

1803-12C1804



# Commercial Air Conditioners 2018/2019



## Water Cooled Screw Chiller

Full falling film type 70-470RT (R134a)



### Commercial Air Conditioner Division Midea Group

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Note: Product specifications change from time to time as product improvements and developments are released and may vary from those in this document.



Midea CAC After-service Application



iOS Version



Android Version

# Midea CAC

Midea CAC is a key division of the Midea Group, a leading producer of consumer appliances and provider of heating, ventilation and air conditioning solutions. Midea CAC has continued with the tradition of innovation upon which it was founded, and emerged as a global leader in the HVAC industry. A strong drive for advancement has created a groundbreaking R&D department that has placed Midea CAC at the forefront of a competitive field. Through these independent efforts and joint cooperation with other global enterprises, Midea has supplied thousands of innovative solutions to customers worldwide.

We have three production bases: Shunde, Chongqing and Hefei.

MCAC Shunde: 38 product lines focusing on VRF, Split Products, Heat Pump Water Heaters, and AHU/FCU.

MCAC Chongqing: 14 product lines focusing on Water Cooled Centrifugal/Screw/Scroll Chillers, Air Cooled Screw/Scroll Chillers.

MCAC Hefei: 11 product lines focusing on VRF, Chillers, and Heat Pump Water Heaters.

MIDEA GROUP  
FORTUNE GLOBAL  
**FORTUNE**  
**500**

- 2017 >> Developed the large capacity air cooled scroll chiller.
- 2016 >> Acquire an 80% stake in Clivet.
- 2015 >> Launched the inverter direct-drive centrifugal chiller and magnetic chiller.  
An international strategic Platform has brought Midea Group, Carrier Corporation and Chongqing General Industry Group together in the chiller business.
- 2013 >> Launched the super high efficiency centrifugal chiller with dual-stage compressor and full falling film evaporator.
- 2008 >> Developed the Smart Star new-generation Semi-hermetic centrifugal chiller.
- 2007 >> Won the first Midea centrifugal chiller project overseas.
- 2006 >> Launched the first VFD (Variable Frequency Drive) centrifugal chiller.
- 2004 >> Acquired MGRE entered the chiller industry.
- 2001 >> The R134a (LC) series centrifugal chiller was named as a key national product.
- 1999 >> Entered the CAC field.

Midea Company  
Introduction



Midea CAC  
Introduction





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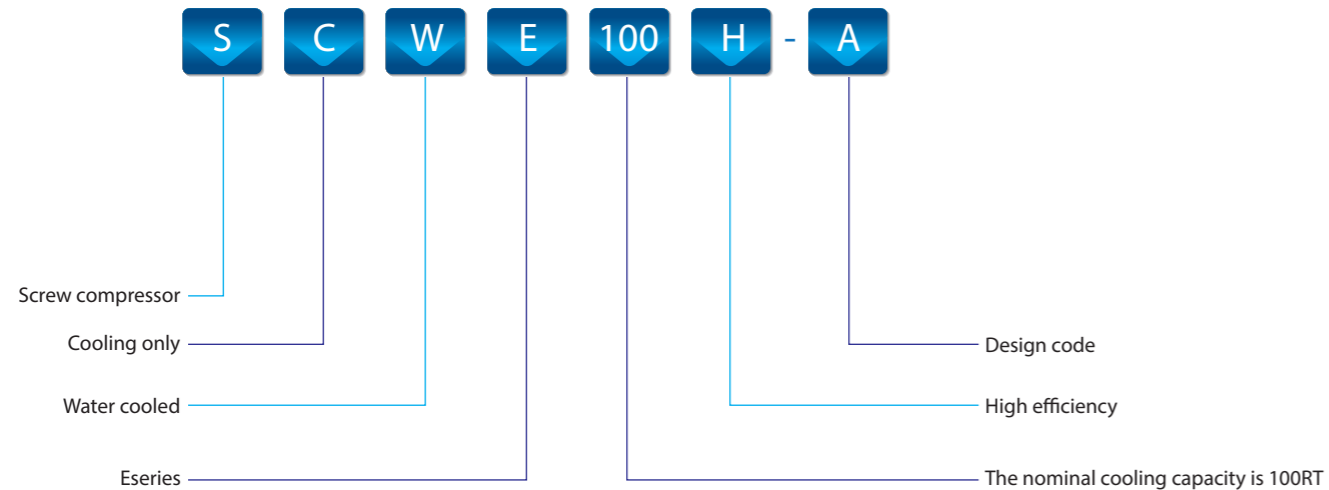
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# Overview

