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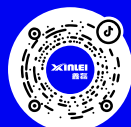
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XINLEI COMPRESSOR CO.,LTD.

XINLEI REFRIGERATION (HEATING) COMPRESSOR

- High efficiency and energy saving
- Stable and Reliable
- intelligent control
- low carbon and environmental protection



Xinlei Group is a professional manufacturer of intelligent HVAC equipment

The company was established in Taizhou, Zhejiang, and was listed on the main board of the Shenzhen Stock Exchange on January 19, 2023. As a leading enterprise in the industry, Xinlei's independent research and development and production products span the piston, screw magnetic levitation centrifugal all-fluid sector.

All kinds of magnetic levitation central air conditioning, air energy central heat pump and other air energy products in continuous innovation to achieve high energy efficiency breakthroughs, access to more than 300 authorized patents, was named the national "specialized, special and new" small giant enterprises, up to now, Xinlei has more than 800 distribution outlets in more than 100 countries and regions around the world, our energy-saving equipment and intelligent solutions have been widely recognized by the market and customer partners.

Over the years, the company has been providing customers with a comfortable, energy-saving, environmentally friendly and convenient indoor environment, with the service tenet of "innovation reflects value", and serves every customer attentively. The company has many experienced pre-sales, in-sales, after-sales service personnel, and strong team technical capabilities, creating a new world of "energy saving, environmental protection and intelligence" in the aerodynamic city.

1876

The world's first air conditioner was born in the United States

In the 20 years since the invention of air conditioning, it has always been machines, not people, that have enjoyed air conditioning

1996

Xinlei brand was founded in the era of the national "Ninth Five-Year Plan" economic take-off

2000

Xinlei's self-developed and self-produced aerodynamic products entered the European and American markets

2006

Faced the "EU anti-dumping" lawsuit and won the preliminary ruling

The daily output is 12,000 units, accounting for more than 56% of the customs export data

2017

Comprehensively layout the air/magnetic levitation centrifuge market and has made the first breakthrough

2020

It has increased production by 30% and saved energy by 50% for Sinopec, which has taken a major step on the road of "domestic substitution" of high-end air energy manufacturing

2022

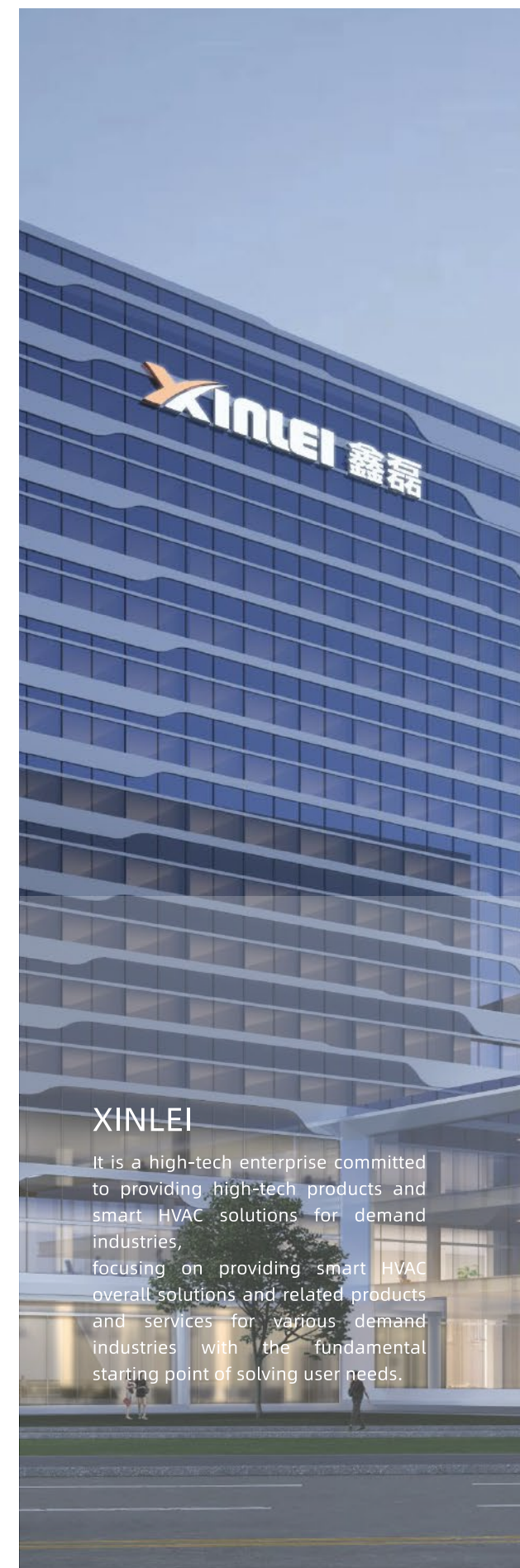
Xinlei's first maglev inverter centrifugal chiller (heat pump) unit was launched, with an energy-saving rate of up to 50%, triggering a new revolutionary journey in the industry

2023

Xinlei was successfully listed
Stock code 301317

Xinlei heat pump has achieved a breakthrough in high energy efficiency in continuous innovation

The 300RT and 1000RT water-cooled chilled water (heat pump) unit test benches have passed the certification of the National Testing Center



XINLEI

It is a high-tech enterprise committed to providing high-tech products and smart HVAC solutions for demand industries, focusing on providing smart HVAC overall solutions and related products and services for various demand industries with the fundamental starting point of solving user needs.

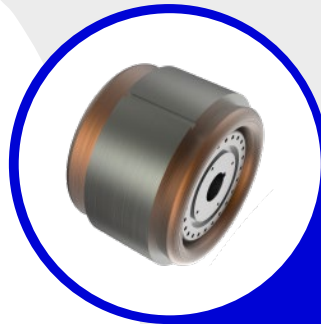
MRC Series Magnetic Levitation Centrifugal Compressors

One-stop solution

MRC series magnetic levitation centrifugal compressor is independently developed and manufactured by Xinlei based on the mature "magnetic levitation +" development platform, which applies high-efficiency multi-operating conditions pneumatic technology, high-precision magnetic levitation bearing control technology, high-efficiency permanent magnet synchronous motor technology, and two-stage compression and enthalpy boosting technology. In terms of structure, the machine adopts the inverter direct drive mode and impeller horizontal opposed mode, realizing the high efficiency and reliability of the compressor.

