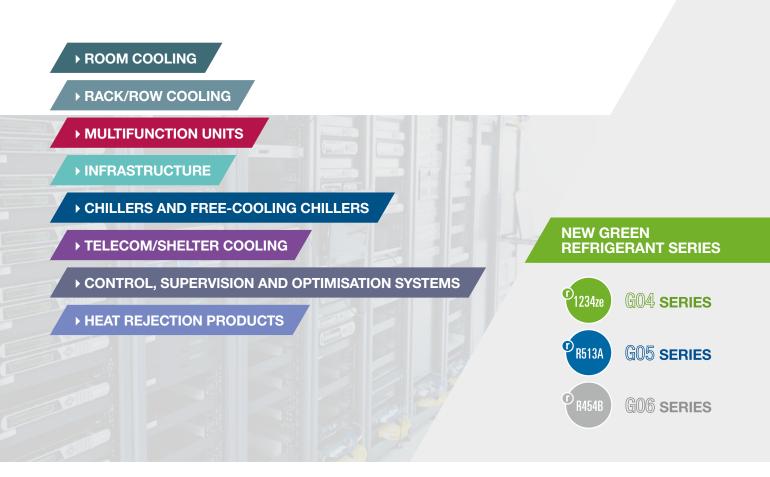
MITSUBISHI ELECTRIC HYDRONICS & IT COOLING SYSTEMS S.p.A.

IT COOLING PRODUCT OVERVIEW

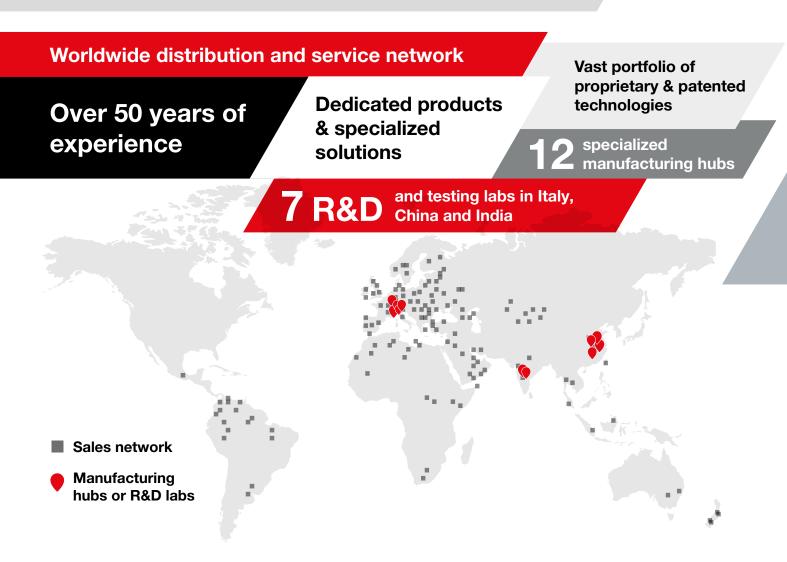




melcohit.com

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







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.



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



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.

New G04, G05, G06 and G00 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.

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).





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.

Hydronic Plant Connect



ADAPTIVE Set point

Fully developed in-house, HPC perfectly matches the need for cooling, reliability, and energy savings, guaranteeing excellent performances while fully respecting the required IT cooling demands. **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.

ROOM COOLING

Direct expansion close control ur	nits		
t-NEXT DX with remote air cooled condenser	6,37 •	4 149	AIR COOLED AXIAL C EC FAN
t-NEXT DW with built-in water cooled condenser	7,89 >	∢ 156	WATER COOLED AXIAL C FAN
t-NEXT DF DX dual fluid / air cooled	12,2 ►	4 136	AIR COOLED 🚲 DUAL FLUID
t-NEXT DF DW dual fluid / water cooled	11,2 >	145	👌 💥 WATER COOLED 🎄 🗱 DUAL FLUID
t-NEXT FC DW free cooling / water cooled	7,88 >	157	WATER COOLED Stree Cooling C FAN
i-NEXT DX inverter compr./ with remote air cooled condenser	10,4 >	135	INVERTER AIR COOLED
i-NEXT DW inverter compr./ with built-in water cooled condenser	11 >	↓ 140	INVERTER A 💥 WATER COOLED
i-NEXT DF DX inverter compr./dual fluid/air cooled	12,3)	142	INVERTER AIR COOLED AND DUAL FLUID
i-NEXT DF DW inverter compr./dual fluid/water cooled	12,3 ►	4 147	NVERTER 🖋 WATER COOLED 🛷 dual fluid 🕼 EC FAN
i-NEXT FC DW inverter compr./free cooling/water cooled	11 >	4 140	INVERTER A WATER COOLED A FREE COOLING C FAN

