	INVERTER AIR COOLED EC FAN
<b>i-NEXT MTR PRECISE DW</b> inverter compr. / water cooled	11,7 ▶	◀ 18,6	INVERTER WATER COOLED EC FAN

10      15      20 kW

- ▶ Highest energy efficiency
- ▶ Total dependability
- ▶ Ideal for high temp. IT environments

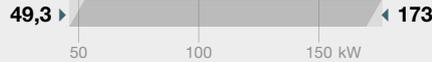
**X TYPE**



### Close control units for high temperature, high Delta T

#### NEXT-X-TYPE

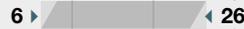
chilled water, X coil technology



### Close control units with displacement air delivery

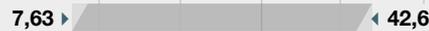
#### w-NEXT3 DL

displacement



#### w-NEXT DL DX

with remote air cooled condenser



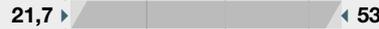
#### w-NEXT DL

chilled water



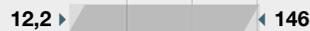
#### i-NEXT DL DX

inverter compr. / with remote air cooled cond.



## REMOTE CONDENSERS AND DRY COOLERS

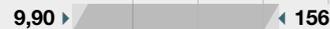
**T-MATE2 DX-A** air cooled remote condenser with AC axial fans



**T-MATE2 DX-E** air cooled remote condenser with EC axial fans



**T-MATE DX-PF-E** air cooled remote condenser with EC plug fans



#### T-MATE DC-A

dry cooler with AC axial fans

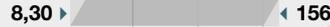


#### GR-Z A

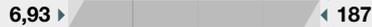
dry cooler with EC plug fans



**GR-Z E** air cooled remote condenser with AC axial fans



**BRRE** air cooled remote condenser with EC axial fans



**i-BRRE** air cooled remote condenser with EC plug fans



#### BRDC

dry cooler with AC axial fans



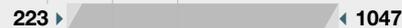
#### i-BRDC

dry cooler with EC plug fans



#### DR-Z

adiabatic with EC axial fans



50 100 150 200 250 300 kW

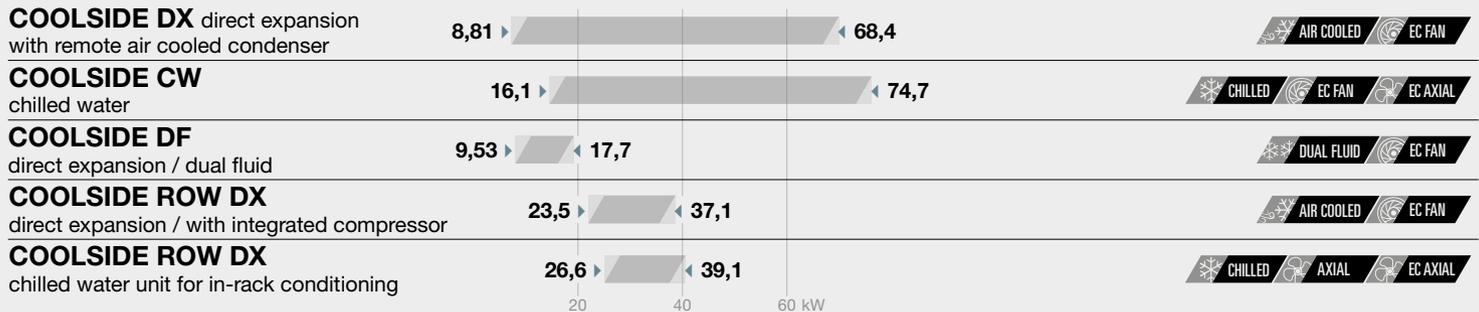


# AIR CONDITIONERS FOR HIGH DENSITY RACKS AND BLADE SERVERS



- ▶ Maximization of the internal capacity of the infrastructure
- ▶ Elimination of hot spots
- ▶ Minimum floorspace occupancy

## Close-coupled air conditioners



# DATA CENTER INFRASTRUCTURE



### ▶ RC RACK

**High quality cabinets for the protection and housing of servers**

Floor-standing cabinets suitable for the housing of the server. The supporting structure is made of sheet steel with a thickness of 20/10 and can reach a capacity of 2000 kg.