Three-dimensional flow closed impeller

- Adoption of advanced aerodynamic design technology, integrated CFD full flow field performance analysis, so that the compressor performance to reach a higher level;
- Adopting new type of three-dimensional flow closed impeller, **with higher impeller efficiency and lower noise**;
- Adoption of high-strength precision cast aluminum alloy, all impellers have been tested at **1.2 times** the design speed for over-speed test, so it has high reliability.

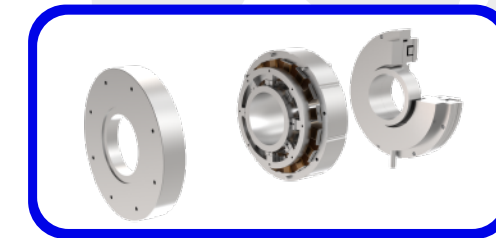
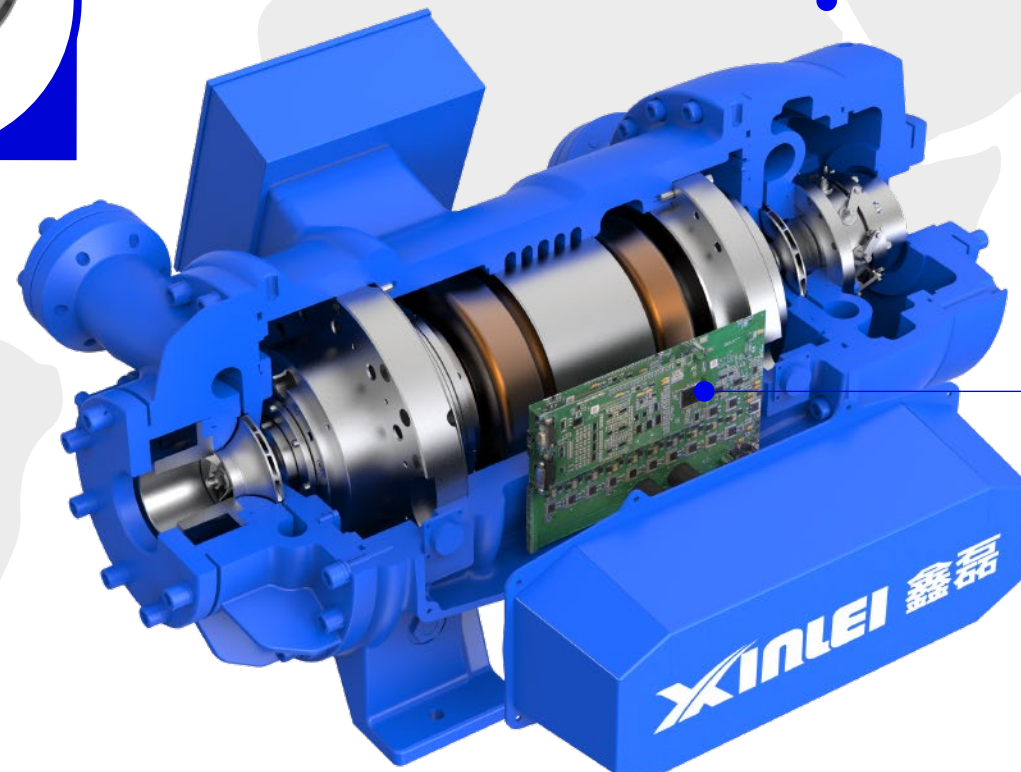
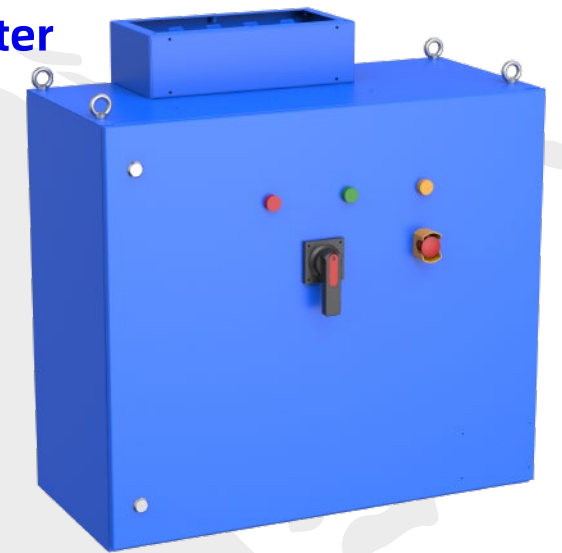


Permanent magnet synchronous motor

- Permanent magnet synchronous motors are smaller and **10%** more efficient than traditional asynchronous motors.
- High-efficiency permanent magnet synchronous motor with **97.5%** efficiency at full load and >95% efficiency at partial load.
- High reliability** due to **H-class** insulation design with a maximum temperature resistance of 180°C.

On-board refrigerant cooling inverter

- The cooling effect of refrigerant cooling is significantly better than water-cooled, compared with water-cooled inverters, **the cleanliness is higher, the life of electrical components is longer**, and there is no problem of water inverters being dirty and clogged, so the probability of accidental downtime can be greatly reduced.
- Fully closed-loop temperature and humidity intelligent thermal management system with **active refined** refrigerant control.
- Adopting multi-objective PI to control the flow rate and temperature difference, realizing high load heat dissipation and anti-condensation function, further **improving** the **reliability and applicability** of the product.



Industrial Magnetic Bearing Technology

- The radial and axial modular design allows the bearing to achieve a compact structure and stable performance;
- Oil free, zero friction, low power consumption, only **3-10%** of conventional oil bearings, and the higher the speed, the more obvious energy-saving effect;
- Stable and reliable, the magnetic bearing can withstand the compressor's **continuous violent vibration** for a long time **without falling**.

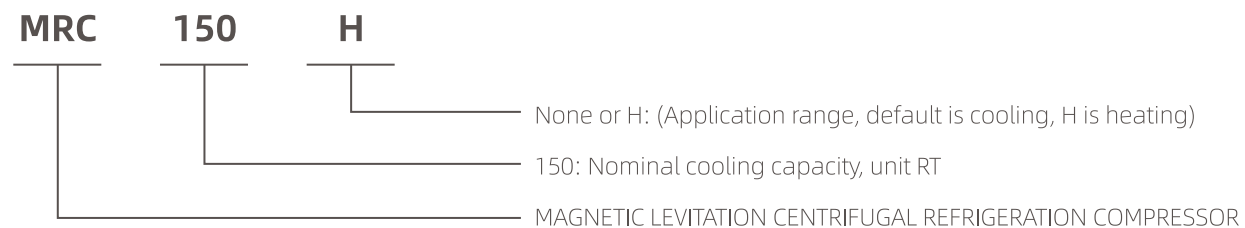
Bearing Controller

- Adopting high-precision components, rationalized arrangement, with **high control precision** and **strong anti-interference ability**, and passed the third-party EMC test;
- Integrated on the compressor with temperature field simulation design for **precise cooling**, no risk of condensation, long-lasting reliability.