The cooling capacity range of Midea high efficiency full falling film water cooled screw chiller is 70RT to 470RT. The high efficiency full falling film water cooled screw chiller adopts the industry leading twin-rotor screw compressor, environmentally-friendly R134a refrigerant and full falling film evaporation technology to achieve efficiency for high full loads and partial loads, showcasing the creativity of Midea's global R&D team. The product employs a number of patented technologies and is reliable, safe and stable. It's an ideal choice for hotels, shopping malls, hospitals, factories, cinemas and other civil architecture air conditioning systems. Its uses also extend into the plastic industry, electroplating industry, food processing, chemical industry and other processing facilities that require large amounts of chilled water.



## Nomenclature

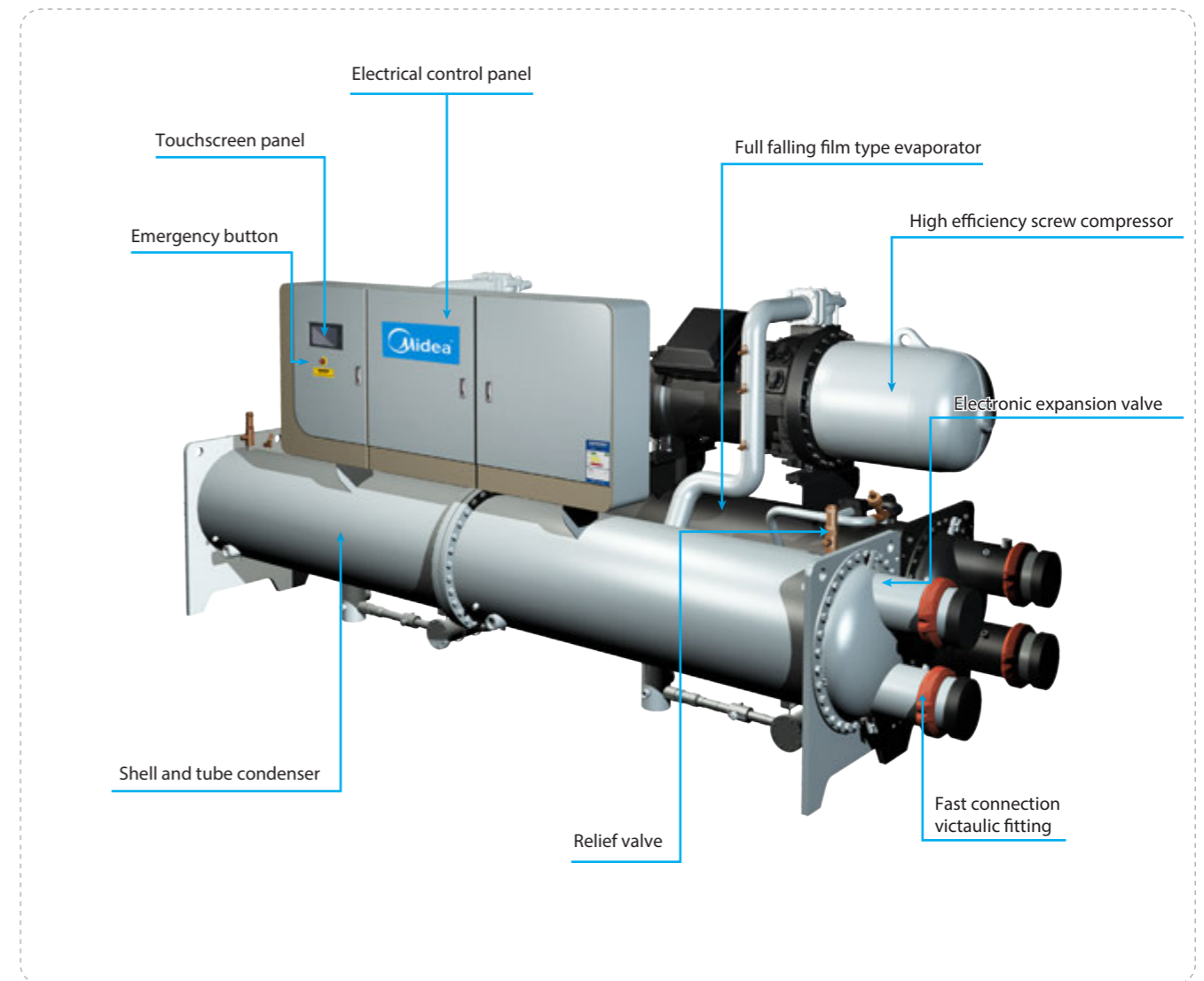


## Operating Range

Item	Unit	Operating range
Cooling water inlet temperature	°C	19~35
Chilled water outlet temperature	°C	5~15

Note: Normal use of the unit will be affected adversely if the above parameter exceeds the operating range.

