

**mitsubishi electric**  
**HYDRONICS & IT COOLING SYSTEMS S.p.A.**

IT COOLING

FREE-COOLING CHILLER

# TR2-FC-Z **G04**

**THE FREE-COOLING CHILLER  
DEDICATED TO HYPERSCALE  
AND COLOCATION DATA CENTERS**

**r** HFO  
1234ze



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



# TR2-FC-Z **G04**

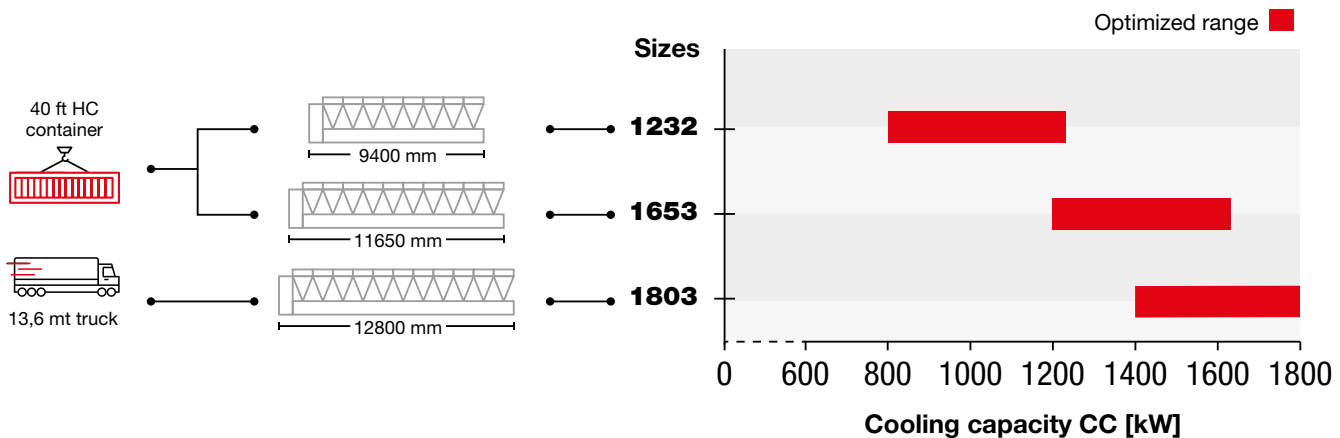
The RC® TR2-FC-G04-Z is a high-capacity range of free-cooling chillers based on the oil-free magnetic levitation compressor technology, specifically designed for data center applications.

Available in free-cooling and free-cooling no glycol versions, these chillers are suitable for the different climate conditions all around the world. They are designed for increasing the cooling density, minimizing energy consumption in any climate condition and maximizing efficiency at every load conditions.

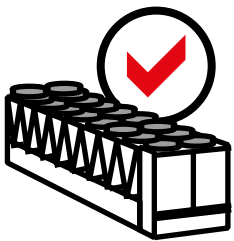
The TR2-FC-G04-Z combines the most efficient compressor technology available on the market together with the use of free-cooling technology. A brand new FC logic provides the smartest management of resources, leading never before seen annual energy savings.

These characteristics emerge even more in terms of the environmental impact the series has; new models have been specifically developed and designed for use with the low Global Warming Potential (GWP) refrigerant R1234ze.

TR2-FC-G04-Z is the unrivalled choice for all hyperscale and colocation data centers, as it can be fully customize to the needs of your specific set-up and use.



## Free-cooling chillers at cutting-edge efficiency for the modern Data Center industry



### Optimized Range

Thanks to the smart design, the unit is always transportable in a standard truck, and the first two sizes also in a 40' HC container.



# Discover the unbeatable solution for your data center



## Environmental friendly

- Specifically designed for low GWP **R1234ze refrigerant**
- Various leak detection options preserves the environment

## TR2-FC-G04-Z is the result of Mitsubishi Electric Hydronics & IT Cooling Systems' extensive approach to sustainability.

Achieving outstanding performance and ensuring long-term sustainability are challenges that modern HVAC systems need to tackle.

Increasing concerns about the global warming impact of chillers and heat pumps is driving new regulatory policies

to push towards even more efficient units with the lowest carbon footprint.

Today, an all-round approach is the only way to effectively reduce the Total Equivalent Warming Impact (TEWI).