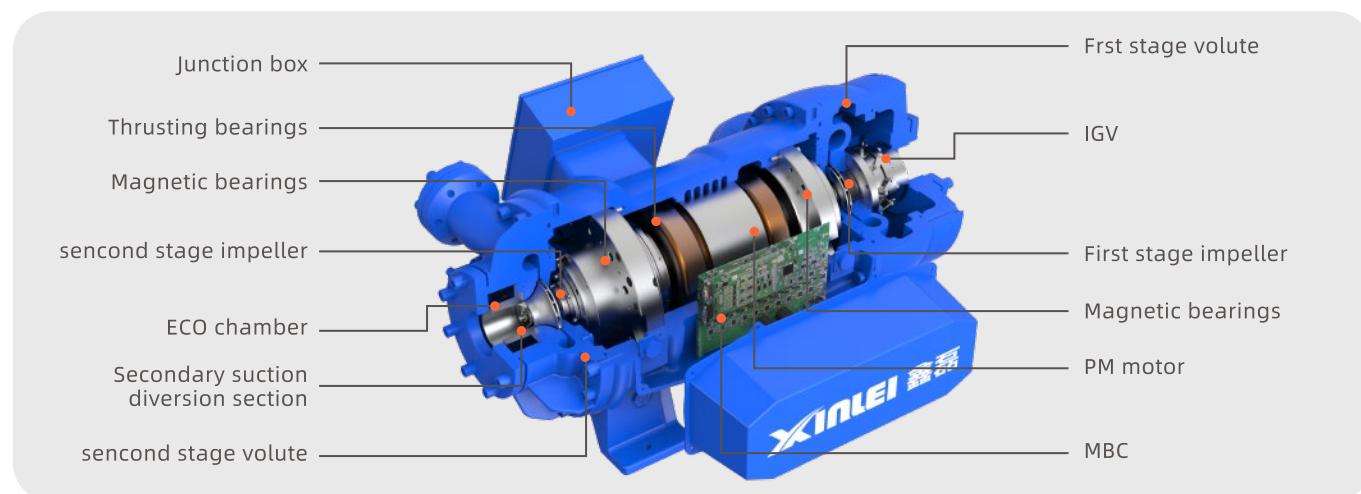


MRC Series MAGNETIC LEVITATION CENTRIFUGAL REFRIGERATION COMPRESSOR

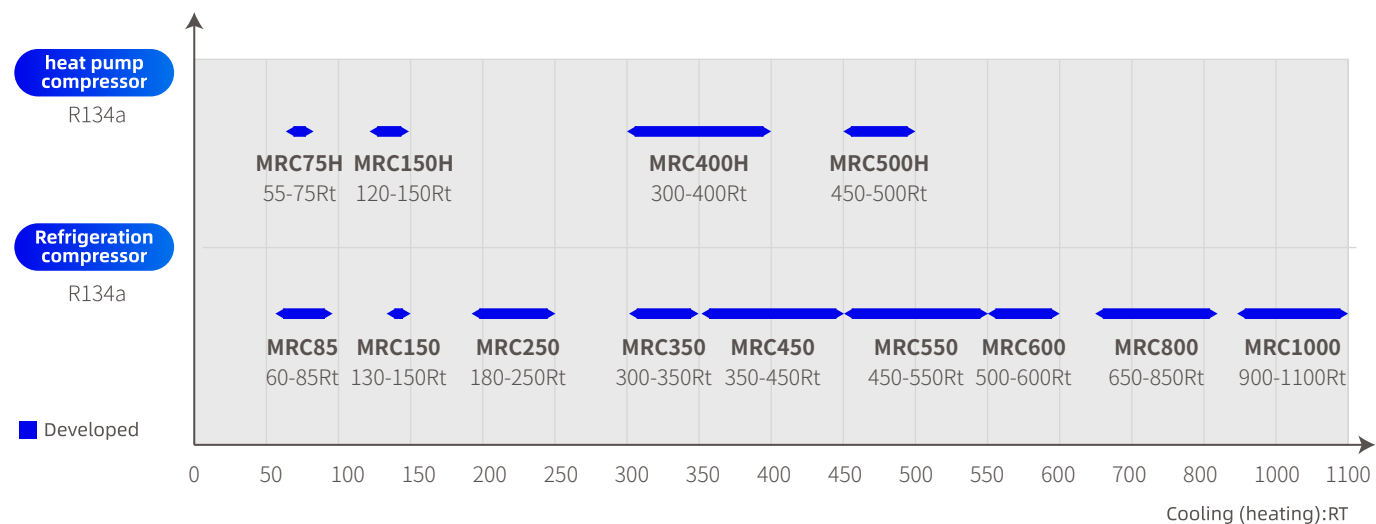
Compressor Naming



COMPRESSOR CROSS-SECTION

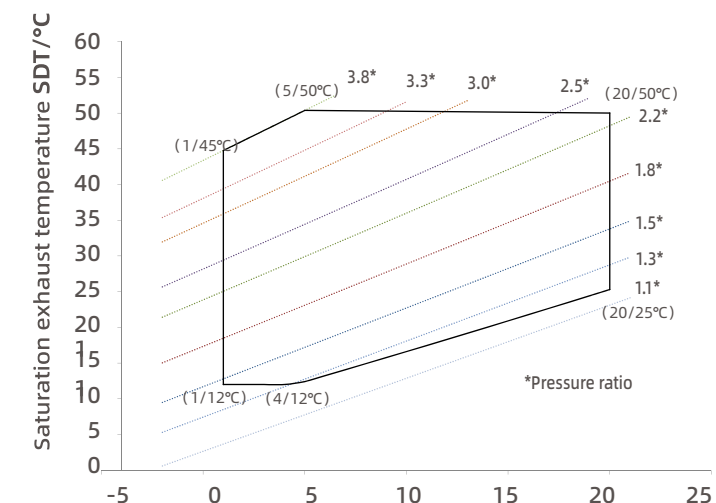


Product Profile



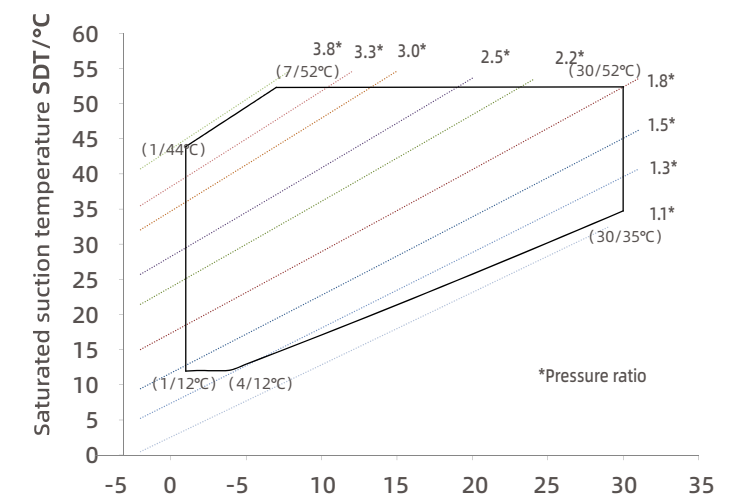
* ① The above compressor cooling capacity range is based on evaporation temperature 2°C, condensation temperature 50°C, with flash tank economizer.
* ② The above compressor cooling capacity range is based on evaporation temperature 6°C, condensation temperature 36°C, with flash tank economizer.

Operating range



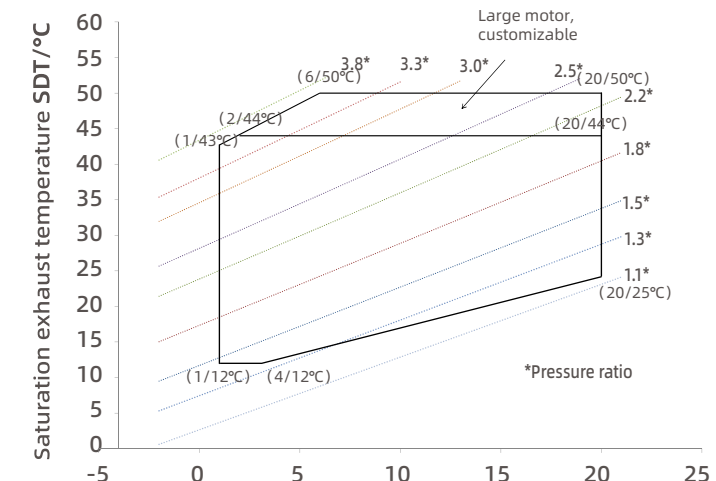
MRC75/150/400/500 compressor Saturation exhaust temperature SDT/°C

- The maximum pressure ratio is 3.8, which can be used in conventional air conditioners, heat pumps, heat recovery and other scenarios; The evaporation temperature is as high as 20°C,
- suitable for high water temperature scenarios such as data centers and process types.