## Product Structure



# Features

## High Efficiency and Energy Saving

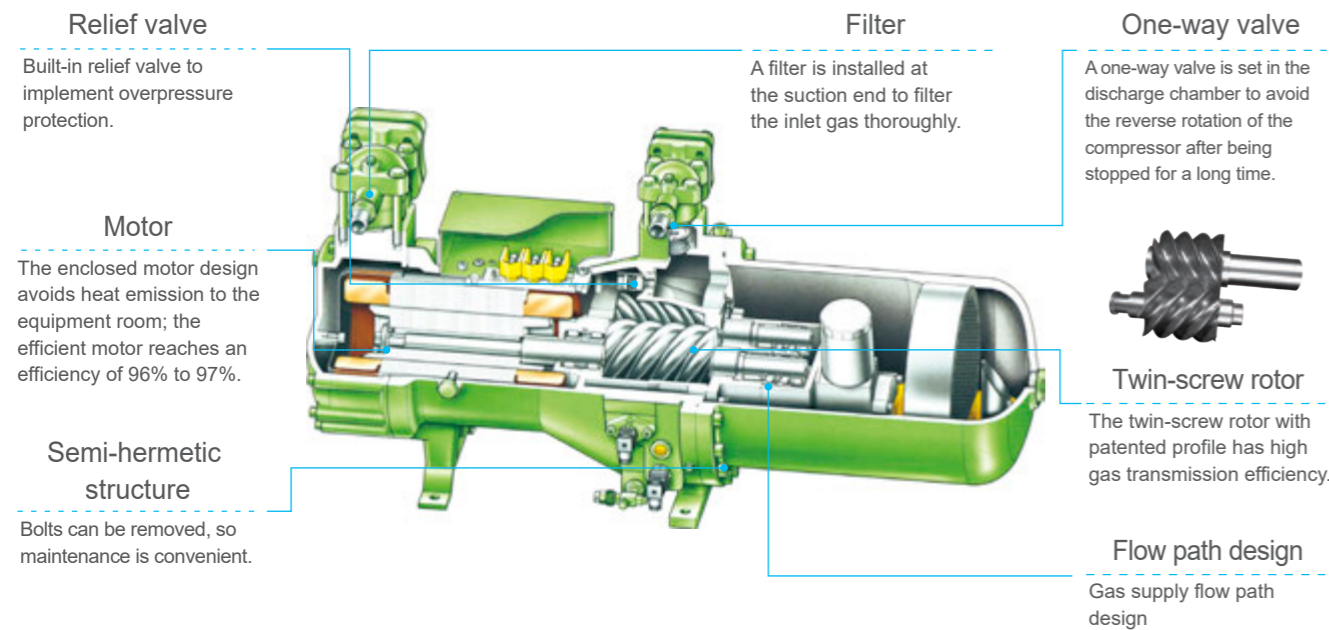
The full series of products are AHRI certified.



Certified in accordance with the AHRI Water-Cooled Water-Chilling and Heat Pump Water-Heating Packages Using Vapor Compression Cycle Certification Program, which is based on AHRI Standard 550/590 (I-P) and AHRI Standard 551/591 (SI). Certified units may be found in AHRI Directory at [www.ahridirectory.org](http://www.ahridirectory.org)

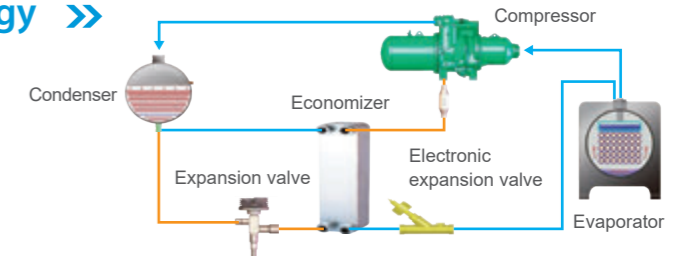
### Cutting-edge screw compressor technology >>

- ❖ The product adopts a semi-hermetic twin-rotor screw compressor, a screw rotor using a patented profile undergoing the optimized compression process with a German KAPP gear grinding machine, and the surface has been laser-hardened to implement dynamic and static balance correction.
- ❖ The twin-screw rotors adopt the asymmetric patent design of five to six teeth, reaching the machining precision of micron level and ensuing low noise and long service life.
- ❖ The compressor adopts the bearing of international famous brand SKF, which has a long service life, ensuring that the continuous operation time of the chiller is at least 50000h.