### ▶ RC AISLE CONTAINMENT

**Aisle Containment solutions for high density applications**

Aisle Containment solutions for the physical separation of the hot and cold air streams.

### ▶ RC PDUs

**Premium Rack Power Technology**

Power distribution units (PDUs) that manage power usage for servers, storage and network equipment.

### ▶ RAISED FLOORS

**Raised floor solutions for high efficiency data centers**

The raised floor is designed to easily adapt to future evolutions of IT spaces, avoiding expensive building work. This solution fulfills the need for versatile design of data centers.

# EVAPORATIVE COOLING SYSTEMS

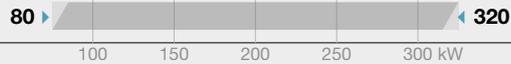
- ▶ Variable air flow and cooling capacity
- ▶ Fully aluminum structure (20-year warranty against corrosion)
- ▶ Low pPUE index: 1,025



## 2-Stage indirect evaporative cooling system for large data centers

### SIVIS

evaporative cooling system

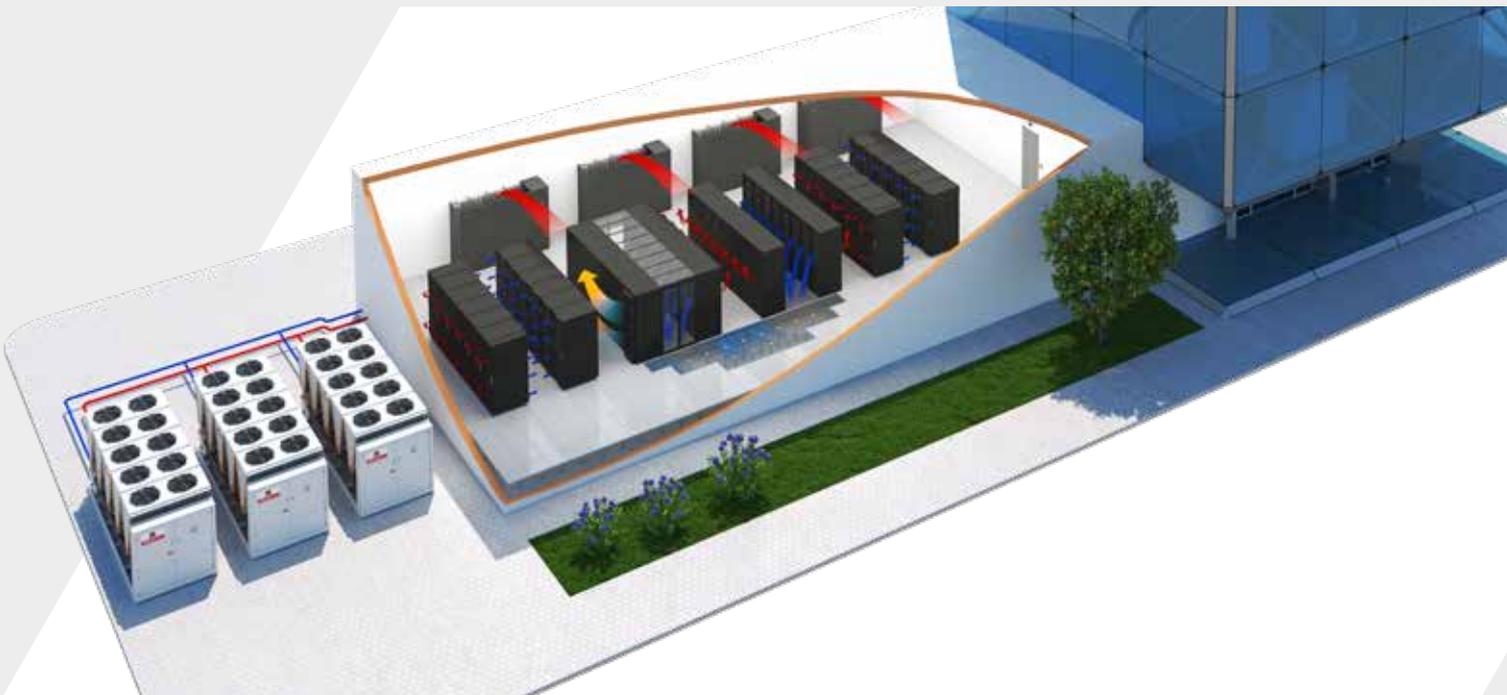