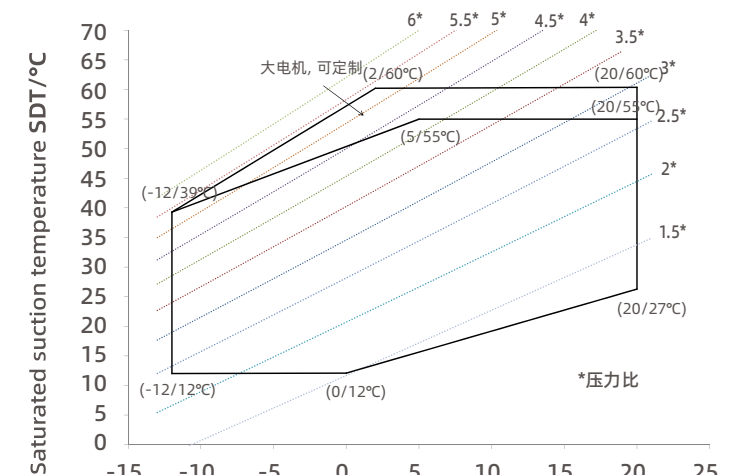
MRC850 compressor Saturated suction temperature SDT/°C

- The maximum pressure ratio is 3.7, which can be used in conventional air conditioners, heat pumps, heat recovery and other scenarios; The evaporation temperature is as high as 30°C,
- suitable for high water temperature scenarios such as data centers and process types.



MRC250 compressor Saturation exhaust temperature SDT/°C

- The maximum pressure ratio is 3.6, which can be used in conventional air conditioners, heat pumps, heat recovery and other scenarios; The evaporation temperature is as high as 20°C,
- which is suitable for high water temperature scenarios such as data centers and process types.

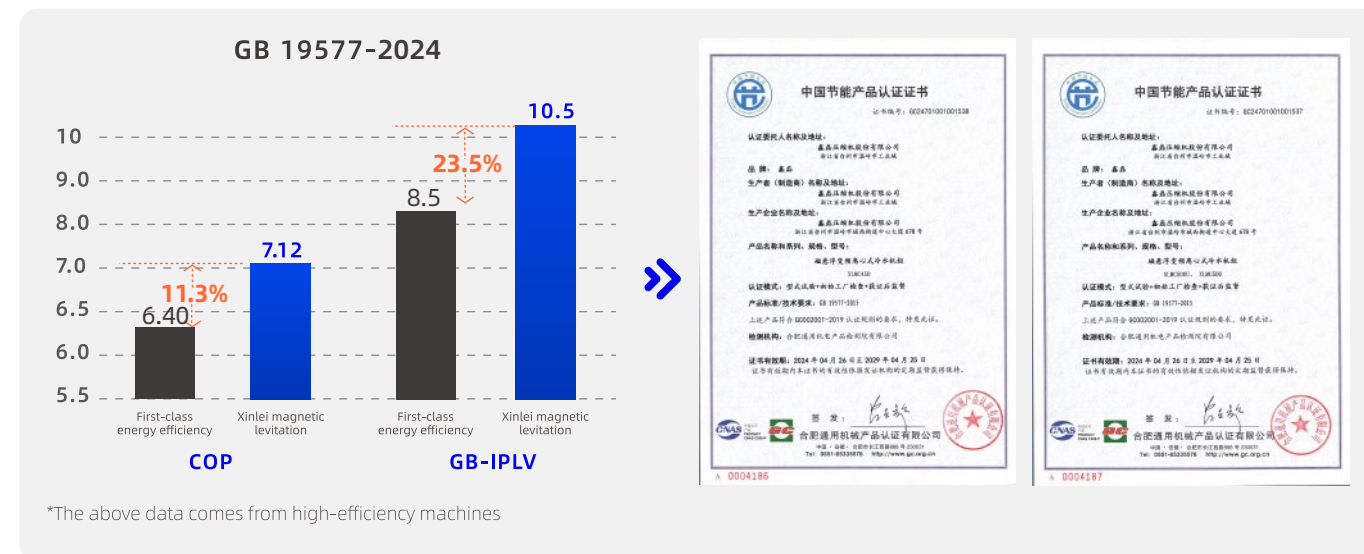


MRC75/150/400/500H compressor Saturated suction temperature SDT/°C

- Which can be used for water and ground source high-temperature heat pumps and energy tower water source heat.