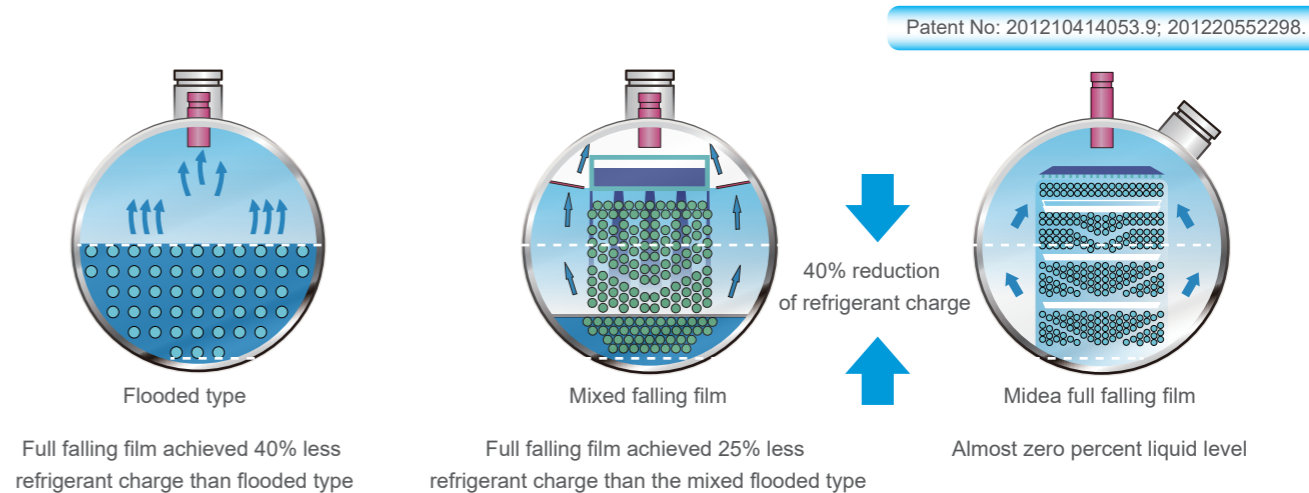
### Enhanced vapor injection technology >>

- ❖ The unit adopts the optimized system design solution, which works together with the optimal gas supply port design and the efficient high quality economizer to increase the supercooling degree of condenser and improve the unit efficiency greatly. (This function needs to be customized.)



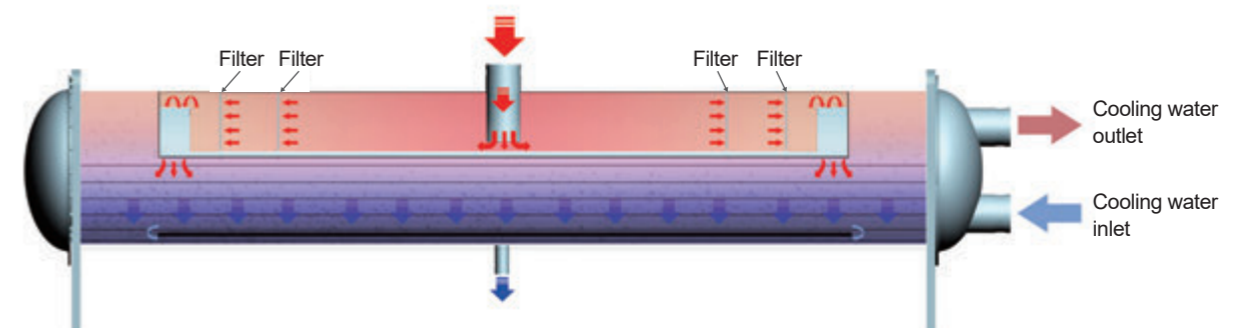
### Full falling film evaporation technology >>

- ❖ First created the application of full falling film evaporator and adopted spray technology to achieve film evaporation on the surface of heat exchange tube, greatly increase the overall heat transfer efficiency and reduce refrigerant charge by up to 40%.
- ❖ The patented refrigerant distributor can improve the homogeneity of liquid, avoid drying, fully display the performance of heat exchange tube and increase the unit efficiency.



