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

IT COOLING

PRODUCT OVERVIEW

- CLOSE CONTROL AIR CONDITIONERS
- EVAPORATIVE COOLING SYSTEMS
- AIR CONDITIONERS FOR HIGH DENSITY RACKS AND BLADE SERVERS
- DATA CENTER INFRASTRUCTURE
- CHILLERS
- UNITS FOR SIMULTANEOUS AND INDEPENDENT PRODUCTION OF HOT AND COLD WATER
- TELECOM SOLUTIONS
- CONTROL, SUPERVISION AND OPTIMISATION SYSTEMS
- ANCILLARY PRODUCTS

NEW GREEN REFRIGERANT SERIES

r1234ze G04 SERIES

rR513A G05 SERIES

rcitcooling.com

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, merging the experience of RC with Climaveneta's in this segment.

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.
This is enhanced by both brands' extensive experience, and by the advantages of integrated R&D, operations and central functions.

Over 50 years of experience

Dedicated products & specialized solutions

12 specialized manufacturing hubs

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

Vast portfolio of proprietary & patented technologies

Worldwide distribution and service network

COUNTLESS SUCCESSFUL PROJECTS WORLDWIDE

Wiit Spa - Milano, Italy
Tier IV certified

Data Center proRZ
Munich, Germany

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

Building on the experience of RC Group and Climaveneta both on HPAC and on chillers, RC IT Cooling solutions offer the smartest combination of the most advanced technologies such as: full inverter concept, free cooling, heat recovery management, adiabatic cooling.

Reduced operating costs

In infrastructures working 24 hours per day, 365 days per year, over an average of 10 years, every energy improvement allows for a significant reduction in OPEX (operating costs).

Complete reliability and extended lifetime

The uptime of server infrastructure and hence of most critical services in modern society, is tightly related to the reliability of the IT cooling system, which must guarantee Tier IV uptime standards over its whole lifetime.

Widest use of the available power capacity

In all installations were power feeds are at capacity, the key option to expand data center facilities is to significantly improve the energy performance of the whole data center.

Optimised footprint

A green, high efficiency approach to data centers is key also to enable a more effective use of available space thus delaying the need of building new rooms.

Increased sustainability

Intelligent energy management is crucial also for sustainability, considering the growing impact of data center industry in terms of total CO_2 emissions.

more on: www.rcitcooling.com

- **Fastweb** - Milano, Italy
  Tier IV certified
- **China Construction Bank Data Center** - Bejing China

- **ANZ Bank Server Room**
  Auckland – New Zealand
- **SKY Studios**
  Unterfoehring - Germany

CLOSE CONTROL AIR CONDITIONERS

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

X TYPE · VAIR Variable Air Flow · INVERTER DRIVEN COMPRESSOR · ADAPTIVE SET POINT · Active Redundancy · Active FreeCooling

Direct expansion close control units

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

50 100 150 kW

Chilled water close control units

w-NEXT S	chilled water	7,03	234	CHILLED · EC FAN
w-NEXT DF	dual coil	13,6	140	CHILLED · DUAL COIL · EC FAN
w-NEXT HD S/K	high density	14,3	183	CHILLED · HIGH DENSITY · EC FAN
w-NEXT2 S/K	chilled water, 2-section	57,8	227	CHILLED · EC FAN
w-NEXT2 DF	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

i-NEXT MTR PRECISE DX	inverter compr. / air cooled	11,1	16,6	INVERTER · AIR COOLED · EC FAN
i-NEXT MTR PRECISE DW	inverter compr. / water cooled	11,7	18,6	INVERTER · WATER COOLED · EC FAN

10 15 20 kW

Close control units for high temperature, high Delta T

NEXT-X-TYPE	chilled water, X coil technology	49,3	173	X COILS · CHILLED · EC FAN

50 100 150 kW

Close control units with displacement air delivery

t-NEXT DL DX	with remote air cooled condenser	7,63	42,6	AIR COOLED · EC FAN
w-NEXT DL	chilled water	11,6	41,3	CHILLED · EC FAN
i-NEXT DL DX	inverter compr. / with remote air cooled cond.	21,7	53	INVERTER · AIR COOLED · EC FAN

