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

ER-HT-C

WATER TO WATER HIGH TEMPERATURE CHILLERS FOR HEAT REUSE APPLICATIONS. FROM 52 TO 205 KW.

r R134a

r R513A

ER-HT-C

THE SMART WAY TO REUSE HEAT WITHOUT WASTE.

**Water-source chiller with dual Scroll compressor.
From 52 to 205 kW.**

ER-HT-C is the ultimate **chiller** solution for indoor installation equipped with dual scroll compressor and plate heat exchanger.
Ideal for IT Cooling applications (warmer water temperatures and heat recovery systems), the range can use R134a as refrigerant or contribute to a lower environmental impact thanks to the use of low GWP refrigerant R513A.

IT COOLING

Heat recovery from server rooms and reuse to meet the heating load of the same building or to sell heat to neighbouring buildings or district heating system.
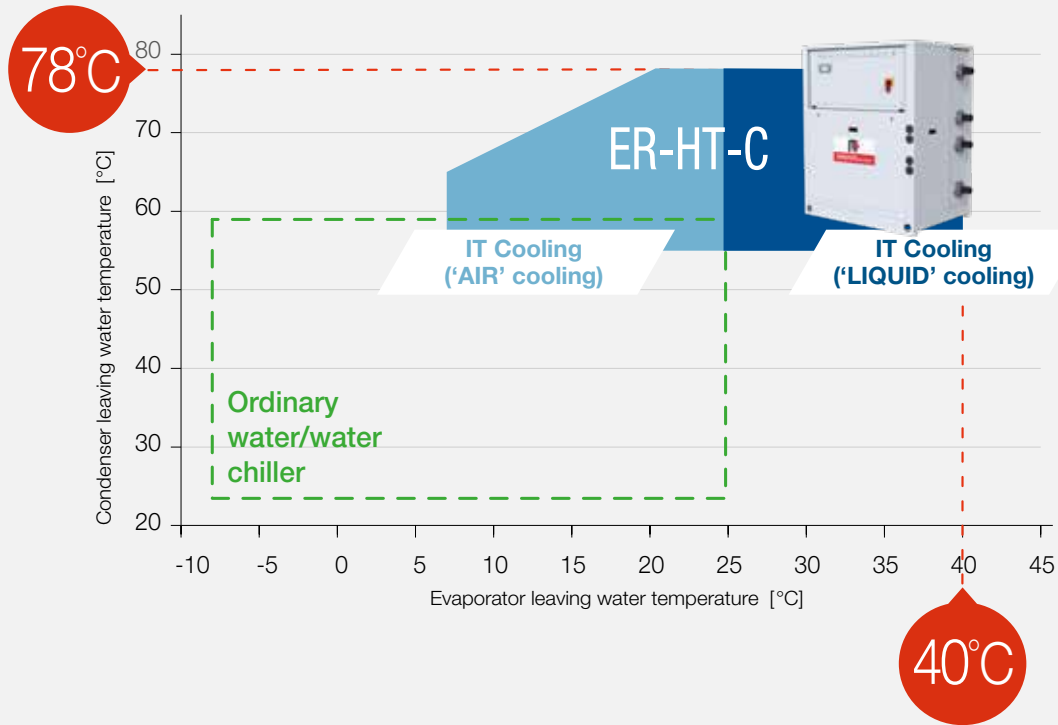In fact, its high leaving water temperature gives data centers more chances to reuse exhausted heat for wide applications, resulting in higher ERF.

ALL-ROUND SUSTAINABILITY

r R513A

Fully committed to supporting the creation of a greener tomorrow, ER-HT-C-G05 combines brilliant efficiency with the use of a low GWP refrigerant that tackles both the indirect (due to the primary energy consumption) and the direct global warming impact.

78°C

80

Condenser leaving water temperature [°C]

ER-HT-C

70

60

IT Cooling ('AIR' cooling)

IT Cooling ('LIQUID' cooling)

50

40

Ordinary water/water chiller

30

20

-10 -5 0 5 10 15 20 25 30 35 40 45

Evaporator leaving water temperature [°C]

40°C

REDUCED SIZE AND NOISE LEVEL

This water to water heat pump is purposely designed to fit the requirement of indoor installation. The smart component disposal minimizes the footprint but still grants simple and safe access to the internal parts.

Furthermore, as a result of a soundproofing oriented design and a dedicated acoustical enclosure, the units achieve a remarkable noise emission of only 70 dB(A).

