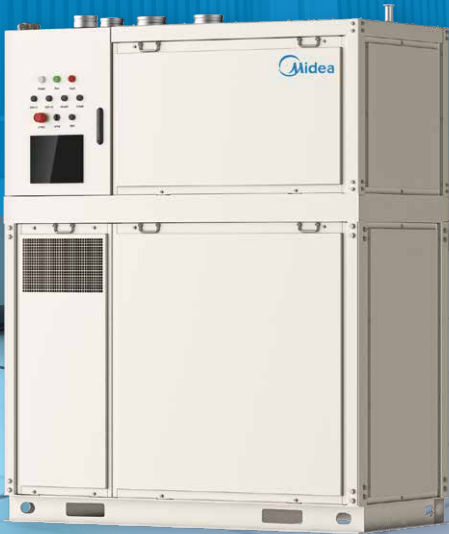


SMART IN ONE

DATA CENTER SOLUTIONS
Magnetic CDU



Midea Group
Midea Building Technologies Division

202608

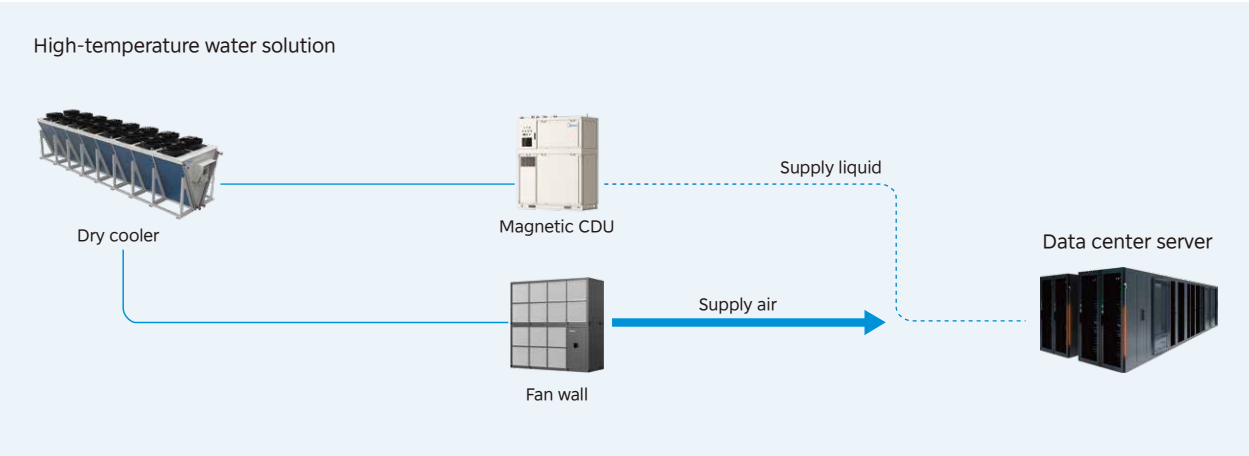
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Midea reserves the right to change the specifications of the product, and to withdraw or replace products without prior notification or public announcement. Midea is constantly developing and improving its products.



Data Center Solutions

Product Overview

Midea's Magnetic CDU (Coolant Distribution Unit) is developed for air-liquid hybrid cooling data center. It is Midea's latest generation of oil-free variable-frequency centrifugal chiller products, provides seamless cooling for high-density IT infrastructure. It is engineered for reliability and maximum efficiency.



Features

Wide Chip Compatibility & Flexible Deployment

The secondary water supply temperature is adjustable from 20 °C to 45 °C, matching heat dissipation demands of all types of chips and supporting all computing scenarios.

Elevated Inlet Temperature for Reduced Water Consumption

The maximum primary-side inlet temperature reaches 41 °C. Dry coolers can meet primary water supply requirements in most regions globally, greatly reducing water consumption of data centers.

Dual Protection for Extended Service Life

It adopts rigorous compressor hard-landing protection technology, which has been validated by professional third-party testing with over 300 protection cycles, to deliver worry-free operation throughout the entire lifecycle.

Patented power-loss self-generation technology guarantees smooth shutdown of the compressor every time, supporting a service life of up to 30 years.

Rapid Load Response & High-Precision Temperature Control

Equipped with permanent magnet synchronous motor compressors, the unit delivers ultra-fast response.