10 20 30 40 50 kW

REMOTE CONDENSERS AND DRY COOLERS

T-MATE DX-A	air cooled remote condenser with AC axial fans	9,50	302	OUTDOOR · AXIAL
T-MATE DX-E	air cooled remote condenser with EC axial fans	9,50	302	OUTDOOR · EC AXIAL
T-MATE DX-PF-E	air cooled remote condenser with EC plug fans	9,90	156	OUTDOOR · CENTRIF.
T-MATE DC-A	dry cooler with AC axial fans	6,40	172	OUTDOOR · AXIAL
GR-Z A	dry cooler with EC plug fans	9,41	156	OUTDOOR · AXIAL
GR-Z E	air cooled remote condenser with AC axial fans	8,30	156	OUTDOOR · EC AXIAL
BRRE	air cooled remote condenser with EC axial fans	6,93	187	OUTDOOR · AXIAL
i-BRRE	air cooled remote condenser with EC plug fans	13,4	187	OUTDOOR · EC AXIAL
BRDC	dry cooler with AC axial fans	7,50	210	OUTDOOR · AXIAL
i-BRDC	dry cooler with EC plug fans	14,0	210	OUTDOOR · EC AXIAL

50 100 150 200 250 300 kW

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

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.

AIR CONDITIONERS FOR HIGH DENSITY RACKS AND BLADE SERVERS

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

ADAPTIVE SET POINT

Active FreeCooling

Close-coupled air conditioners

COOLSIDE DX	direct expansion with remote air cooled condenser	8,81	68,4	AIR COOLED · EC FAN
COOLSIDE CW	chilled water	16,1	74,7	CHILLED · EC FAN · EC AXIAL
COOLSIDE DF	direct expansion / dual fluid	9,53	17,7	DUAL FLUID · EC FAN
COOLSIDE FC	direct expansion / free cooling	11,1	14,6	FREE COOLING · AIR COOLED · EC FAN · EC AXIAL
COOLSIDE ROW DX	direct expansion / with integrated compressor	23,5	37,1	AIR COOLED · EC FAN
COOLSIDE DOOR	chilled water unit for in-rack conditioning	26,6	39,1	CHILLED · AXIAL · EC AXIAL

20 40 60 kW

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**

EVAPORATIVE Cooling

2-Stage indirect evaporative cooling system for large data centers

SIVIS	evaporative cooling system	80	320

100 150 200 250 300 kW

ANCILLARY PRODUCTS

Remote condensers

NHCR / NCE / FCE	7,90	929	AXIAL

200 400 600 800 kW

Active FreeCooling

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 ThermalEnergy Management

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

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.

CHILLERS

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

Air cooled chillers

NR-Z	scroll compressors	39,2	327	SCROLL AXIAL	PLATES
NR-Z	scroll compressors	159	352	SCROLL AXIAL	SHELL&T.
i-NR-Z	inverter driven scroll compressors	43,9	129	INVERTER SCROLL AXIAL	PLATES
NRCS-Z	scroll compressors	50,7	885	SCROLL AXIAL	SHELL&T.
FR-Z	screw compressors	140	1710	SCROLL AXIAL	PLATES SHELL&T.
i-FR (1+i)-Z	inverter driven screw compressors	567	1273	INVERTER SCREW AXIAL	SHELL&T.
i-FR-G01-Z	inverter driven oil-free centrif. compr.	477	1697	INVERTER SCREW AXIAL EC FAN	SHELL&T.
TRCS2-Z	inverter driven oil-free centrif. compr.	220	1324	INVERTER OIL FREE AXIAL EC FAN	FLOODED
NR-C-Z	inverter driven oil-free centrif. compr.	17,4	291	SCROLL PLUG FAN	PLATES

500 1000 1500 kW

Water cooled chillers

NR-W-Z	scroll compressors	38,1	398	SCROLL	PLATES
FR-W-Z	screw compressors	124	401	SCREW	SHELL&T.
FRCS3-W-Z	screw compressors	188	1693	SCREW	FLOODED
i-FR-W (1+i)-Z	screw compressors	532	1607	INVERTER SCREW	FLOODED
TR-W-Z	inverter driven oil-free centrif. compr.	246	4549	INVERTER OIL FREE	FLOODED

1000 2000 3000 4000 kW

Condenserless chillers

HR-Z	scroll compressors	4,70	32,4	SCROLL	PLATES
NRCS-ME-Z	scroll compressors	39,5	432	SCROLL	PLATES
FRCS-ME-Z	screw compressors	79,2	2240	EC FAN	SHELL&T.