INDOOR INSTALLATION

Plant rooms are usually located within the buildings. Narrow spaces and tangled unorganised pipes are huge obstacles for the installation and maintenance operations of a machine.

Furthermore, raised noise levels and vibrations may seriously compromise the usability of the adjacent rooms.

Today, reduced footprint, easy installation and quiet operation are crucial features for any technical unit.

ER-HT-C-G05

IT COOLING

No kWh wasted

Reduced carbon footprint

Wide application

DATA CENTER "HEAT REUSE"

Because of the high condenser leaving water temperature, ER-HT-C enables data centers to reuse exhausted heat for wide applications, resulting in having more chance to achieve higher ERF than lower temperature

- ✔ No kWh wasted
- ✔ Reduced carbon footprint
- ✔ Possible to reuse heat in the same building, or sell heat to neighbouring buildings or district heating system
- ✔ Wide application
  - Room heating
  - Domestic hot water
  - District heating system (higher selling price at higher temperatures)

The wide range of evaporator leaving water temperature is suitable for both air-cooling and liquid-cooling systems.

- ✔ Efficient liquid cooling with "warm" chilled water As secondary inlet temperature at CDU could be around 40°C or more, liquid cooling can enable higher chilled water, which optimize the overall performance of facility infrastructure.
- ✔ Flexible operation mode maximizes your efficiency
- ✔ Operation mode switches, adapted to heat demand and climate
  - Heat Recovery mode
  - Free Cooling mode
  - Chiller mode

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FOR IT COOLING APPLICATIONS:
the flexible link that completes today's systems and creates new usage opportunities

DRY COOLER

20

CRAH

ER-HT-C-G05

Gas boiler

78

ER-HT-C-G05

CRAH

40

CDU
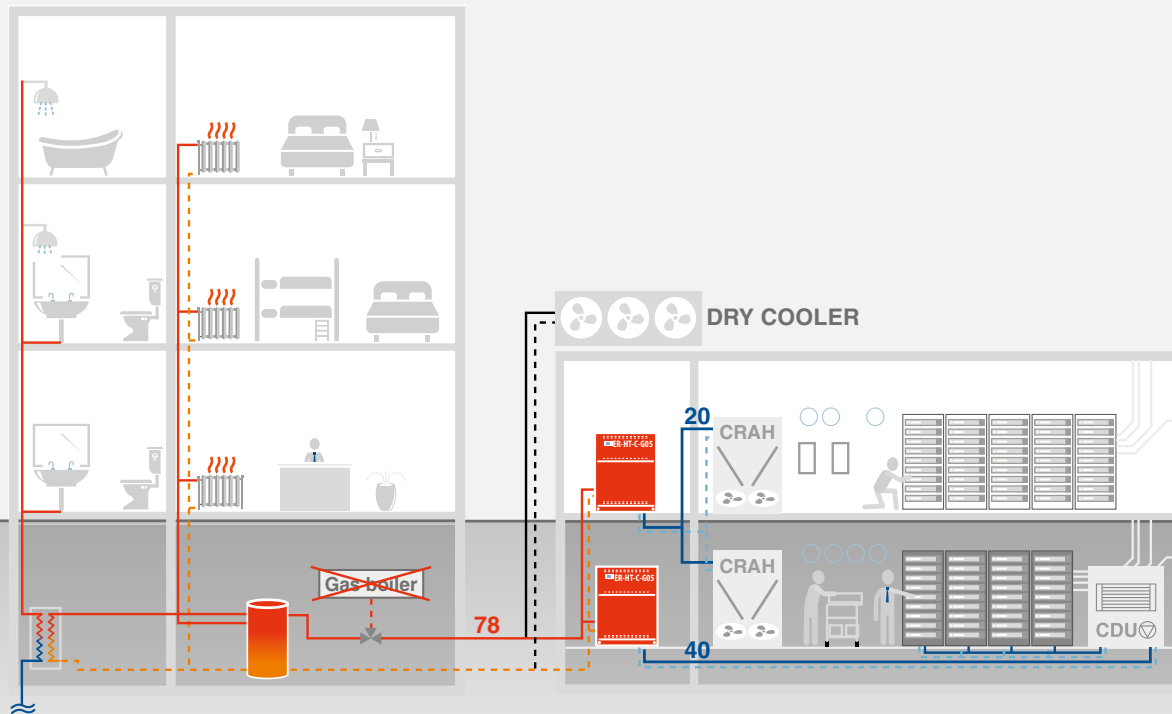
ENERGY REUSE FACTOR (ERF)

Energy Reuse Factor (ERF) is set to become a new vital consideration for the design and operation of data centers.