### New condenser >>

- ❖ It adopts the double-side reinforced high efficiency condenser tube, and the tube arrangement design in the condenser has been optimized.
- ❖ The new designed multi-turbulence subcooler ensures a supercooling degree above 5°C through the counterflow supercooling of refrigerant, improving the heat exchange performance and heat exchange efficiency.



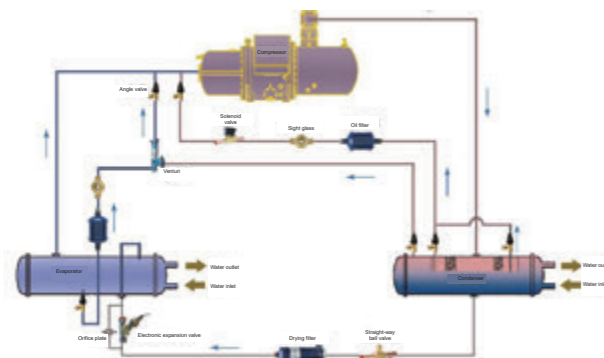
## Stable and Reliable

### Enclosed motor design >>

- ❖ The motor is set at the compressor gas inlet, and the adopted refrigerant cooling method works together with the unique inlet flow path design to ensure full cooling of the motor. The motor does not send out heat to the equipment room, so the heat dissipation of the chiller does not need to be considered for ventilation of the equipment room.
- ❖ The compressor motor adopts large capacity design, and the motor directly drives the rotor to achieve very high efficiency.

### Reliable oil system >>

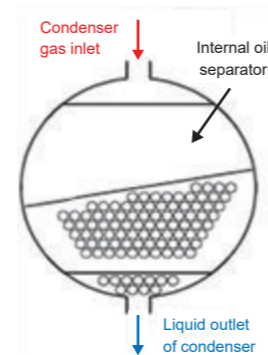
- ❖ Oil supply  
The system adopts differential pressure type oil supply. All the moving parts in the compressor can stay well lubricated without an external oil pump.
- ❖ Oil return  
The first oil separation: The compressor is provided with a three-stage oil separator to ensure low oil content.  
The second oil separation: The built-in high efficiency oil separator for the condenser controls the oil separation efficiency to a value above 99.99%, enabling the system to realize normal oil return under both partial load and full load, ensuring reliable and stable operation of the system, and increasing the unit operation range.  
Double oil return system: The system adopts oil return through oil separation and Venturi injection. Oil return is implemented through the Venturi tube injection of high pressure gas, and oil is not stored in the evaporator.  
An oil heater is set in the unit. The control system preheats the lubricating oil according to the unit's status to maintain optimal viscosity, optimizing the lubrication function. The external oil filter can be replaced easily.