500 1000 1500 2000 kW

Air cooled chillers with free-cooling technology

NRCS-FC-Z	scroll compressors	41,5	477	SCROLL AXIAL	PLATES
NR-FC-Z	scroll compressors	364	978	SCROLL AXIAL EC FAN	PLATES
FR-FC-Z	screw compressors	332	1450	SCREW AXIAL	SHELL&T.
TRCS-FC-Z	inverter driven oil-free centrif. compr.	302	1693	OIL FREE EC FAN	FLOODED

500 1000 1500 kW

Air cooled chillers with evaporative free-cooling technology

FR-EFC-Z	screw compressors	330	1441	SCREW AXIAL	SHELL&T.
TRCS-EFC-Z	inverter driven oil-free centrif. compr.	300	1682	OIL FREE EC AXIAL	FLOODED

500 1000 1500 kW

G04 SERIES Air and water cooled chillers with HFO 1234ze

R 1234ze

FR HFO-Z	air cooled, screw compressors	235	1463	SCREW AXIAL	SHELL&T.
i-FR-G04-Z	air cooled, inverter screw compr.	383	1463	INVERTER SCREW EC FAN	SHELL&T.
TRCS2 HFO-Z	air cooled, inverter oil-free centrif. compr.	339	1017	OIL FREE EC FAN	FLOODED
FR-W-G04-Z	water cooled, screw compressors	93,1	373	SCREW EC FAN	SHELL&T.
TRCS2-W HFO-Z	water cooled, inverter oil-free centrif. compr.	340	1364	OIL FREE	FLOODED

500 1000

G05 SERIES Air and water cooled chillers with R513A

R R513A

FR-G05-Z	air cooled, screw compressors	140	396	SCREW AXIAL	PLATES SHELL&T.
FR-G05-Z	air cooled, screw compressors	288	1710	SCREW AXIAL	SHELL&T.
i-FR-G05-Z	air cooled, inverter screw compr.	477	1697	INVERTER SCREW AXIAL EC FAN	SHELL&T.
TRCS2-G05-Z	air cooled, inverter oil-free centrif. compr.	218	1313	INVERTER OIL FREE AXIAL EC FAN	FLOODED
FX-W-G05-Z	water cooled, screw compressors	124	401	SCREW	SHELL&T.
FRCS3-W-G05-Z	water cooled, screw compressors	188	1693	SCREW	FLOODED
i-FR-W (1+i)-G05-Z	water cooled, inverter screw compr.	532	1607	INVERTER SCREW	FLOODED
TR-W-G05-Z	water cooled, oil-free centrif. compr.	248	4466	INVERTER OIL FREE	FLOODED
TRCS-FC-G05-Z	air cooled, oil-free centrif. compr., free-cooling	299	1671	INVERTER OIL FREE EC FAN	FLOODED
FR-FC-G05-Z	air cooled, screw compressors, free-cooling	332	1450	SCREW AXIAL	SHELL&T.

1000 2000 3000 4000 kW

X TYPE

X-type System
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 et points and operating mode, free cooling mode, active redundancy mode).

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

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

5 10 15 20 kW

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

NR-Q-Z	scroll compressors	43,9	169	SCROLL · AXIAL · P PLATES
NRCS-Q-Z 0604-1204	scroll compressors	142	311	SCROLL · AXIAL · P PLATES
NRCS-Q-Z 1314-2818	scroll compressors	332	757	SCROLL · AXIAL · T SHELL&T.
ERRCS2-Q-Z	screw compressors	200	826	SCREW · AXIAL · EC FAN · T SHELL&T.
i-FR-Q2-Z	inverter driven screw compressors	443	985	INVERTER · SCREW · EC FAN · T SHELL&T.

200 400 600 800 kW

Water source heat pumps

NRCS-WQ-Z	scroll compressors	48,4	284	SCROLL · P PLATES
ERRCS2-WQ-Z	screw compressors	189	318	SCREW · T SHELL&T.

50 100 150 200 250 300 kW

G05 SERIES Air and water source 4-pipe heat pumps with R513A

R513A

ERRCS2-Q-G05-Z	air source, screw compressors	199	826	SCREW · AXIAL · EC FAN · T SHELL&T.
i-FR-Q2-G05-Z	air source, inverter, screw compressors	443	985	INVERTER · SCREW · EC FAN · T SHELL&T.
ERRCS2-WQ-G05-Z	water source, screw compressors	189	318	SCREW · T SHELL&T.

200 400 600 800 1000 kW

CONTROL, SUPERVISION AND OPTIMISATION SYSTEMS

Group devices

- **ClimaPRO DCO**
  Plant Room Optimisation System
  Plant Room Optimiser for real time, smart management of energy indeces for the single units and the entire plant room.
- **MANAGER 3000**
  Specialized group control for the 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.

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 and G05 Series using green refrigerants
Following on vast experience in using green refrigerants, RC has already employed extensively green HFO refrigerants such as HFO1234ze and R513A 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.

for a greener tomorrow

Eco Changes is the Mitsubishi Electric Group's environmental statement, and expresses the Group's stance on environmental management. Through a wide range of businesses, we are helping contribute to the realization of a sustainable society.

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