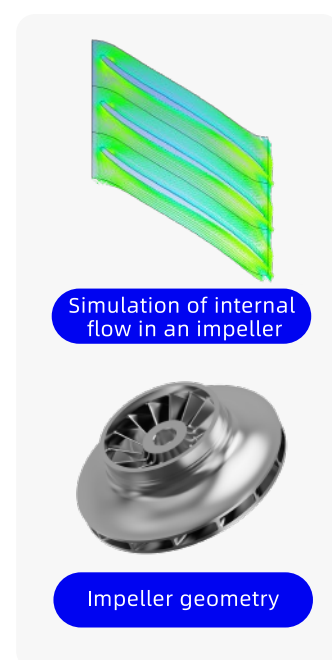
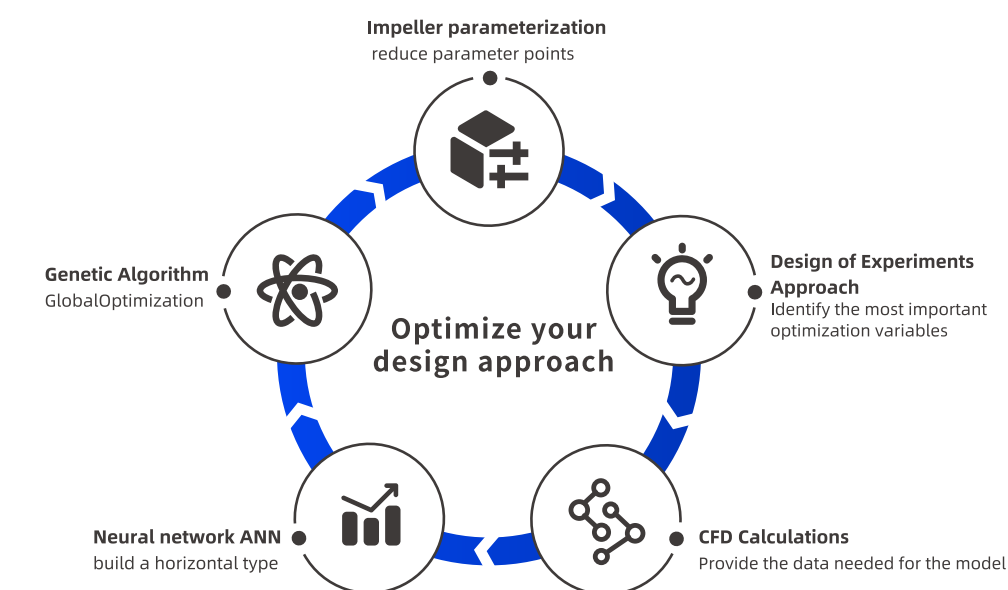
Dual Grade 1 energy efficiency for all series

All series of compressors have a wide range of applications, high energy efficiency. They are designed with optimized pneumatic parameters for a wide range of operating conditions to satisfy the efficient operation of data center, air conditioning, air-cooled chilled water, ice storage, water and ground source heat pumps, etc. The highest pressure ratio reaches 6.0, and the efficiency of the compressor is much higher than the first class of the national standard, of which the optimal performance for air-conditioning reaches COP7.12, IPLV10.50

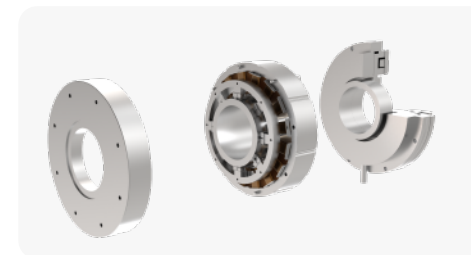


Efficient, multi-condition pneumatic design

The impeller adopts the optimization technology of CFD calculation + neural network + genetic algorithm to optimize the parameters under a wide range of working conditions to achieve high efficiency of both rated and partial load.



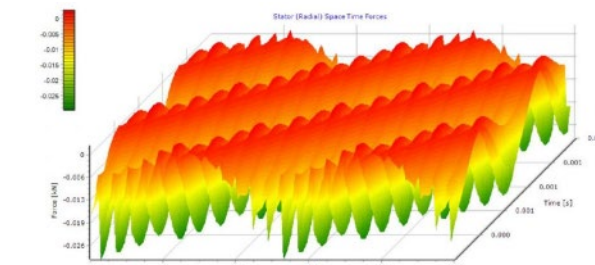
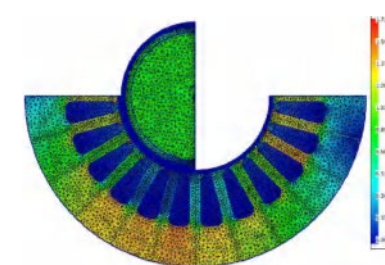
Industrial-grade magnetic bearing technology



Xinlei magnetic bearings

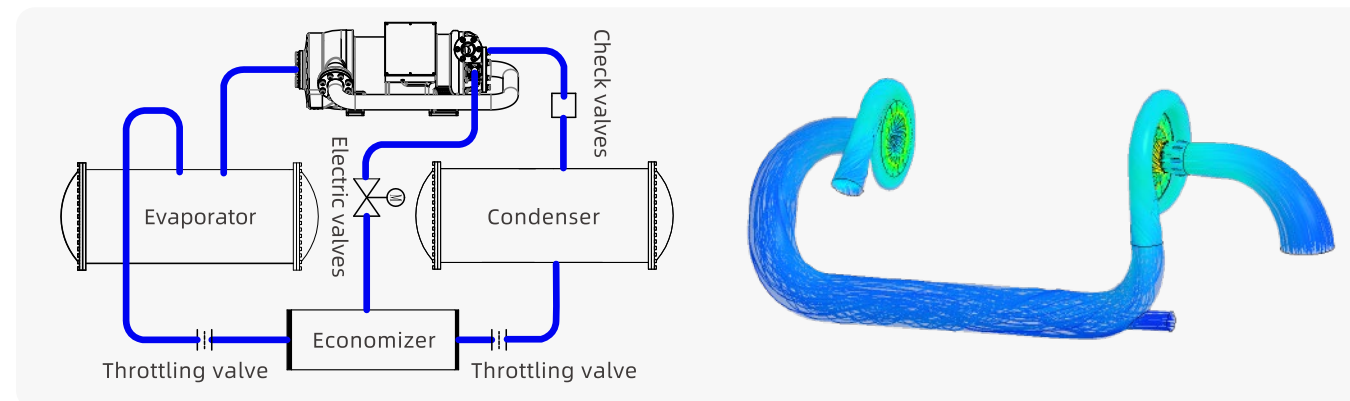
- Radial and axial integrated modular design, compact structure and stable performance;
- Oil free oil, zero friction, low power consumption, only 3~10% of conventional oil bearings, and the higher the speed, the more obvious the energy-saving effect;
- Stable and reliable, the magnetic bearings can withstand continuous severe surge of the compressor for a long time without falling.

