

Inverter Direct-drive Centrifugal Chiller

250~2200RT



AHRI CERTIFIED®
www.ahridirectory.org
Water-Cooled Water Chilling and Heat Pump Water-Heating Packages
AHRI Standards 550/590 and 551/591

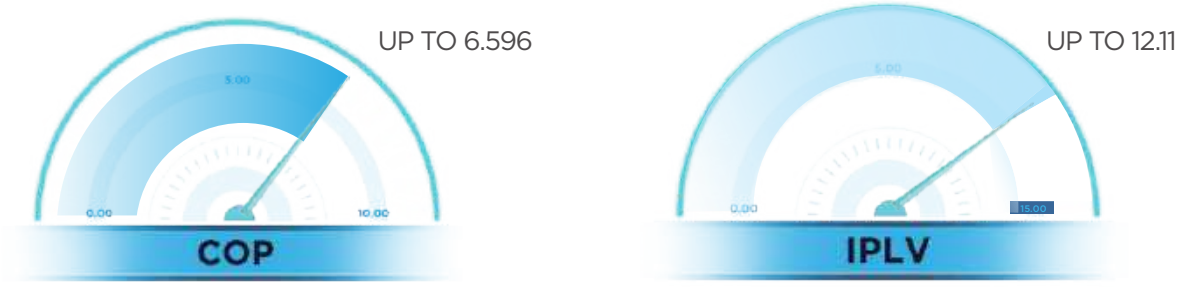
What is Midea Solution?

Midea inverter direct-drive centrifugal chiller has less refrigerant charge, lower noise and owns more than 20 technology patents. COP is up to 7.169 and IPLV is up to 12.11. The series can be used in various buildings including airports, rail transit, hotels, businesses and new or reconstructed buildings, providing customers with efficient and energy-saving green building solutions.



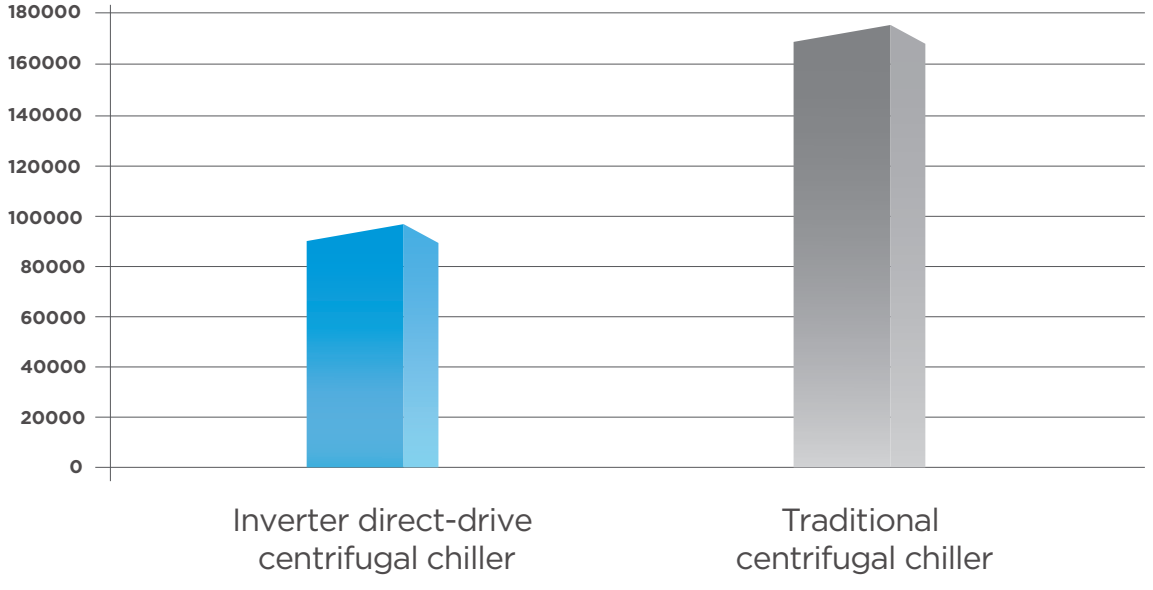
The longer you use, the more you save

Operation cost comparison



Compare a 1700RT inverter direct-drive centrifugal chiller with a 1300RT tranditional centrifugal chiller (4000 operating hours, energy rate 0.0813 $/kWh). The system can help customers save **46%** per year. Given the system's service life, OPEX savings making investing in an inverter direct-drive centrifugal chiller system worthwhile.