ERF is defined as the ratio of energy being reused divided by the sum of all energy consumed in a data center.

ERF

$$ERF(\%) = \frac{\text{Energy reused}}{\text{Total DC energy consumption}}$$

TECHNOLOGICAL CHOICES

CONTROL

W3000+ Controller: The customer has the same platform used on the larger machines and thus is facilitated in maintenance/start-up. Master-client function that manages up to 4 interconnected machines by rotation of them according to the working hours of each.

DEDICATED SCROLL COMPRESSORS

Fixed speed scroll compressors.
Specifically designed to work with High Temperatures
Operating envelope towards both high evaporating and condensing temperatures.
Balanced compression mechanism and robust components, for high durability, safety and silence.

HEAT EXCHANGERS

Plate heat exchangers
Blaze-welded dplate heat exchangers, dual circuit type.

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INDEPENDENT REFRIGERANT CIRCUIT

Two independent refrigerant circuits in all sizes to grant: continuous and independent operation in any condition. Support the use of the extended operating range on the compressors.
High flexibility to the heating requests of the plant.

ELECRONIC EXPANSION VALVE

Managed by proprietary dedicated logics to guarantee an excellent flow control and a highly precise temperature control in every load condition.

NEW INTRODUCED OPTIONS

The new ER-HT-C series is accompanied by a wide range of innovative options that further enhance the unit's performance.

External dry-cooler management:
It is mainly a dedicated logic for combining our chiller with the dry-cooler to achieve energy savings in IT cooling applications where the discharge water has higher temperatures and thus the effect of FC is enhanced.

Leak detection systems:
ER-HT-C can be equipped with systems for early detection of refrigerant leakage than can also potentially shut-down the unit.

"EXPERIENCE IS BY FAR THE BEST PROOF"

LUMI
Data Center
Kajaani-Finland

Period:
2018 - 2023

Application type:
Data Center

System type:
Hydronic System

Cooling capacity:
3960 kW

Installed Units:
2x TX-W-G05 2B00,
1x FOCS2-W HFO-Y/H/S 7204

PROJECT

LUMI is the first pre-exascale supercomputer of the EuroHPC JU - European High-Performance Computing Joint Undertaking- and is now Europe's most powerful supercomputer, located in Kajaani, Finland. LUMI offers European researchers a world-class tool for development understanding complicated phenomena, such as climate change and serves as a platform for international research cooperation and for the of artificial intelligence and quantum technology.

CHALLENGE

The LUMI data center has been recognized as the Green Data Centre of the Year in the 2023 Data Centre World Awards. In line with this prize the wasted heat from Lumi, feeds the local district heating network, combining sustainability and energy efficiency on both sides.

SOLUTION

Mitsubishi Electric supplied very large heat-pumps to cool the microprocessors and recover heat and making usable for the building and neighbourhood. Mitsubishi Electric units have near-zero GWP refrigerant and come with optimised design for excellent ROI are also able to accept up to 48°C inlet water at cooling side.

Fortum District Heating

Kirkkonummi-Finland

Period:
2017 - 2018

Application type:
Data Center

Cooling capacity:
27150 kW

Heating Capacity:
26486 kW

Installed Units:
2x FOCS2-W HFO/H/CA/S 5422,
8x ACU EXPANDED

PROJECT

Fortum, a Finnish energy company, utilizes the waste heat from a data center to supply the heat into a district heat network in a very innovative and sustainable way. The facility currently generates between 10,000-15,000 megawatt-hours of heawaste annually.

CHALLENGE

The heat pumps are used as a primary cooling method for the data center. Fortum's long-term goal is to serve all the district heating customers in Espoo, Kirkkonummi, and Kauniainen regions with carbon-neutral district heat by 2030. Using the heat waste of a data center is a good example of how it is actively possible to move towards low-carbon district heating. Furthermore, as demonstrated in several projects throughout Europe, heat pumps are an energy efficient and economical solution for district heating systems.

SOLUTION

To recover the heat waste of the Ericsson data center and serve the district heating in Kirkkonummi, 2 FOCS2-W HFO/H/CA/S 5422 heat pumps were supplied. The FOCS2-W HFO heat pumps were selected for their efficiency and sustainability as they use HFO-1234ze refrigerant (1,3,3,3-Tetrafluoropropene), which has a minimal greenhouse effect.

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