# ANCILLARY PRODUCTS



## Remote condensers

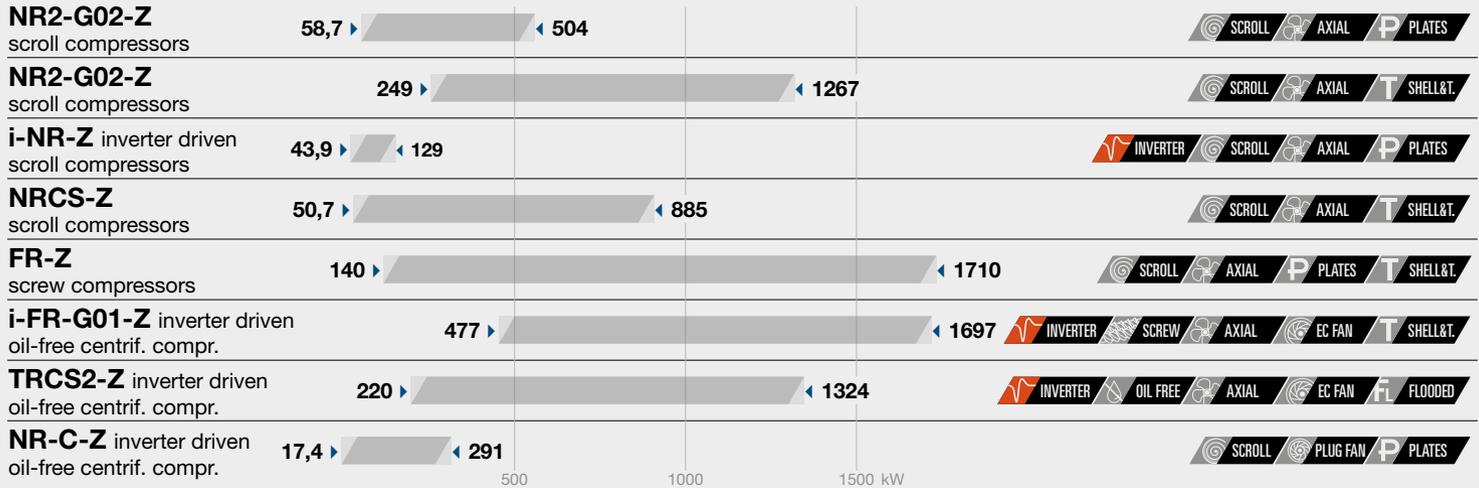
### NHCR / NCE / FCE



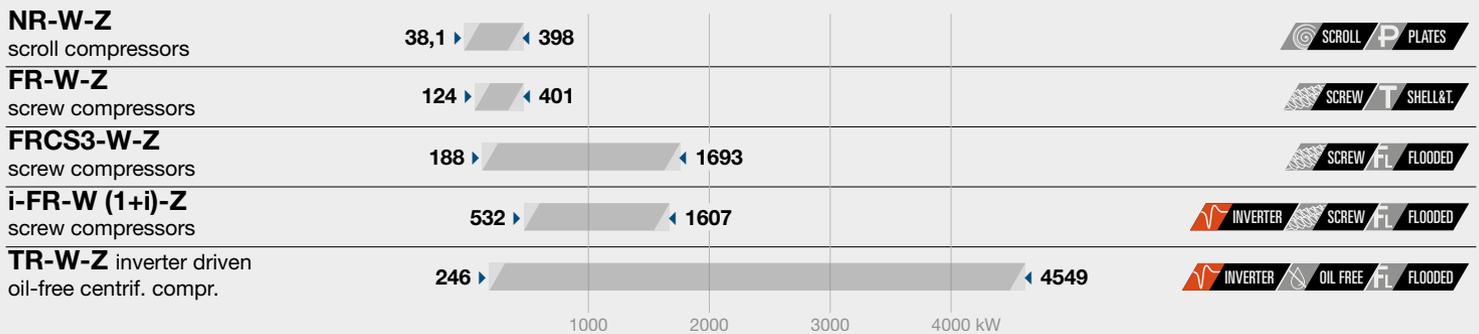
# CHILLERS



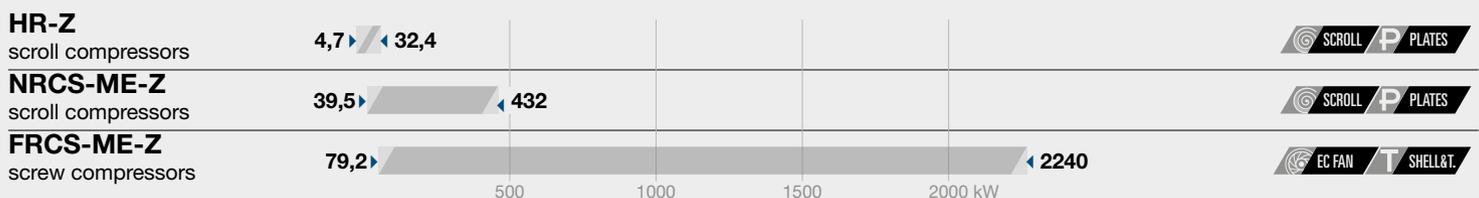
## Air cooled chillers



## Water cooled chillers



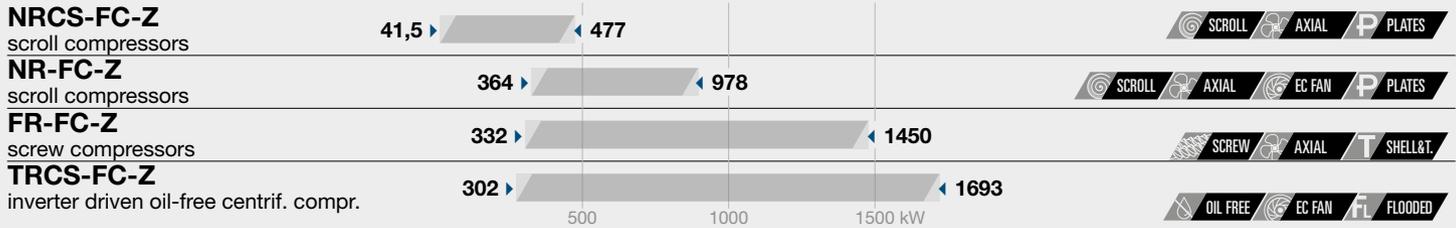
## Condenserless chillers



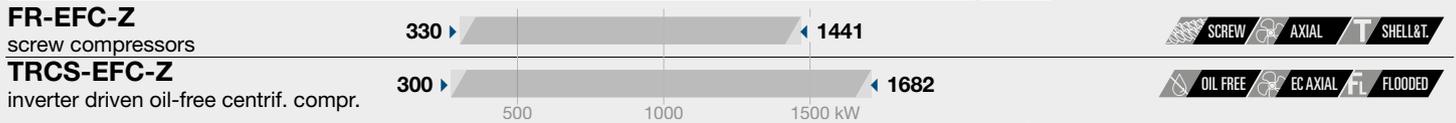
- ▶ Highest energy efficiency
- ▶ Ideal for IT environments
- ▶ Lowest noise emissions