Advanced oil control system



Built-in three-stage oil separator for the compressor



Built-in oil separator for the condenser

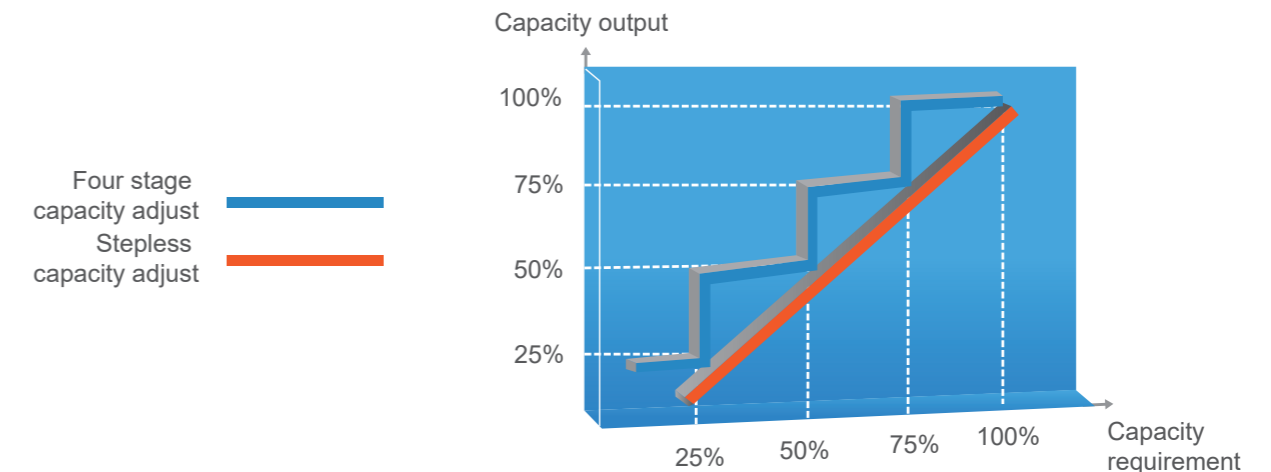
### Multiple guarantee >>

- ❖ Independent circuit design for greater reliability  
The system has an independent circuit design. The double compressor system employs the double independent circuit design and the systems do not affect each other, minimizing the impact of shutdown due to a failure and greatly enhancing the unit's reliability.
- ❖ Powerful protection function for improved safety  
The unit is provided with powerful protection measures to improve operation safety and reliability.
- ❖ Strict factory test  
All the units have undergone strict testing before delivery. Only the water pipe and power supply need to be connected during installation.

## Accurate Capacity Adjust

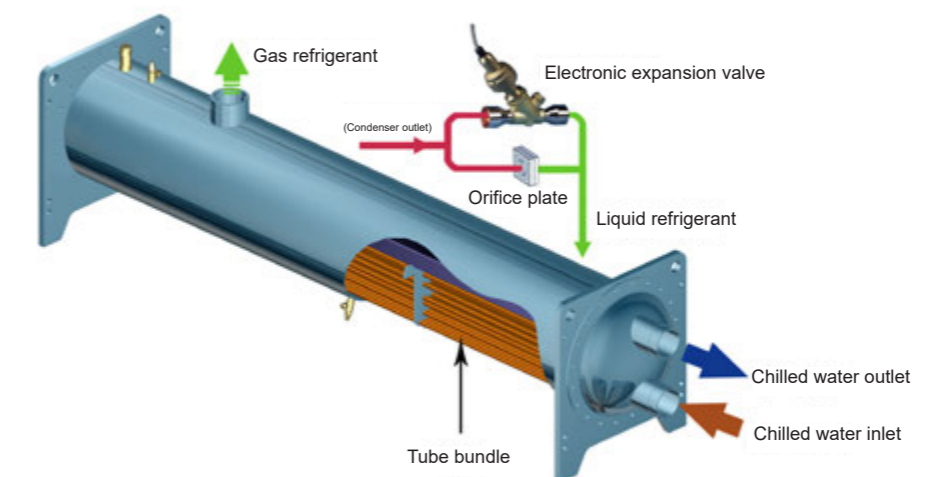
### Stepless capacity adjust >>

The unit capacity adjustment range for one compressor is 25% to 100%, for two compressors is 12.5% to 100%. The capacity adjust system consists of the capacity adjust slide valve, solenoid valve for capacity adjust and oil pressure piston for capacity adjust. The unit also has a stepless regulation control mode.



### Accurate cooling capacity control >>

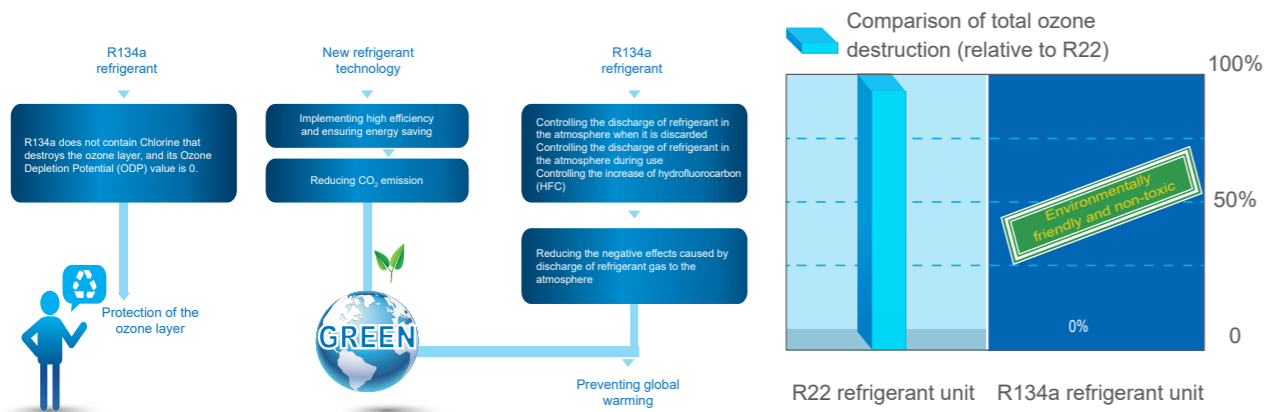
- ❖ The unit features an electronic expansion valve and orifice plate to control the refrigerant for the evaporator and the water temperature accurately.
- ❖ The electronic expansion valve is from a leading international brand. It is characterized by quick response, rapid regulation, and a large capacity adjust range.