Mode switching under sudden load fluctuations can be completed in as fast as seconds, minimizing the impact of water temperature variation.

Real-time adaptive load monitoring sustains long-term water temperature stability within ± 0.1 °C, and restricts transient deviation to within ± 1.0 °C during rapid mode transitions, ensuring uninterrupted stable operation for all chips.

Built-in Free Cooling for Balanced Adaptability & Energy Efficiency

Integrated with a free cooling heat exchanger, the unit supports flexible switching among hybrid cooling and free cooling modes, realizing wide-range temperature regulation while maintaining high energy efficiency.

Multi-Layer Leakage Prevention Design

The system integrates multiple safety protection mechanisms, including liquid leakage detection, alarm triggering, and automatic safety shutoff.

Controller Redundancy for Non-Stop Operation

Supports redundant controller configuration. Each single module enables online maintenance and non-disruptive replacement to guarantee year-round high-availability operation of the system without downtime.

2N Redundancy for High Reliability & Full Front-Access Quick Maintenance

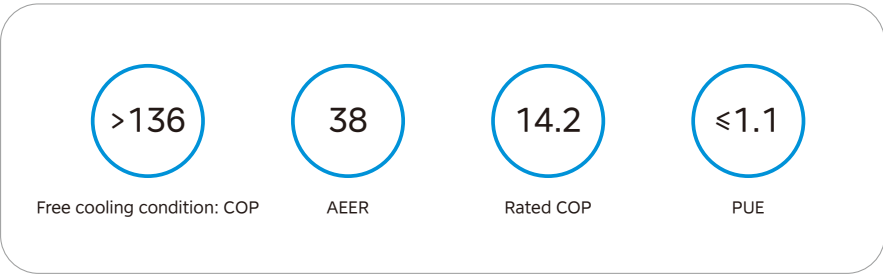
Key components adopt 2N redundancy design, delivering a product lifecycle availability of 99.98% or higher.

All maintenance operations can be completed from the front of the unit, greatly reducing service downtime.

Introduction to Magnetic CDU

Ultimate Efficiency

- The unit is equipped with a high-efficiency magnetic bearing compressor, paired with a free cooling module, achieving high efficiency and energy saving throughout its entire lifecycle.

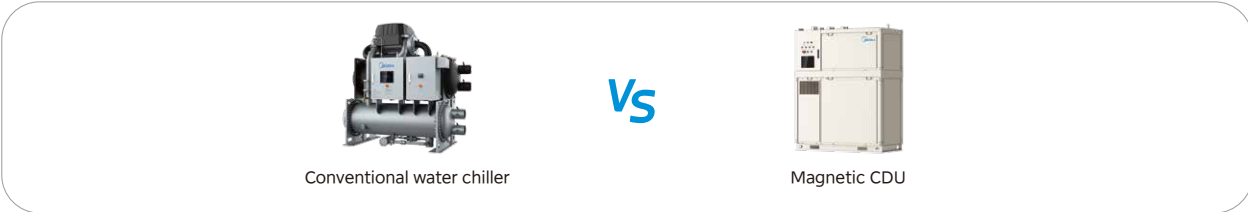


*Energy efficiency data is calculated based on meteorological parameters for the Kuala Lumpur region.



The Land Area Has Been Reduced by 70%

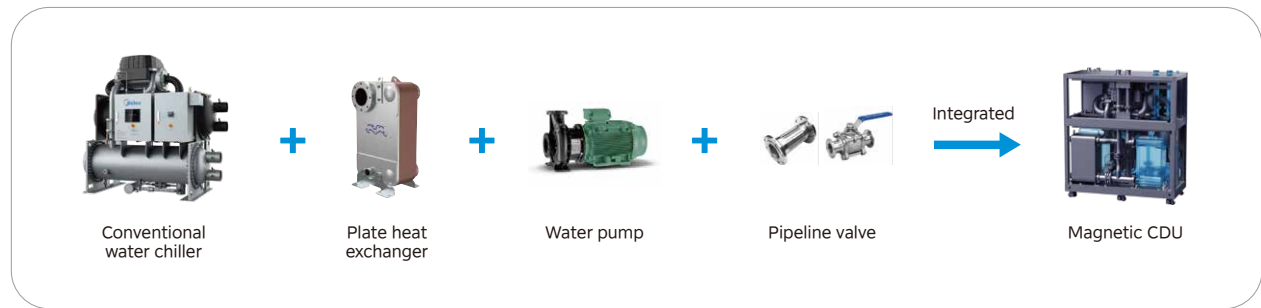
- The unit features a compact, integrated design with all components integrated within the main body, reducing its floor space by 70% compared to conventional all water chillers. With dimensions similar to L2L CDU, it enables seamless replacement of existing CDU and fits both new construction and renovation projects.