### Air cooled chillers with free-cooling technology

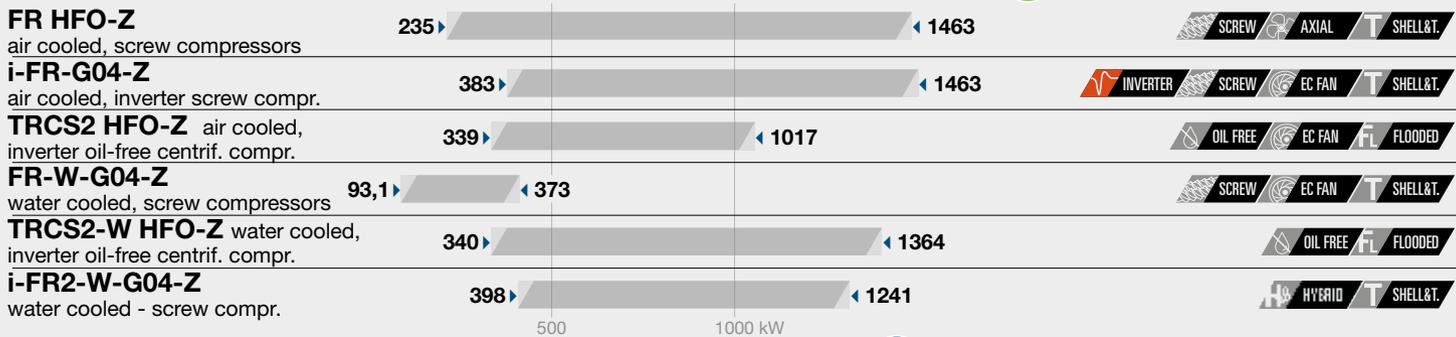


### Air cooled chillers with evaporative free-cooling technology



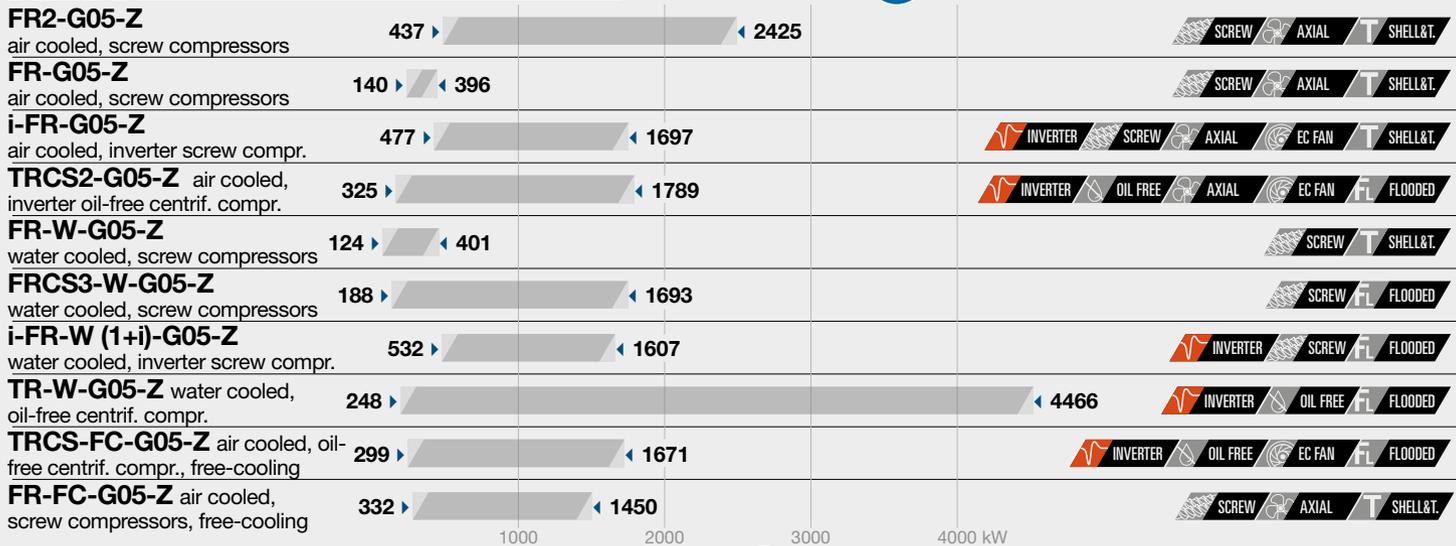
### Air and water cooled chillers with HFO 1234ze