## Environmentally Friendly

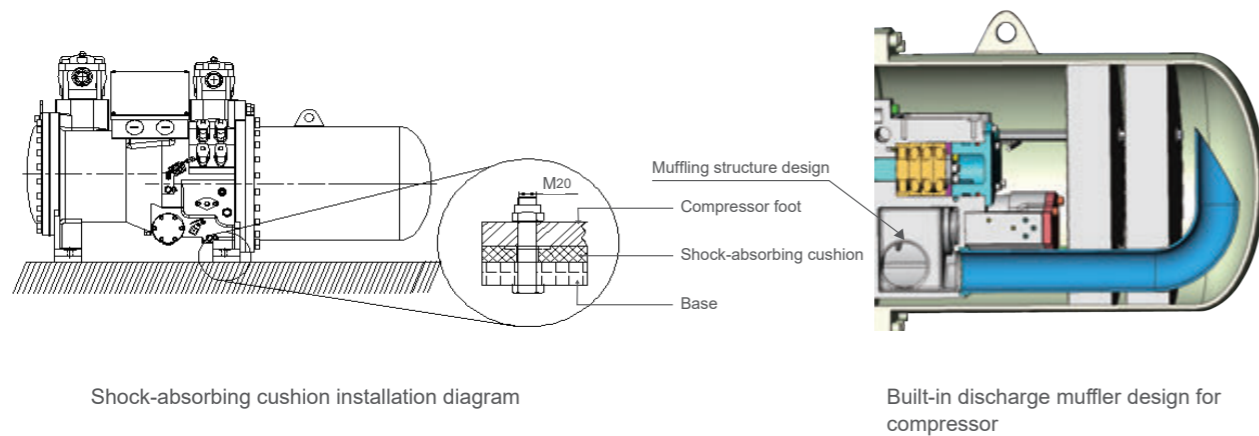
### Environmental protection refrigerant >>

- R134a environmentally friendly refrigerant achieves high cooling efficiency, without destroying the ozone layer. The refrigerant complies with the Montreal Protocol.
- Full falling film evaporation technology greatly improves heat exchange efficiency and reduces the refrigerant charge at the same time, more environmentally friendly.



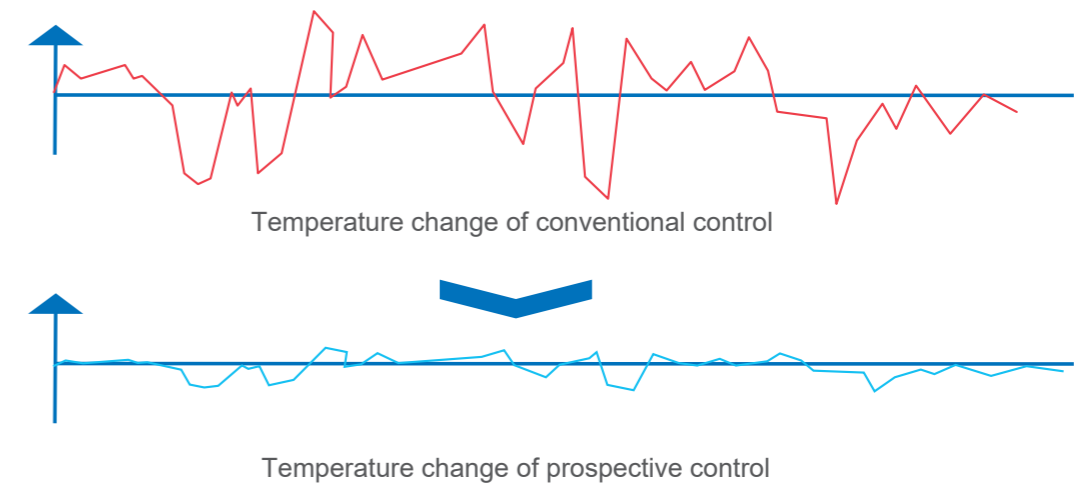
### Quiet operation >>

- The unit operates very quietly at 5~6dB (A) lower than the industrial level.
- A standard shock-absorbing cushion is configured between the compressor foot and the metal support, achieving a good damping effect.
- The built-in discharge muffler for the compressor cuts off transmission from the sound source.