Permanent magnet synchronous motor technology



- The permanent magnet synchronous motor has a compact structure, and the motor efficiency is > 95% in all working conditions, and the maximum is 97.5%.
- The space vector pulse width modulation technology is used to achieve energy saving in the full load operating range.
- H-class** insulation design, real-time monitoring of stator temperature, to achieve precise cooling of the motor, high reliability.

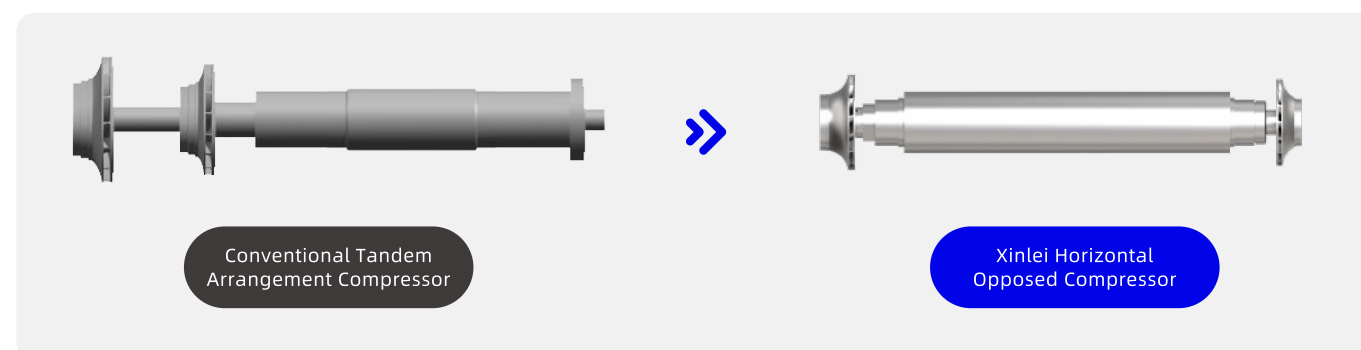
Two-stage compression + gas enthalpy enhancement technology, the unit has higher energy efficiency



- CFD simulation and optimization of the whole flow field, high aerodynamic efficiency, innovative pipeline return design, uniform air supply, and small pressure loss.
- The two-stage compression and replenishment gas increase enthalpy, which is 6% higher than that of single-stage circulation.

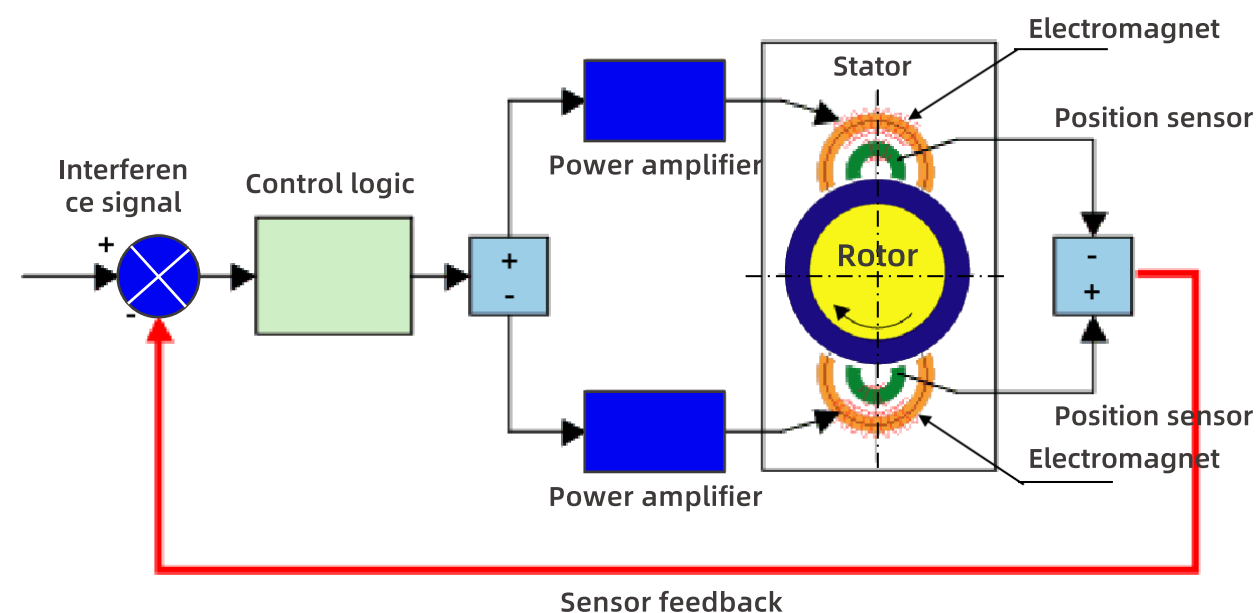
stable and reliable

■ Direct Drive + Horizontal Opposite Technology



- Adopt direct drive, no transmission loss, **100% transmission efficiency**;
- Impeller horizontally opposed, axial thrust offset each other **more than 90%**, has a good self-balancing, and the thrust bearing safety margin is greatly improved;
- Compared with tandem arrangement compressor, the vibration is smaller, the critical speed is higher, it is more suitable for large pressure ratio and high speed operation, and has higher reliability.