G04 SERIES <sup>D</sup>1234ze



### Air and water cooled chillers with R513A

G05 SERIES <sup>D</sup>R513A



### Air cooled chillers with R454B

G06 SERIES <sup>D</sup>R454B



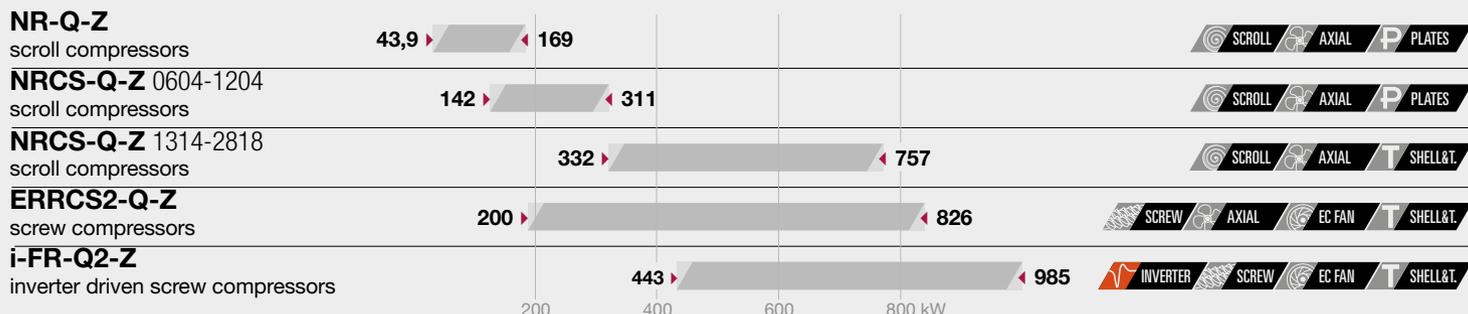
# UNITS FOR SIMULTANEOUS AND INDEPENDENT PRODUCTION OF HOT AND COLD WATER



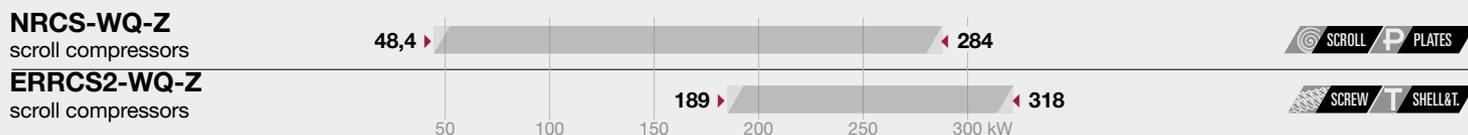
- ▶ Smart heat recovery system
- ▶ A single unit for multiple uses
- ▶ System simplification



## Air source heat pumps

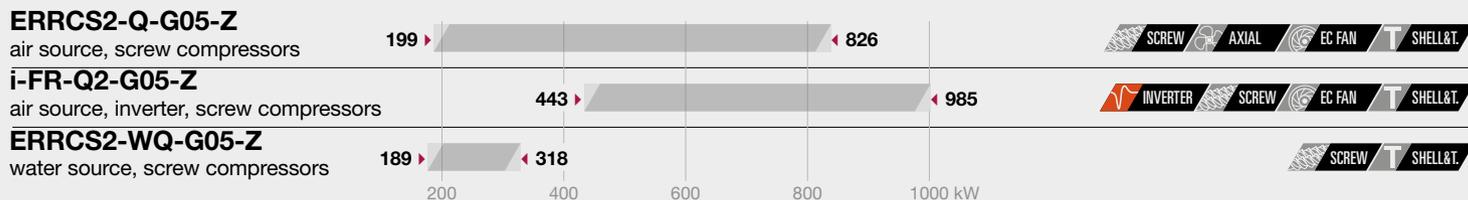


## Water source heat pumps



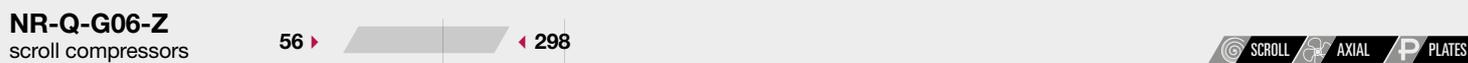
## Air and water source 4-pipe heat pumps with R513A