### TO LEARN MORE ABOUT GREEN REFRIGERANTS

<https://www.melcohit.com/en/what-we-do/green>



## Minimum consumption, maximum efficiency



- Oil-free centrifugal compressors and flooded evaporator ensure the best performance combination available on the market
- **New free cooling logic** to achieves sensational annual energy savings
- **R.E.D. cooler patented solution** improves the thermodynamic cycle
- **Energy monitoring** supervises the performance of the unit

# BEST-IN-CLASS HIGH EFFICIENCY CHILLERS FOR SUSTAINABLE IT COOLING

## Installation care



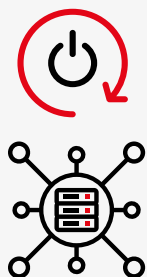
- **Low power absorption** allows you to downsize GENSET and all power equipment, minimizing initial investments.
- **Different acoustic layouts**, make the unit perfect for even the most quiet sites
- Smart current limit function reduces the absorbed current
- Filters to minimize harmonic distortion and increase the power factor
- Completely customizable solutions based on your needs

## Easy maintenance, maximum reliability

- Magnetic levitation technology gets rid of oil lubrication
- **Fully accessible V-block** eases inspection and cleaning of the coils
- Several coil treatments to withstand harsh environments



## Design for critical environments



- **Fast restart** function enables quick cooling recovery
- **ATS** for a quick switch to a secondary power supply
- **Predictive maintenance** through ClimaPRO+ increases uptime and service continuity
- **2-level alarm management**
- Complete remote monitoring and e-mail notification keeps the system always under control

**TO LEARN MORE ABOUT  
DATA CENTERS**

<https://www.melcohit.com/en/stories/366/data-center>



# TECHNOLOGICAL CHOICES

## FAN SECTION

- Higher FC potential thanks to **Ø910 mm EC fans**
- Sound emissions can be improved by fan diffusers and fan plenum

## COIL SECTION

- Complete redesign of the coil geometry: compact footprint and wide heat exchange surface
- **R.E.D. cooler patented solution** improves the thermodynamic cycle increasing both efficiency and cooling capacity



**R.E.D. Cooler**  
Reduced Exergy Depletion

## SPLIT ELECTRICAL BOX

- Ergonomic electrical panel allows you to easily access at the brain of the unit
- Ventilation of the electrical panel ensures the correct working window for the electrical and electronical equipment



## OIL-FREE CENTRIFUGAL COMPRESSOR

- The most efficient compressor available on the market.
- **Absence of inrush current** completely avoids start up issues.
- Magnetic levitation technology completely removes the need for oil lubrication, reducing maintenance costs.

**TR2-FC-Z brings advanced technology, components and know-how together in customizable packages to aid design, specification, installation, and on-going operations.**

## V-BLOCK STRUCTURE

- Optimized layout through advanced CFD analysis led to outstanding cooling capacity – footprint ratios.
- **Removable lateral shields** ensure a complete access to the units, easing maintenance and cleaning
- No compromise in the height of the unit. Unit is shippable with a HC 40' container.



## FLOODED EVAPORATOR

- State of the art flooded evaporator enables the unit to achieve unrivalled efficiency and wide operating maps

## LOW LIFT PUMP



- New solution allows the compressor to operate even below the standard low lift limit.
- **Perfect solution when leaving water temperature is high** since it extends the compressor working map

## TECHNICAL DATA TR2-FC-Z

<https://www.melcohit.com/en/products/2949>



# The new free-cooling management

TR2-FC-G04-Z is equipped with all state-of-the-art technologies: oil-free centrifugal compressors with low lift pump, latest generation EC fans, super-efficient heat exchangers.

But power without control is useless. This is why, we in MEHITS have written a new control logic redesigning the world of free cooling, reaching efficiencies never seen before on the market.

The new free-cooling logic provides a more efficient cooperation of the core technologies of the unit in the hybrid cooling mode, the most relevant in terms of annual consumption.

This improvement compared to a traditional control logic ensures annual energy savings in the range of 10/20%, depending on water temperature and climate. Tested and validated in our laboratories, the new free cooling logic has set a new pillar in the free cooling chiller world.

UP to  
-20%

## A COMPLETE PACKAGE WITH FANWALL INDOOR UNITS

Complete your IT Cooling plant with the new RCWALL, the state-of-the-art fanwall indoor unit.