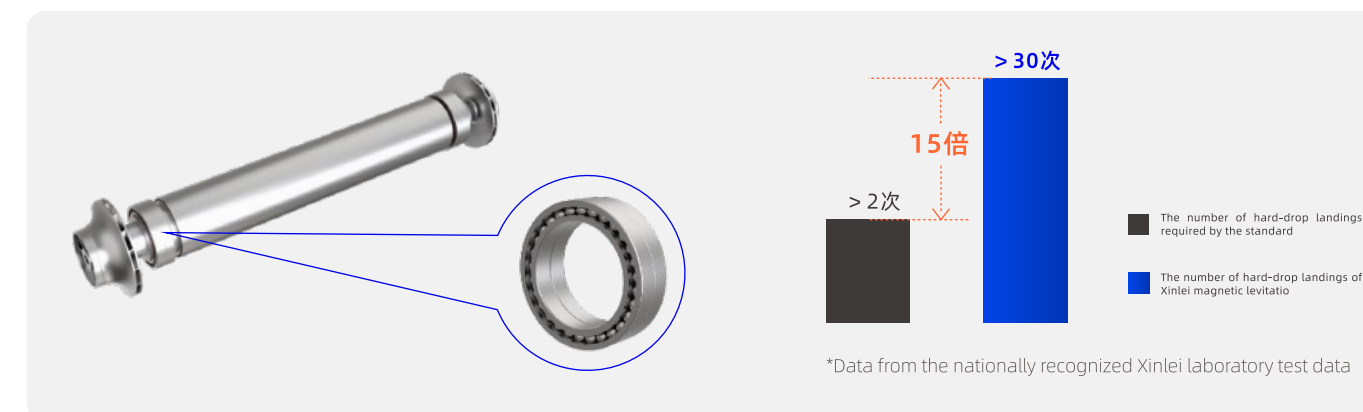
■ Active bearing control technology



The digital controller for magnetic bearings is equipped with 8 high-resolution position sensors to achieve superior vibration reduction control.

Five-degree-of-freedom active bearing control, **10kHz** position dynamic scanning and adjustment, **μm-level** control accuracy, and accurate shaft suspension.

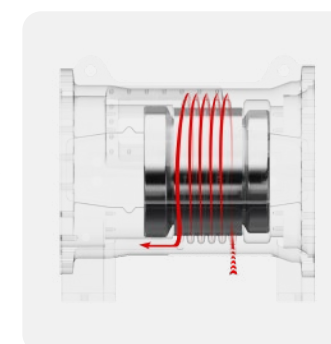
■ High Precision Ceramic Ball Bearings



- High-precision ceramic ball bearings with high precision, high temperature resistance, wear resistance, long service life, and complete protection of the compressor rotor and magnetic bearings in case of abnormal power failure;
- Under the stable working condition of heavy load and large pressure ratio heat pump, cut off the power supply of bearing and motor directly without activating the auxiliary power supply system, and the number of full-speed hard drop is **more than 30 times**.
- **15 times** higher than the industry standard to be released, which stipulates that "the number of hard drops passed 2 times" .

■ Multiple baffles 360° annular cooling

- CFD full flow field analysis and optimization design of motor cooling channel, **360° annular cooling**, to achieve fast uniformity Cooling.
- The refrigerant is circulated for cooling, the cooling effect is better, and the motor can keep the temperature low under harsh working conditions, Longer service life.



■ Built-in IGV Technology

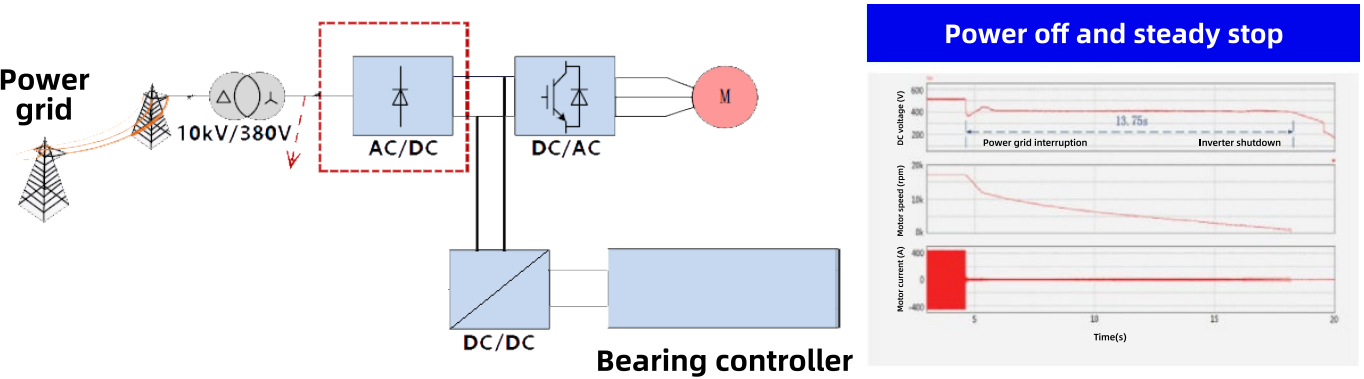
- Intelligent self-calibration to ensure accurate opening control;
- Built-in IGV structure with worm gear transmission, high transmission torque, **self-locking** advantage, high control accuracy;
- Adoption of stepper motor control, which is installed inside the compressor, the motor is small and compact, good for the environment and no risk of leakage.



■ Bearing power supply

Reverse generation (optional)

- When the power is suddenly cut off, the "permanent magnet motor + inverter" will automatically switch to the generator mode, and the inertial parking kinetic energy of the permanent magnet motor will be converted into electrical energy, and the bearing will be supplied with power. It is taken from the inverter bus, and the wide
- working voltage of 200-800V is designed to ensure the continuous and stable operation of the bearing. Ensure that the rotor of the motor continues to suspend during rotation until it is lower than the "safe alternate speed" of 900rpm, and smoothly descends to the alternate bearing to protect the bearing from damage.