G05 SERIES R513A



## Air cooled chillers

G06 SERIES R454B



# TELECOM SOLUTIONS

- ▶ Reliability and extended operation
- ▶ High capacity sensitive cooling
- ▶ Black out management



## Air conditioners for telecom applications with free-cooling and full DC inverter technology

<b>MINIPAC EVO</b> packaged for outdoor installation	1,95 ▶				◀ 20,6	OUTDOOR CENTRIE EC FAN
<b>MINIPAC EVO INV</b> packaged for outdoor installation / inverter techn.		8,56 ▶			◀ 17,6	INVERTER OUTDOOR CENTRIE EC FAN
<b>ENERTEL EVO</b> packaged for outdoor installation packaged for indoor installation	1,95 ▶				◀ 14,8	INDOOR CENTRIE EC FAN
<b>ENERTEL EVO INV</b> packaged for indoor installation /inverer techn.		8,51 ▶			◀ 18,1	INVERTER INDOOR CENTRIE EC FAN
<b>SPLIT EVO</b> split system / ceiling or wall installation	4,94 ▶				◀ 16,8	WALL INSTALLATION CENTRIE EC FAN
<b>SPLIT EVO INV</b> split system / ceiling or wall installation /inverter techn.		8,64 ▶			◀ 17,3	INVERTER WALL INSTALLATION CENTRIE EC FAN

5                      10                      15                      20 kW

# CONTROL, SUPERVISION AND OPTIMISATION SYSTEMS



## Group devices

- ▶ **ClimaPRO Plant Room Optimisation System**  
Plant Room Optimiser for real time,smart management of energy indecesfor the single units and the entire plant room.
- ▶ **MANAGER 3000**  
Specialized group control forthe data center air conditioners.



## Supervision and monitoring systems

- ▶ **FWS3 / FWS3000**  
Remote monitoring systems.
- ▶ **RC Cloud**  
Cloud based remote monitoring system.



## Human Machine Interfaces

- ▶ **KIPLink**  
Control interface for smart phones and tablets.

# MORE THAN 1000 PROJECTS ALL OVER THE WORLD

## FASTWEB DATACENTER, TIER IV

Milan - Italy

**Period:** 2014

**Application:** Data Center

**Plant type:** Hydronic System

**Cooling capacity:** 2800 kW

**Installed machines:**

4x TRCS2/SL-CA-E 0652,  
2x ClimaPRO



## CCB - CHINA CONSTRUCTION BANK DATA CENTER

Beijing - China

**Period:** 2015

**Application:** Data Center

**Plant type:** Hydronic System

**Cooling capacity:** 70000 kW

**Installed machines:**

48x free cooling chillers,  
4x heat pumps



Every project is characterized by different usage conditions and system specifications for many different latitudes. All these projects share high energy efficiency, maximum integration, and total reliability due to the unique experience of RC branded solutions.

## WIIT DATACENTER MILAN

Milan - Italy

**Period:** 2017-2018

**Investor:** WIIT

**Application:** Data Center

**Plant type:** Hydronic System

**Cooling capacity:** 700 kW

**Installed machines:**

10x NEXT EVO INV DX U;

18x TEAM MATE STD



## FORTUM DISTRICT HEATING

Kirkkonummi - Finland

**Period:** 2017-2018

**Application:** Data Center

**Plant type:** Hydronic System

**Cooling capacity:** 27150 kW

**Heating capacity:** 26486 kW

**Installed machines:**

2x FRCS2-W HFO/H/CA/S 5422,

8x ACU EXPANDED





## **MITSUBISHI ELECTRIC HYDRONICS & IT COOLING SYSTEMS S.p.A.**

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[www.melcohit.com](http://www.melcohit.com)