Operating Mode

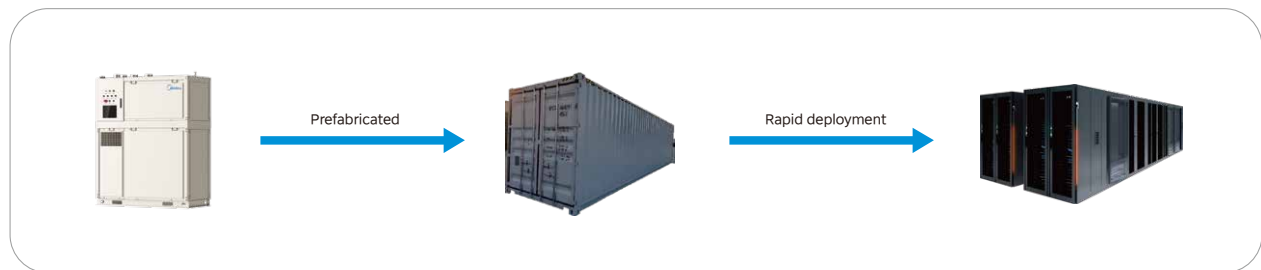
Integrated Water Pump and Engineering Productization

- The unit features an integrated design, with the water pump, pipeline and valve integrated into the body, saving on engineering installation design, realizing engineering productization, and shortening TTM by 20%.



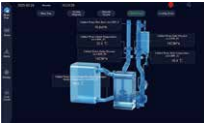
Container Prefabrication Available

- The unit features an integrated design with casters for easy movement and installation, and can be prefabricated into containers for one-click deployment of data centers.



User-Friendly HMI and Control

- Midea's microcomputer control system offers a user-friendly interface. It provides easy access to common control functions, including intelligent operation, safety protection, and interlocking control, ensuring safe startup and shutdown, efficient performance, and intelligent system management.



Interface display

- 10" true color graphics display
- Unit operating data and status
- Early warning/alarm display and recording
- Historical data query function
- Compressor interface
- Parameter setting interface



Operation control

- Independent start/stop function
- Pause operation function
- Timed on/off
- Automatic load increase/decrease
- Soft loading function
- Detailed unit status inquiry