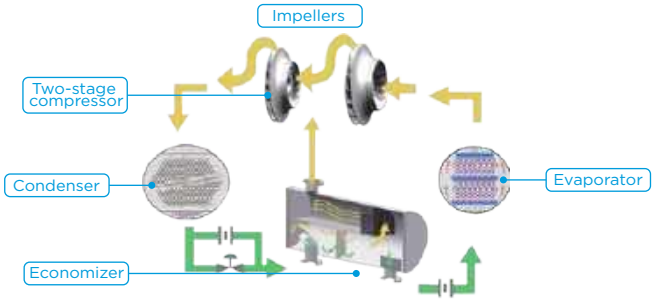
APPROXIMATE ANNUAL ENERGY COST



Energy Saving

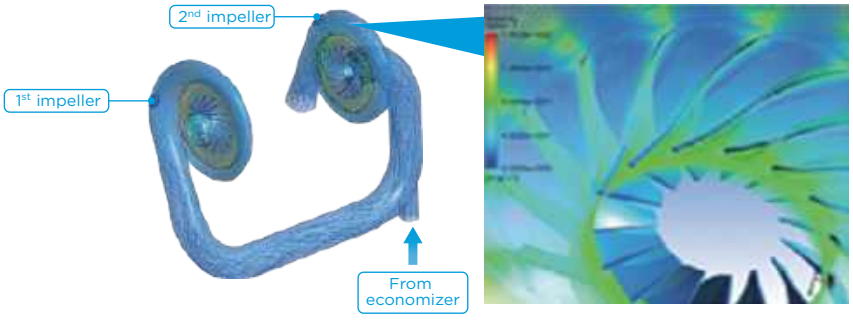
Two-stage compression

- 6% higher efficiency than single-stage compression.
- Lower speed and higher reliability.
- Unique three-stage separation economizer, reliable and effective.



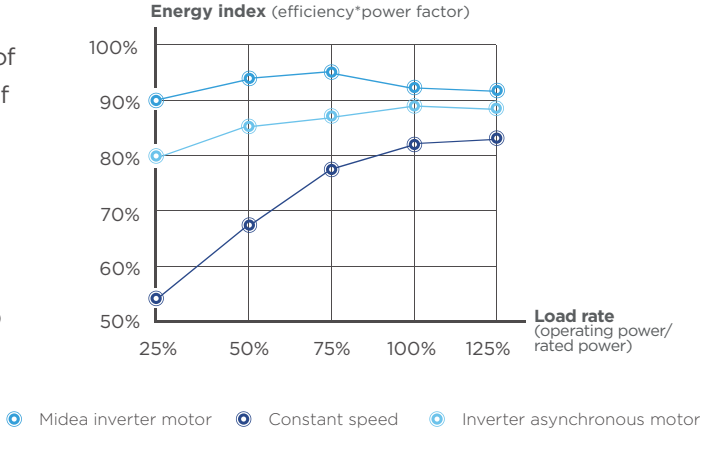
Aerodynamic compressor design

- With 3D-flow closed and strongly backward-bladed impeller design, impeller efficiency is higher than 97%.
- Unique pipeline crossover, with large backflow radius to reduce flow losses and noise.
- The technology of two-stage compression with economizer fully demonstrates the advantage of aerodynamic design and brings higher efficiency to the system.