### Raised floor not needed

The absence of raised floor reduces costs and routine maintenance.



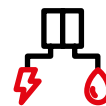
### Lower initial cost per kW

Reduced initial costs compared to traditional solutions due to product design.



### Modular design

With stackable modules.



### Connection flexibility

Top and side hydraulic connections are available to match the needs of the plant.



### Full frontal accessibility

To main components from suction side (blown coil).

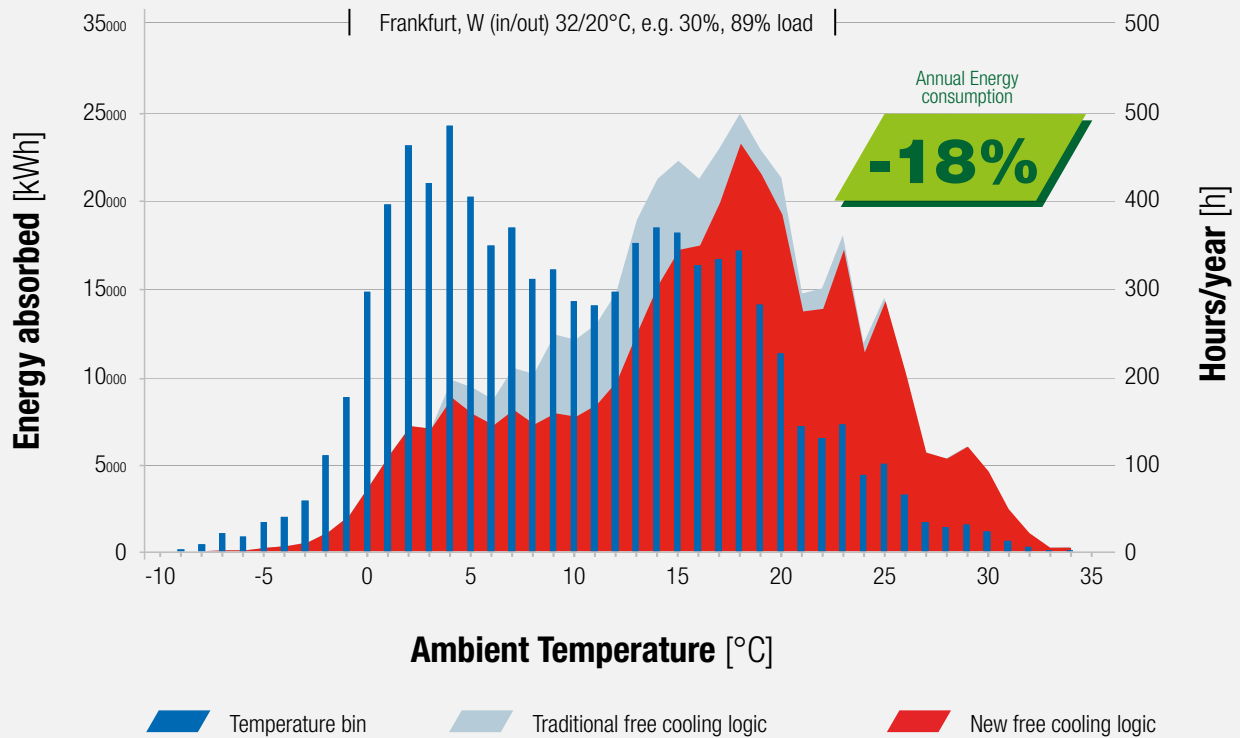


### More room available for equipment

The positioning of the units in the technical corridor provides more usable space for the server racks.