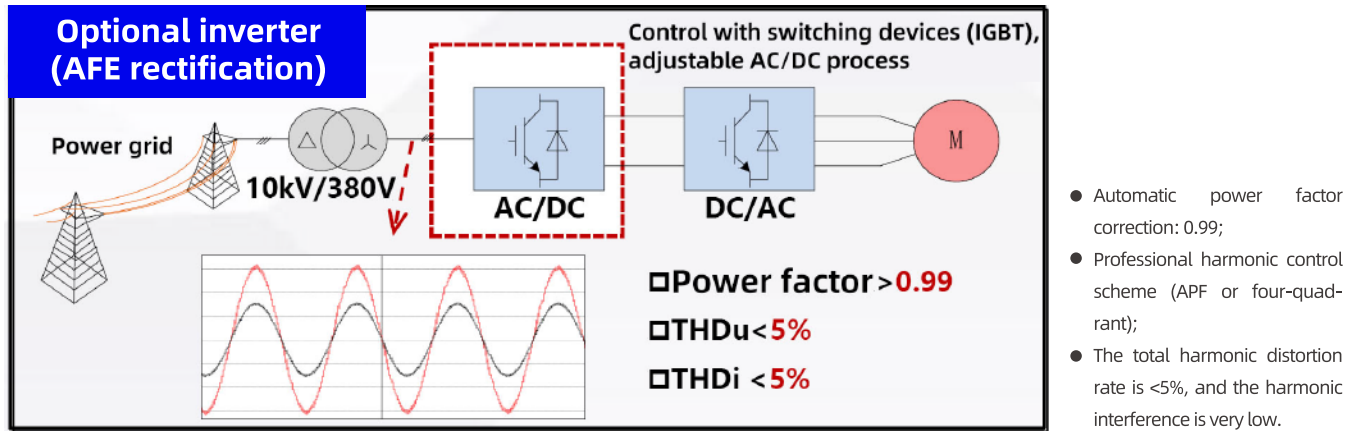


UPS (optional)

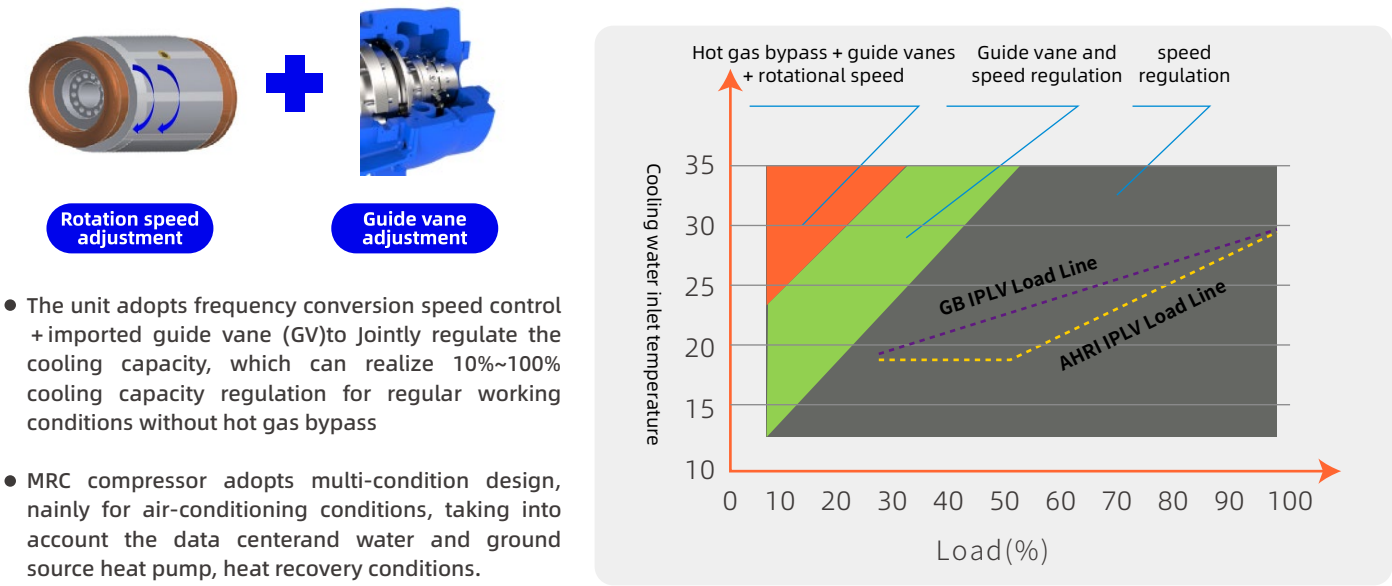
- All-in-one integrated power module design, including UPS, AD/DC DC power supply, base CFD analysis of heat dissipation air duct design, protection level $\geq$ IP54;
- Ensure that the rotor of the motor continues to suspend during rotation until the "safe alternate speed.", 0rpm, a smooth descent to the alternate bearing, fully protects the bearing from damage;
- UPS adopts lead-acid battery, which has mature technology, low cost and high safety factor, Easy to maintain.



■ Professional harmonic control (optional)



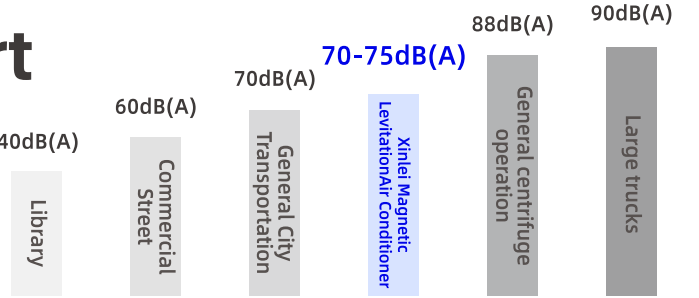
Wide range operation



- The unit adopts frequency conversion speed control + imported guide vane (GV) to jointly regulate the cooling capacity, which can realize 10%~100% cooling capacity regulation for regular working conditions without hot gas bypass
- MRC compressor adopts multi-condition design, mainly for air-conditioning conditions, taking into account the data center and water and ground source heat pump, heat recovery conditions.
- The MRC-H series compressor has a rated pressure ratio of 4.2 and a maximum pressure ratio of 6.0, and can be used in water and ground source high-temperature heat pumps, energy tower heat pumps, air-cooled heat pumps, ice storage and other scenarios.

Low noise comfort

- Operating noise as low as 70dB(A);
- Oil-free and frictionless, reducing the transmission noise of mechanical parts;
- Compressor horizontally opposed impeller + external pipeline type refluxer structure reduces the aerodynamic noise of refrigerant in the flow process.



Scope of supply

Number	Name of parts and materials	Quantity	Configuration
1	Compressor main unit	1	●
2	Compressor interstage connecting pipe	1	●
3	Compressor controller assembly	1	●
4	Magnetic bearing power module box (switching power supply, UPS, etc.)	1	●
5	Magnetic bearing control unit	1	●
6	Compressor controller connection line	1	●
7	Frequency inverters	1	●
8	Motor-cooled electronic expansion valve with electronic expansion valve drive	1	●
9	Suction pressure sensor	1	●
10	Discharge pressure sensor	1	●
11	Suction and discharge gas temperature sensor (PT1000)	2	○
12	Compressor damping pads	4	○
13	Discharge check valve	1	○

Note: ●Standard ○Optional The above is the standard scope of supply of compressor, if you have special requirements, please contact Xinlei technical personnel.