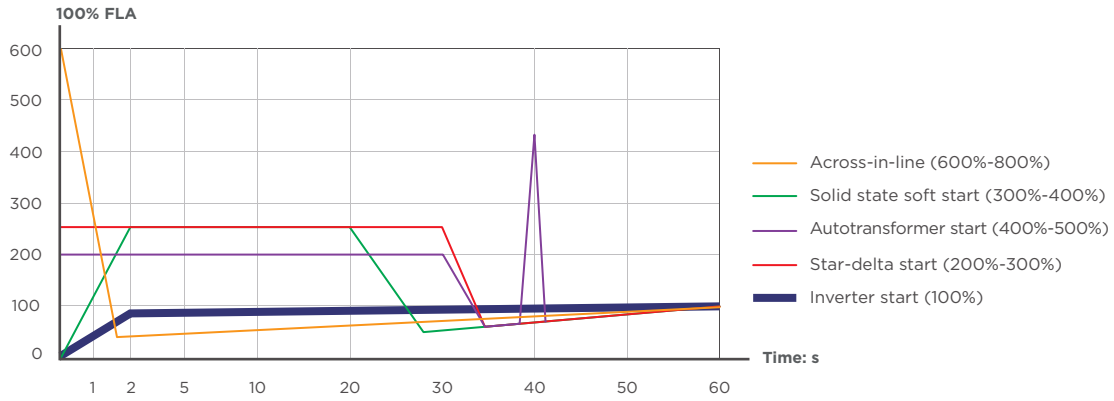
High speed inverter motor

- Wide-range regulation. Variable frequency range of 110 Hz to 300 Hz for low voltage motor and that of 50 Hz to 120 Hz for high voltage motor.
- 360° motor cooling technology.
- Motor efficiency as high as 96.5%, energy index (efficiency*power factor) over 2% higher than inverter asynchronous motor.
- Unit-mounted refrigerant-cooled low voltage VFD and free-standing air-cooled high voltage VFD to ensure the reliability and stability of the VFDs. Zero in-rush current.



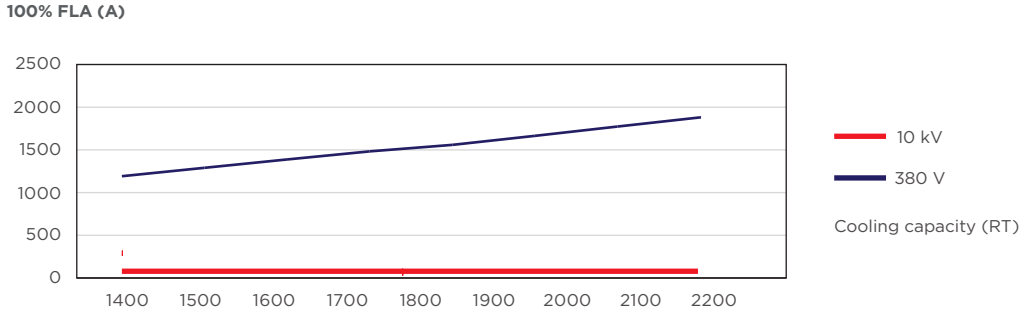
Zero in-rush current

The unit adopts inverter starting mode, which produces zero in-rush current during the starting process and enables a stable operation from 0A to FLA.