## energy analysis



## clima PRO+ The plant room controller, Optimizer and diagnostic device

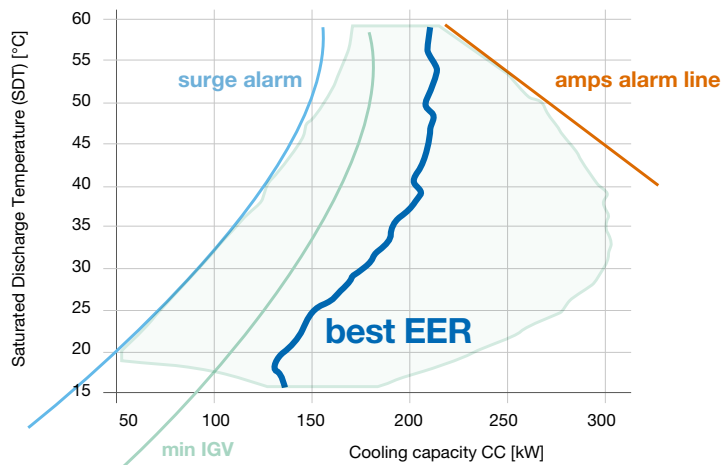
ClimaPRO+ changes the way you manage your IT Cooling plant and introduces a new approach to your cooling plant management.

Discover this advanced optimization device entirely geared towards maximum efficiency and value over time.

- Easy management of entire plant through a **single-access-point**
- **Optimization** of the entire cooling plant
- **Pump management**
- **Detailed energy report** of the entire cooling system
- **Real time monitoring** and **predictive maintenance**
- Redundancy management up to **Tier IV** certification

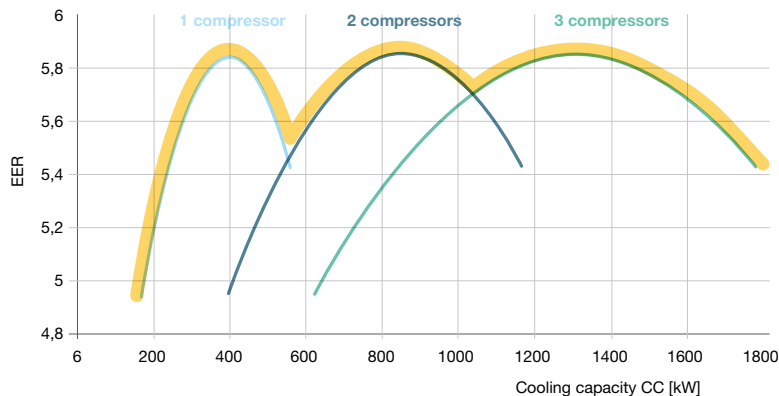


# Always the Highest Efficiency



W3000+ control logic, optimally manages the correct compression ratio, the rotation speed, the position of IGV (Inlet Guide Vane) and the opening of the by-pass valve.

All this to ensure that the compressors - during start-up, in operation, in response to the thermoregulator and during shutdown - **always work in complete safety** (away from the limits of the “surge” and “amps”).



W3000+ constantly monitors the compressor: the cooling capacity required by the thermoregulator is achieved by making the compressor work only in the envelope's area with the **highest efficiency** (curve “best EER”).

In addition, the exclusive **‘jumping staging’** logic, enabling, during partialization, only the most efficient combination of compressors.



## Interxion Data Center

Copenhagen - Denmark

**Cooling capacity:** 3830 kW

**Installed Units:** 5 x oil-free centrifugal free cooling chillers

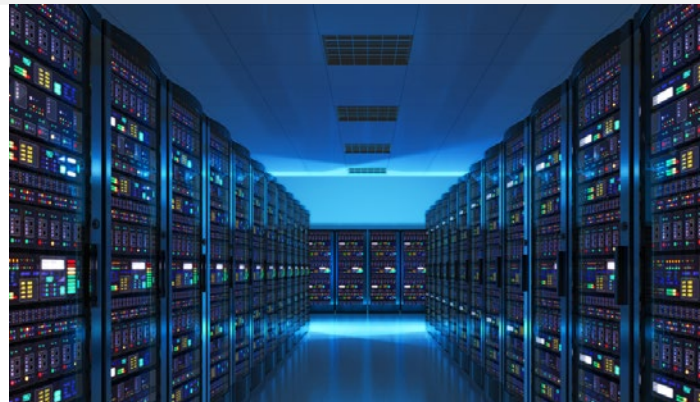


## OS-IX Data Center

Oslo - Norway

**Cooling capacity:** 5550 kW

**Installed Units:** 8 x oil-free centrifugal free cooling chillers 41 x indoor chilled water unit + aisle containment



## Data Center Group

Munich - Germany

**Cooling capacity:** 1800 kW

**Installed Units:** 8 x oil-free centrifugal free cooling chillers 16 x indoor chilled water unit





**mitsubishi electric hydronics & it cooling systems s.p.a.**

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