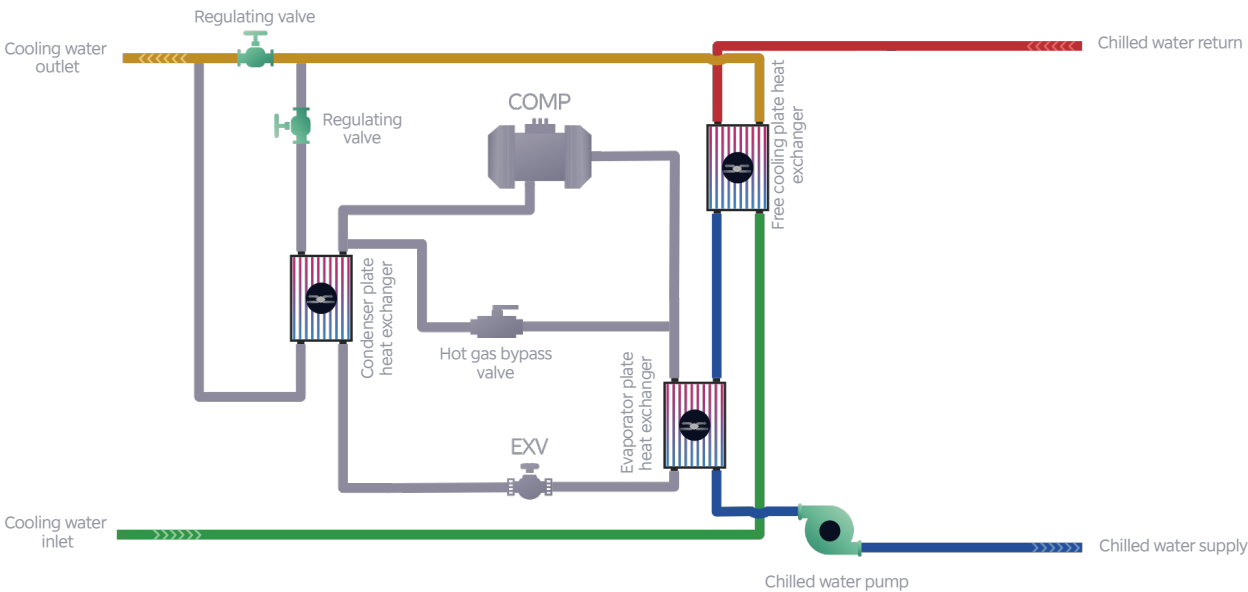


Interlock control

- Compressor anti-surge interlock
- Pre-alarm interlock control
- Pause/shutdown guide vane interlock
- Pre-start safety check
- Start-up panel interlock control
- Superheat degree monitoring (suction/discharge)

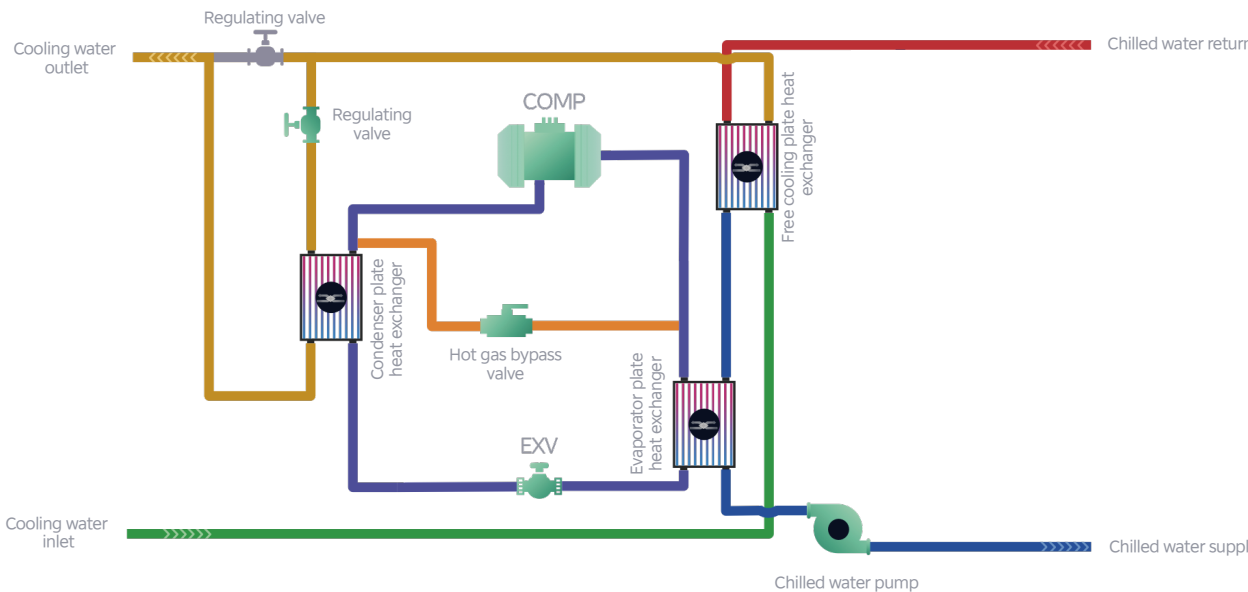
Free Cooling Mode

- The compressor refrigeration system stops working, and only the water pump runs, utilizing free cooling plate heat exchanger for refrigeration, achieving a highly efficient and energy-saving effect.