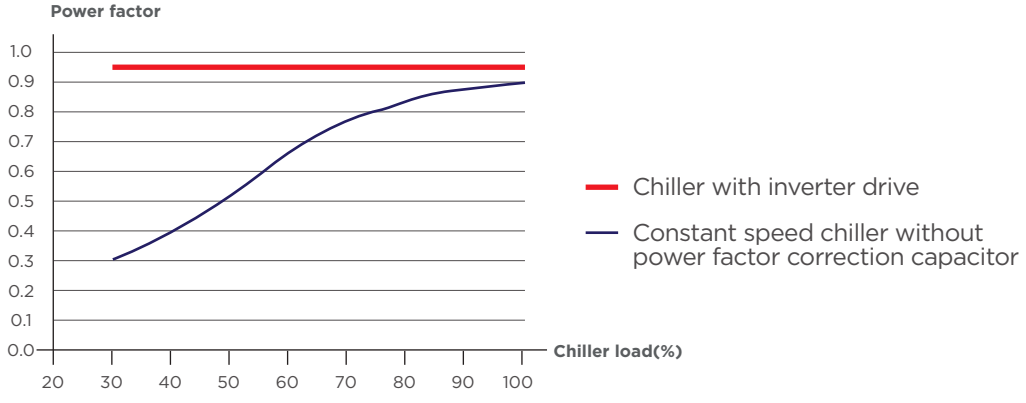
Lower operating current

High voltage VFD start, greatly reduce the motor starting current, no impact on the power grid. The operating current is only 1/26 of 380 V unit, and the loss of the motor and cable is lower, which can reduce the heat of the circuit breaker equipment, reduce the temperature of the switching contact, and reduce the failure rate of the equipment.



High power factor

The high power factor eliminates the need for a power factor connection capacitor.



Leading Technology

Back-to-back two-stage compression technology



VS



Midea back-to-back impeller

- Midea first developed the patented back-to-back compression technology with crossover pipe structure.
- Balance the thrust forces for longer life span and improved efficiency by less seal leakage and no gear loss.

Patented IGV correcting algorithm

- Realized stable load regulating, energy saving and more comfort.
- High precision and high compatibility.
- Invented a centrifugal chiller load regulation method.

Guide vane opening correction model:
B=a*sd1(t)2+b*sd1(t)+c

B: the 2nd guide vane opening

sd1(t): the 1st guide vane opening

a: quadratic coefficient

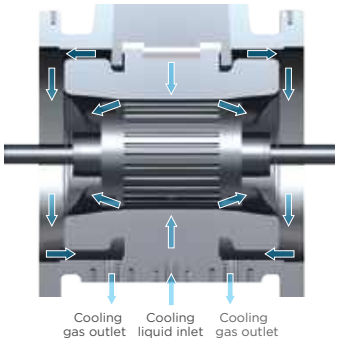
b: monomial coefficient

c: constant

Traditional serial impeller

- The traditional two-stage centrifugal impellers are arranged in serial to the same direction and the axial forces on the two impellers are from the same direction and overlapped.
- More stress on thrust bearing, cause mechanical damage and require higher reliability of bearing.

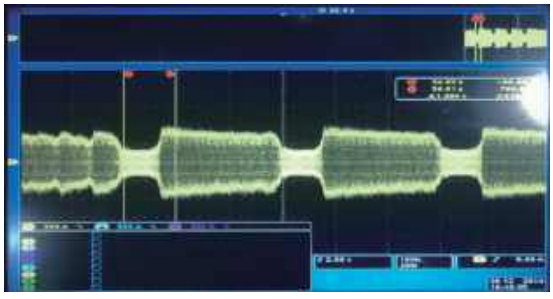
360° motor cooling technology



- The motor is cooled by the refrigerant, with liquid supply and gas return at the bottom, thus ensuring higher efficiency.
- Cooling method eliminates the potential for shaft seal leakage and refrigerant/oil loss.
- The motor adopts F-level insulation design, with three PTC temperature switches preset in the winding to ensure constant safety.

Anti-surge technology

- Extend the surge curve: real-time to adjust the motor speed in different operating conditions.
- Precise monitoring and comparison: real-time to monitor running current and comparing running current curve to current data base in the controller.



Typical current waveform in surging condition

Full falling film evaporation technology



- First created the full falling film evaporator and adopted spray technology to achieve film evaporation on the surface of the heat exchange tube, greatly increasing overall heat transfer efficiency and reducing refrigerant charge.
- The patented refrigerant distributor can improve the homogeneity of the liquid to avoid local drying, fully showcasing the performance of the heat exchange tube and increasing unit efficiency.

Ensure the fastest chiller restarts with Quick Start/Instant Start feature (optional)

Temperature-sensitive operations such as data center, pharmaceutical, and manufacturing facilities require constant cooling for equipment and processes.