≈. = ⊮.}

Chilled water close control	ol units			
w-NEXT3 chilled water	6 > 4 26			💥 CHILLED 🥳 EC FAN
w-NEXT3 DF dual fluid	9 > 16			CHILLED 🖉 DUAL COIL 🕼 EC FAN
W-NEXT-S dual coil	6,7 •		1 213	Chilled / CF 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 CHILLED 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

i-MTR2-G02-M0 full inverter / direct expansion	12 >	18	INVERTER C FAN
	10	15 20 kW	
Close control units for high temperatur	e, high Delta T		
NEXT-X-TYPE chilled water, X coil technology	49,3 •	4 173	🖌 COILS / 🛠 CHILLED 🌀 EC FAN

100

150 kW

50

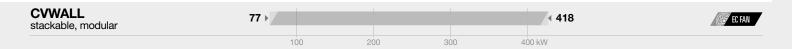
- Highest energy efficiency
- Total dependability
- Ideal for high temp. IT environments





Close control units with displa	acement air c	lelivery		
w-NEXT3 DL displacement	6 ▶	< 26		CHILLED CE FAN
t-NEXT DL DX with remote air cooled condenser	7,63 🕨		42,6	AIR COOLED
w-NEXT DL chilled water	11,6 ►		41,3	Chilled Cran
i-NEXT DL DX inverter compr. / with remote air cooled c	cond. 2	1,7 ▶	₹ 53	INVERTER AT AIR COOLED
	10	0 20	30 40	50 kW

FANWALL UNIT FOR DATA CENTER COOLING



REMOTE CONDENSERS AND DRY COOLERS

T-MATE2 DX-A air cooled remote condenser with AC axial fans	12,2 ▶	146	OUTDOOR AXIAL
T-MATE2 DX-E air cooled remote condenser with EC axial fans	9,79 >	 146 	OUTDOOR SEC AXIAL
T-MATE DX-PF-E air cooled remote condenser with EC plug fans	9,90 >	156	OUTDOOR OF CENTRIE
T-MATE DC-A dry cooler with AC axial fans	9,41 >	▲ 156	OUTDOOR AXIAL
GR-Z A dry cooler with EC plug fans	6,40 >	• 172	OUTDOOR AXIAL
GR-Z E air cooled remote condenser with AC axial fans	8,30 >	▲ 156	OUTDOOR CAXIAL
DR-Z adiabatic with EC axial fans		223 >	1047 Adiabatic Se ec axial
	50	100 150 200 250 300	kW

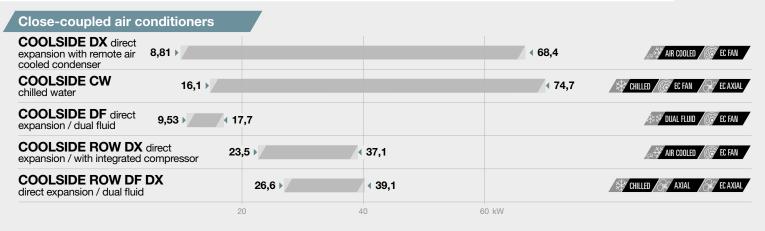


RACK/ROW COOLING

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







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

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.