Active Hybrid Mode

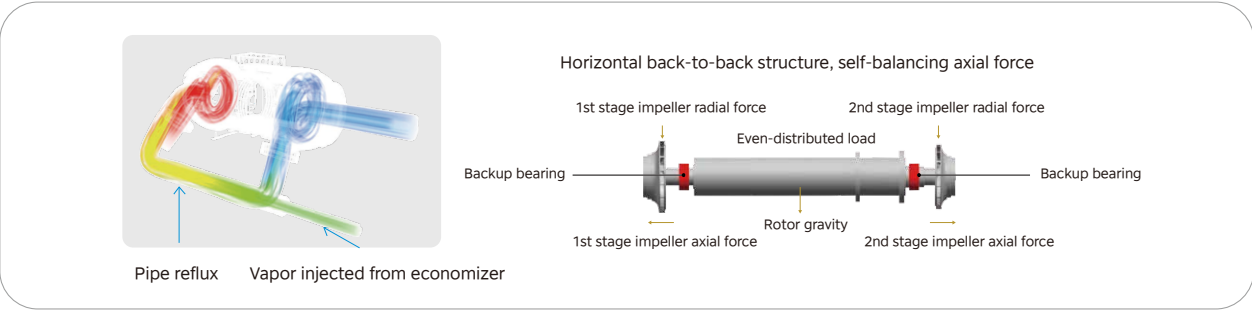
- The compressor and water pump are both turned on, and the system operates in a hybrid mode, with free cooling and mechanical refrigeration working together.



High Efficiency with Superior Energy Savings

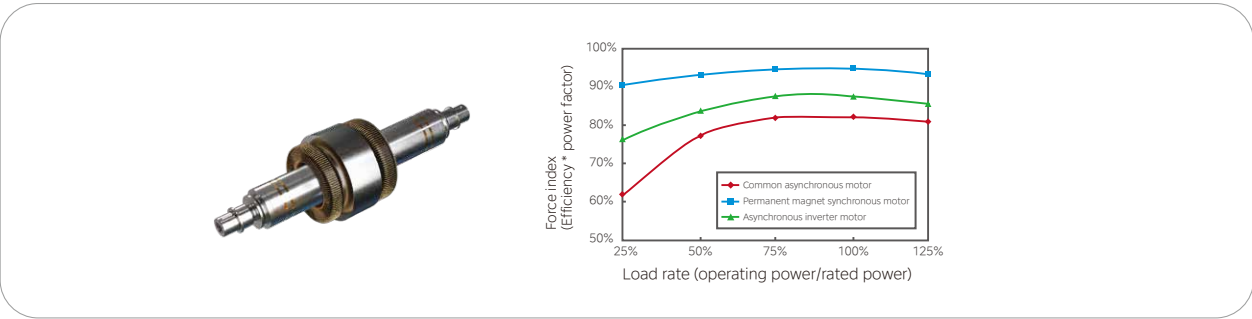
Aerodynamic Technology

- The three-dimensional enclosed impeller design ensures evenly distributed axial gas inflow into the second-stage impeller, with full flow field optimization for enhanced compressor efficiency.
- The pipe-type reflux device optimizes gasflow for smoother delivery, while the economizer enables more even gas distribution. This optimized flow field improves adaptability with smaller cooling capacities while increasing efficiency under partial loads.
- Innovative, industry-first back-to-back compression reduces axial force by 90%.