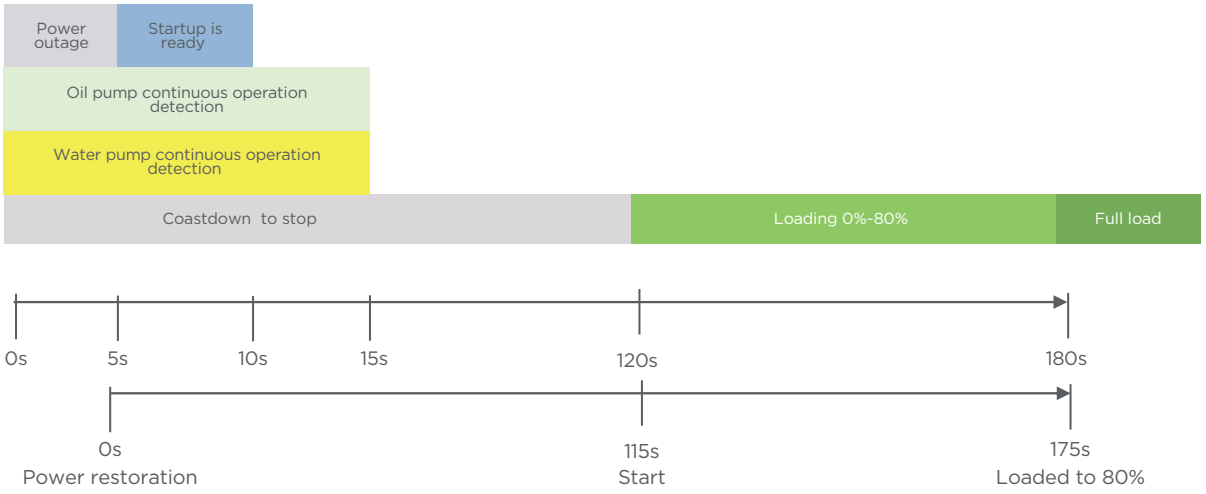
Now there's a sure way to reduce the risk of cooling disruption - the Quick Start/Instant Start feature from Midea. This feature for Midea centrifugal chillers can save you both time and money by:

- Reducing time for chiller restart after power failure
- Keeping process equipment cooled
- Reducing risks of expensive downtime
- Providing a faster initial start, too

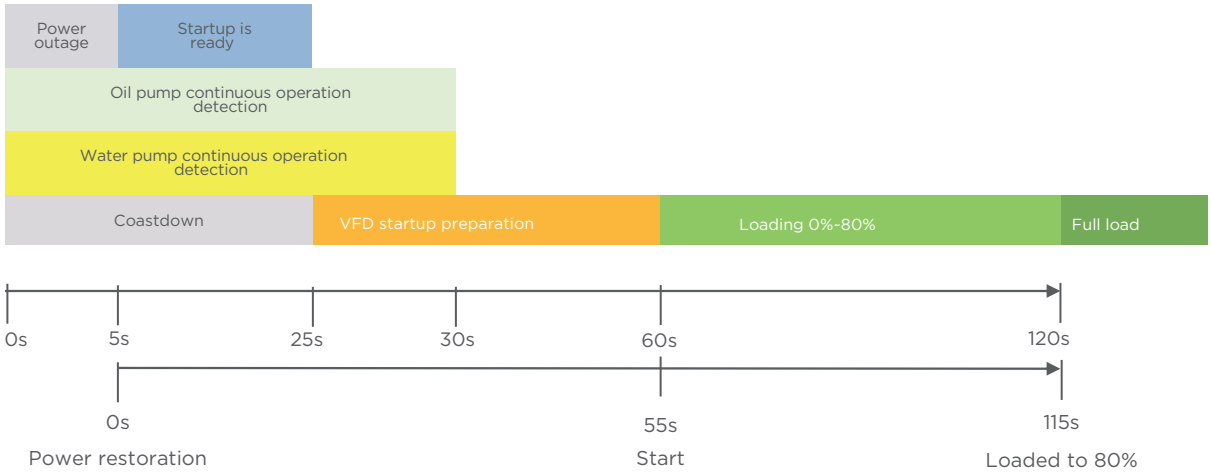
Reduce restart time to seconds

After power is interrupted, it can take a standard centrifugal chiller many minutes to restart. But with the Quick Start/Instant Start feature, once power is restored, the chiller can restart as soon as possible.