I

CHILLERS AND FREE-COOLING CHILLERS

Air cooled chillers	;				
NR2-G02-Z scroll compressors	58,7 ▶	4 1267		Т	SHELL&T. SCROLL AXIAL PLATES
FR2-G01-Z screw compressors	437 🕨			< 2425	SCROLL AXIAL T SHELL&T.
i-NR-Z inverter driven scroll compressors	43,9 • 129			\bigwedge	INVERTER SCROLL AXIAL PLATES
NRCS-Z scroll compressors	50,7 •	 885 			SCROLL AXIAL T SHELL&T.
FR-Z screw compressors	140)		1710	G	scroll 🔗 axial /P plates /T shell&t.
i-FR-G01-Z inverter coll-free centrif. compr.	driven 477 •		↓ 1697	INVERTER AND	SCREW 💦 AXIAL 🧖 EC FAN 🕂 SHELL&T.
TRCS2-Z inverter driv oil-free centrif. compr.	^{ren} 220)	1324		INVERTER &	OIL FREE AXIAL C FAN FL FLOODED
NR-C-Z inverter driver oil-free centrif. compr.	^າ 17,4				SCROLL SPLUG FAN PLATES
	500	1000 1500	2000 kW	V	
Water cooled chill	lers				
NR-W-Z scroll compressors	38,1 > < 398				SCROLL PLATES
FR-W-Z screw compressors	124 • 401				SCREW T SHELL&T.
FRCS3-W-Z screw compressors	188 ►	1693			SCREW FL FLOODED
TR-W-Z inverter driven oil-free centrif. compr.	246 •			∢ 454	9 INVERTER OIL FREE L FLOODED
	100	0 2000	3000	4000 kW	
Condenserless ch	illers				

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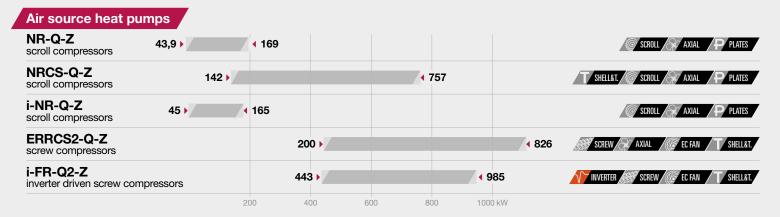
HR-Z scroll compressors	4,7 > 32,4	
NRCS-ME-Z scroll compressors	39,5 🕨	432
scioli compressors		
FRCS-ME-Z	79,2 🕨	
screw compressors		
	5	500

Air cooled chillers wi	ith free-cooling technolo	ogy 🔊		
NRCS-FC-Z scroll compressors	41,5 > 477			SCROLL AXIAL PLATES
NR2-FC-Z scroll compressors	360 >	∢ 895		SCROLL AXIAL C EC FAN PLATES
FR-FC-Z screw compressors	332)		1450	SCREW AXIAL T SHELL&T.
TRCS-FC-Z inverter driven oil-free centrif. compr.	302 >		1693	OIL FREE
	500	1000	1500 kW	

 Highest energy efficiency Ideal for IT environments Lowest noise emissions 	l		
Air cooled chillers with evaporative free-co	oling technology / 🔊	•	
TRCS-EFC-Z 330 >		∢ 1441	SCREW AXIAL T SHELL&T.
TRCS-EFC-Z nverter oil-free centrif. compr. 300 ▶		▲ 1682	OIL FREE CAXIAL FL FLOODED
500	1000	1500 kW	
hir and water cooled chillers with HFO 1234	4ze GO4 SERIES ^{Q2}	34ze	
FR2-G04-Z 437 ▶ ir cooled, screw compressors 437 ▶		₹ 2445	SCREW AXIAL T SHELL&T.
-FR-G04-Z 383 >	• 1463		INVERTER SCREW CF EC FAN
TRCS2 HFO-Z air cooled, 339 August 2019	▲ 1017		OIL FREE C FAN F FLOODED
FR-W-G04-Z water 93,1 > 373			SCREW CF EC FAN T SHELL&T.
RCS2-W HFO-Z water cooled, 340 V	▲ 1364		
-FR2-W-G04-Z 398 ► vater cooled, screw compr.	• 1241		SHELL&T.
TR2-W-G04-Z nverter oil-free centrif. compr. 246		∢ 454	19 INVERTER OIL FREE
500	1000	1500 kW	
ir and water cooled chillers with R513A	G05 SERIES PRISA		
R2-G05-Z 437 ►	◆ 2425		SCREW AXIAL T SHELL&T.
R-G05-Z ir cooled, screw compressors 140 > 4 396			SCREW AXIAL T SHELL&T.
-FR-G05-Z air cooled, 477 >	▲ 1697	INVERTER AND	SCREW 😽 AXIAL 🖉 EC FAN 丁 SHELL&T.
RCS2-G05-Z air cooled, 325 Noverter oil-free centrif. compr.	↓ 1789	INVERTER S.	OIL FREE AXIAL C EC FAN
R-W-G05-Z water ooled, screw compressors 124 > 401			SCREWI T SHELL&T
RCS3-W-G05-Z water ooled, screw compressors	↓ 1693		SCREW FLOODED
R-W-G05-Z water cooled, 248		444	66 INVERTER S OIL FREE L FLOODED
RCS-FC-G05-Z air ooled, oilfree centrif. compr., 299 ▶ ee-cooling	∢ 1671		INVERTER OIL FREE CF EC FAN FL FLOODED
	▲ 1450		SCREW AXIAL / T SHELL&T.