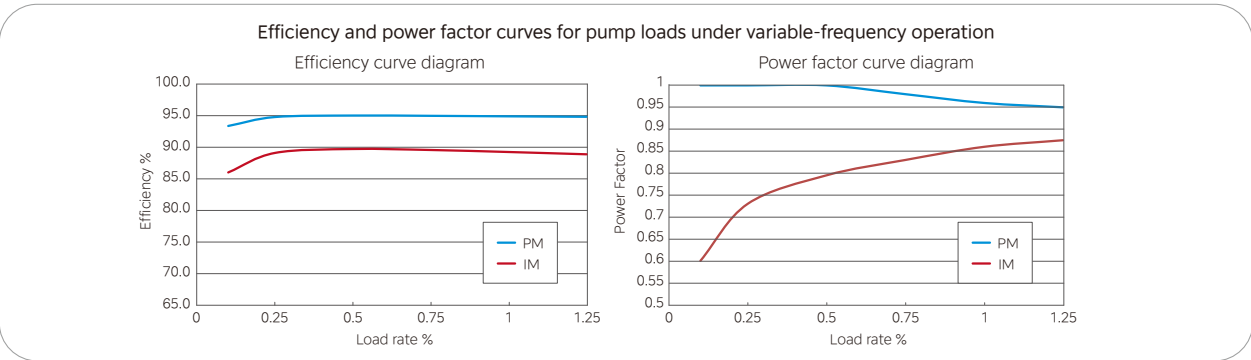
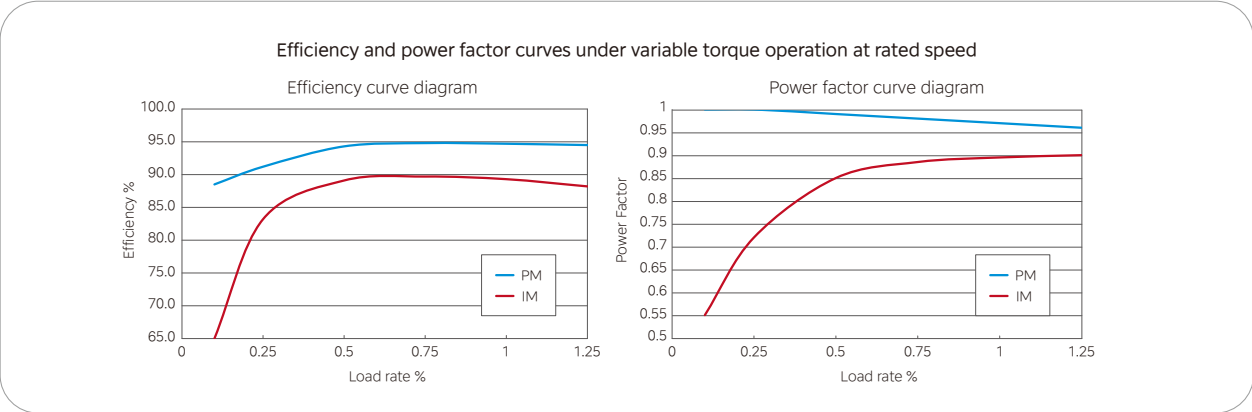
Permanent Magnet Synchronous Motor Design for Compressors

- Motor efficiency exceeds 96% in the full operating range, with highest efficiency of up to 97%.
- Space Vector Pulse Width Modulation (SVPWM) technology is employed for precise speed regulation and motor control, allowing the system to quickly adapt to changing operating conditions. This technology ensures low startup and operating current, leading to reduced electricity costs and distribution cost over the unit's lifespan. Additionally, an innovative vapor injection valve adaptively adjusts to optimize the vapor injection process for maximum efficiency.



Ultra-High Efficiency for Pump Motors Across Full Speed and Load Range

- The rotors of Permanent Magnet Synchronous Motors (PMSM) generate magnetic fields via permanent magnets without reactive excitation current, delivering an exceptionally high power factor (approaching 1). It maintains ultra-high efficiency under all rotational speeds and load conditions.
- Compared with Induction Motors (IM), it achieves outstanding efficiency across the full speed regulation range. The improvements in efficiency and power factor are particularly pronounced at low rotational speeds or low torque output.



Outstanding Starting Performance and Ultra-Fast Dynamic Response for Pump Motors

- Benefiting from high torque density, low rotational inertia, excellent controllability and outstanding starting performance, permanent magnet motors achieve ultra-fast dynamic response, shortening speed adjustment time and improving the overall system efficiency.

Reliability, Durability and Ultra-Low Noise Operation

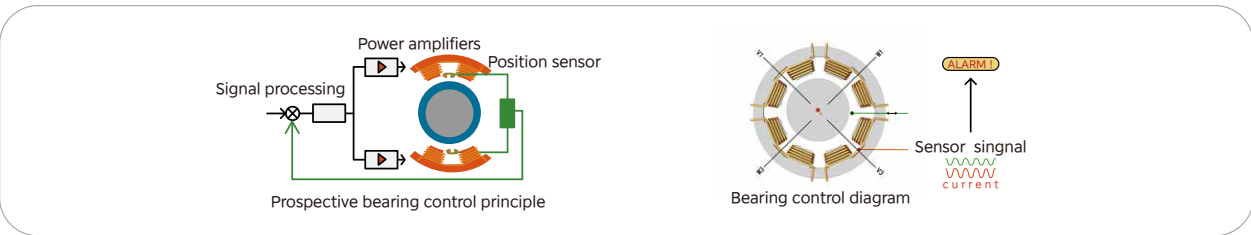
Mechanical and Electrical Control Integration

- The magnetic bearing compressor, motor, bearing control, and VFD are combined into a single, unified design, reducing the chiller system's overall size by 50% compared to conventional systems.
- The compressor features IP67 protection, ensuring it is safeguarded against water, fire, corrosion, and dust.