Quick Start



Instant Start



Note: when power is restored after a power outage of 5s, instant start has a shorter preparation time of 60s and takes 60s less to load to 80% compared to quick start.

Intelligent Control

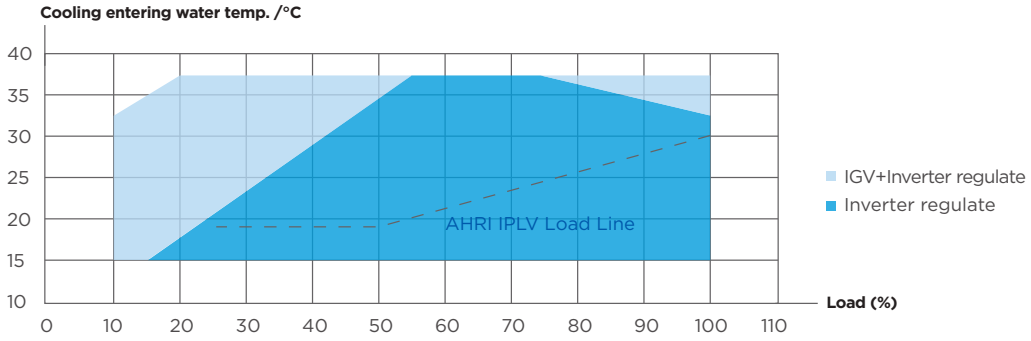


- 10-inch colorful touch screen.
- Real-time operating parameters (temperature, pressure etc.) display.
- Three-level password setting to prevent misoperation.
- Detailed fault information record.
- Power-off memory function.
- Timer.
- Master & Slave, Back-up, Duty cycling.
- Compatible with QuickView, M-Cloud, Midea Chiller Plant Control and M-BMS.

Flexibility

Wide operation map

- Only inverter regulation on AHRI condition to save energy.
- Capacity load from 10%~100% and cooling EWT up to 37 °C are able to satisfy the application requirement of multiple operating conditions (load from 10%-20% need hot gas bypass).



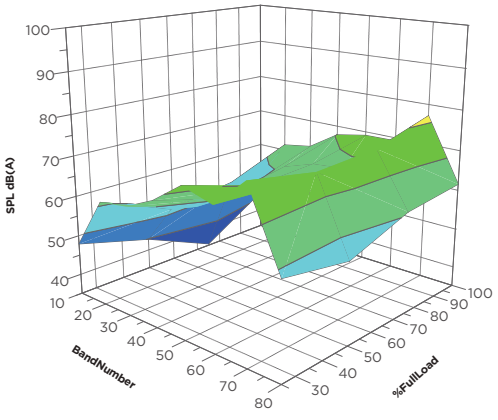
Compact size

Compact size is ideal for retrofit as well as small installation space project. The space savings can add up as quickly as the energy savings.

Eco-Friendly

Quieter operation

Midea inverter direct-drive centrifugal chiller is the quietest chiller in its size range with sound pressure ratings as low as 78 dB(A) as per AHRI Standard 575-2017. That makes it ideal for sound sensitive environments such as schools, performance halls, museums, condominiums and libraries.



LEED

R134a refrigerant has zero ozone depletion potential and has no elimination cycle for now. Full falling film technology reduces refrigerant charge which enables to qualify for maximum leadership in Energy and Environmental Design® (LEED) points for Enhanced Refrigerant Management. And with the chiller' s high efficiency, you can also earn additional points for credits from Optimized Energy Performance (EAc1).

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Midea Group

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