Air Cooed chillers and f	ree-cooling	chillers with F	R454B	GO6 SERIE	S P _{R454B}	
NR2-G06-Z air cooled, scroll compressors	55,9 🕨			∢ 1216		SCROLL AXIAL PLATES T SHELL&T.
		100 50	0	1000 1500) kW	

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



INVERTER

VAIF

Smart

Water source heat pumps

NRCS-WQ-Z scroll compressors	48,4 •					4 284	SCROLL P PLATES
ERRCS2-WQ-Z scroll compressors			189 🕨			<mark>∢</mark> 318	SCREW SHELL&T.
	50	100	150	200	250	300 kW	

Air and water source 4-pipe	heat pum	ps with R513	GO5 S	ERIES PISTA	
ERRCS2-Q-G05-Z air source, screw compressors	199 🕨			826	SCREW SC AXIAL / C EC FAN / T SHELL&T
i-FR-Q2-G05-Z air source, inverter, screw compressors		443 🕨		985	INVERTER SCREW C EC FAN / T SHELL&T.
ERRCS2-WQ-G05-Z water source, screw compressors	189 🕨	4 318			SCREW/T SHELL&T.
	200	400	600 800	1000 kW	



TELECOM/SHELTER COOLING

Reliability and extended operation

- High capacity sensitive cooling
- Black out management



Air conditioners for telecom applications	with free-cooling	g and full DC inverter technolog	ал
MINIPAC EVO packaged for outdoor installation 1,95 >		₹ 20,6	OUTDOOR CENTRIE CE FAN
MINIPAC EVO INV packaged for outdoor installation / inverter techn.	8,56 >	∢ 17,6	OUTDOOR CENTRIE. CE FAN
ENERTEL EVO packaged for outdoor installation packaged for indoor installation		 14,8 	INVERTER INDOOR CENTRIE CE FAN
ENERTEL EVO INV packaged for indoor installation /inverer techn.	8,51 ▶	4 18,1	INVERTER INDOOR CENTRIF. CE FAN
SPLIT EVO split system / ceiling or 4,94 V wall installation		₹ 16,8	WALL INSTALLATION CENTRIE C FAN
SPLIT EVO INV split system / ceiling or wall installation /inverter tech.	8,64 >	 17,3 Inverter 	Wall INSTALLATION CENTRIF.
5	10	15 20 kW	

CONTROL, SUPERVISION AND OPTIMISATION SYSTEMS

-	_	
-	_	
7	1.11	1

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.



HPC - Hydronic Plant Connect HPC is a new control logic, completely integrated in the units' controller, that allows one to manage the entire hydronic IT cooling plant.



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

BANEDANMARK TIER III

Ringsted - Denmark

Period: 2020 - 2021 Application type: Data Center System type: Hydronic System, HPAC System Cooling capacity: 771 Installed Units: 3x i-NR-Z/SL 0302P, 1x i-FR-G04-Z/SL-A 2602, 8x COOLSIDE,



DNV-GØDSTRUP HOSPITAL

Herning - Denmark

2x Aisle Containment

Period: 2020

Application type: Healthcare / Hospitals, Data Center System type: Hydronic System, HPAC System

Cooling capacity: 766

Installed Units: 2x TRCS2-W HFO-Z/HC/S, 24x Coolside CW-I 0060, 2x w-NEXT DL/S 042, 2x w-NEXT DL 022, 2x w-NEXT DL 042, 84x RACK 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





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