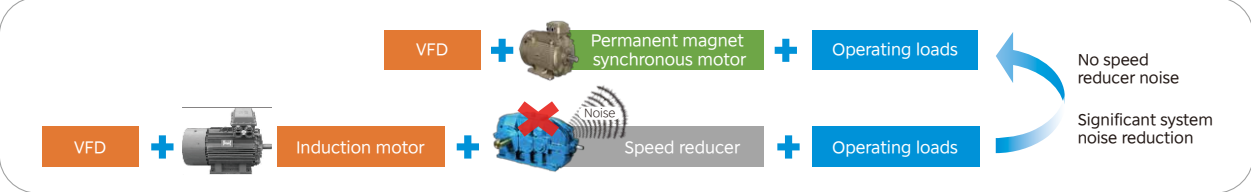
High-Precision Magnetic Bearing Control Technology

- The high-efficiency magnetic bearing 5-degree-of-freedom position control technology can monitor and correct the levitation position of the bearing in real time. The position detection frequency is 400,000 times per second.
- With a small bearing clearance of just 75 μm , the rotor's displacement precision reaches 0.5 μm in static levitation.



Ultra-Low Noise Operation for Pump Motors

- For low-speed operating conditions, replacing the induction motor and speed reducer system with a permanent magnet direct-drive system eliminates transmission noise from the reducer, delivering a significant reduction in overall system noise.



Specifications

Model		CCNG280EV(X)	
Nominal Cooling Capacity	RT	325	
	kW	1150	
Power Supply	/	380 V AC 3~ 50 Hz/540 V DC	
Maximum Power Input	kW	88	
Cooling EER	kW/kW	14.2	
Refrigerant Type	/	R134a	
Secondary Side	External Pump Head	m	≥12.5
	Water Flow Rate	m³/h	56
	Medium	/	PG25(25% Propylene Glycol Aqueous Solution)
	Designed Water Inlet	°C	44.5
	Pipe Connection Diameter	mm	DN100
Primary Side	Water-Side Pressure Drop	kPa	185
	Water Flow Rate	m³/h	118
	Medium	/	Water
	Designed Water Inlet	°C	34
	Pipe Connection Diameter	mm	DN125
Outline Dimensions	Length	mm	1800
	Width	mm	850
	High	mm	2200
Shipping Weight		kg	2100

Remarks:

1. The water-side pressure is 1.0 MPa. Both the chilled and cooling side pipes of CCNG280EV(X) are connected by clamps, and the clamp standard is GB5135.11. The chilled water replenishment pipe coupling is a sanitary clamp, and the clamp standard is ISO2852.

2. Standard use of R134a refrigerant, with environmentally friendly alternatives—R513A and R1234ze(E)—available as options.

3. Medium for primary and secondary sides—Water/Ethylene Glycol/Propylene Glycol Solution—available as options.

4. Due to product improvements and optimizations, the above parameters are subject to change. Please refer to the actual product.

Data Center Product Lineup

— Dry Cooler



— Water-Cooled Centrifugal Chiller



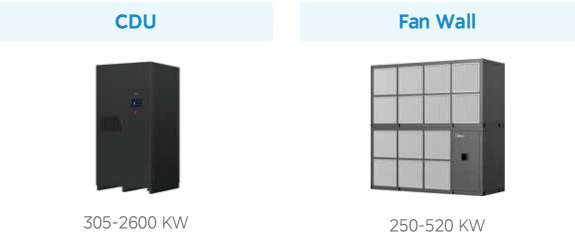
— Air-Cooled Magnetic Bearing Centrifugal Chiller



— Modular Chiller Plant



— Terminal

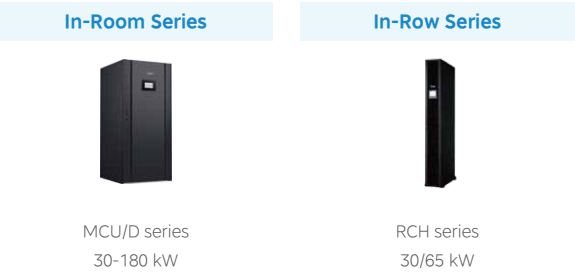


— Secondary Piping Solution



Precision Air Conditioner

— Chilled Water Precision Air Conditioner



— Air-Cooled Precision Air Conditioner