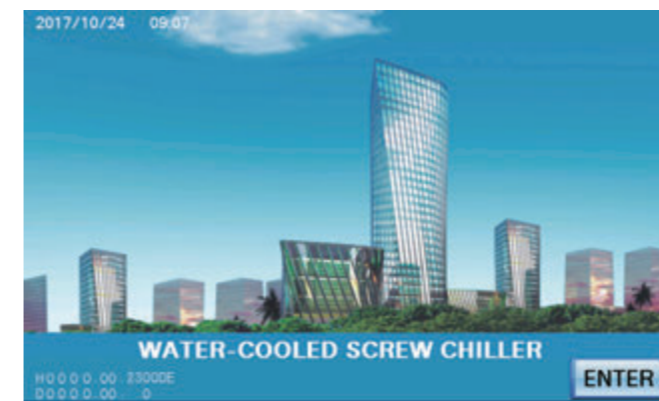


## Intelligent Control

The units adopt prospective-control logic, such as the trend prediction, self-diagnosis, self-adjustment and safety protection, it can predict real load change according to the target values and historical load levels.



- Intelligent load control:** The microcomputer control system predicts load changes in real time according to the target value and the historical load level of the same period, corrects the unit load, and avoids influencing the system's energy consumption by frequent water temperature fluctuation and abnormal shutdown due to adjustment lag.
- Intelligent control of safety:** The control system monitors the change trend of each unit parameter, and adjusts the unit operating status from time to time to make the unit operate in the safety interval.
- Intelligent failure handling:** When the unit fails, the system not only executes the corresponding protection measures, but also records the transient operating parameters of the fault, facilitating manual investigation and handling of the fault.
- The unit adopts the high precision sensor and the optimal control algorithm at the same time to conduct non-deviation control on the unit and keep the unit operating optimally all the time.



# Specifications

Model	SCWE	70H-A	90H-A	100H-A	110H-A	130H-A	150H-A	170H-A	200H-A	210H-A	
Cooling capacity	RT	69.9	87.2	95.3	108.0	130.8	150.7	170.6	194.0	210.2	
	kW	245.8	306.8	335.3	379.8	460.0	530.0	599.9	682.2	739.2	
Input power	kW	42.33	51.20	56.31	64.04	78.02	88.64	99.85	113.00	128.10	
Cooling COP	W/W	5.806	5.992	5.954	5.930	5.895	5.978	6.008	6.037	5.770	
Cooling IPLV	W/W	7.781	7.444	7.883	7.859	7.246	7.386	7.507	7.544	7.537	
Compressor	Quantity	1									
	Form	Semi-hermetic screw compressor									
	Starter	Star-delta									
Capacity adjust range	Stepless										
Refrigerant	Type	/									
	Charge	kg	75	90	105	105	120	140	160	180	180
Power supply	380V-3N-50Hz										
Rated current	A	70.2	80.4	93.4	107.5	124.7	141.3	154.7	182.5	202.7	
Max. operating current	A	103.7	123.2	139.5	159.7	187.3	212.0	235.2	271.5	302.5	
Starting current	A	191.7	245.7	298.3	360.0	394.0	454.7	480.7	617.7	676.3	
Evaporator	Water flow	m³/h	38.09	47.56	51.98	58.87	71.28	82.15	92.99	105.70	114.60
	Water pressure drop	kPa	61.1	63.8	48.5	60.5	64.1	64.9	63.2	64.2	63.6
	Connection pipe diameter	/	DN150								
Condenser	Water flow	m³/h	47.63	59.46	64.94	73.59	89.10	102.70	116.20	132.20	143.20
	Water pressure drop	kPa	54.3	52.6	50.8	49.3	50.5	52.7	51.7	50.1	52.0
	Connection pipe diameter	/	DN150	DN150	DN150	DN150	DN150	DN150	DN150	DN200	DN200
Dimension	Unit length	mm	3500	3500	3500	3500	3500	3500	3500	3500	3500
	Unit width	mm	1200	1200	1200	1200	1200	1200	1400	1400	1400
	Unit height	mm	1741	1741	1841	1791	1807	1841	1841	1941	1991
Shipping weight	kg	2021	2389	2426	2472	2960	3029	3153	3443	3566	
Running weight	kg	2001	2389	2426	2482	2990	3089	3223	3573	3716	

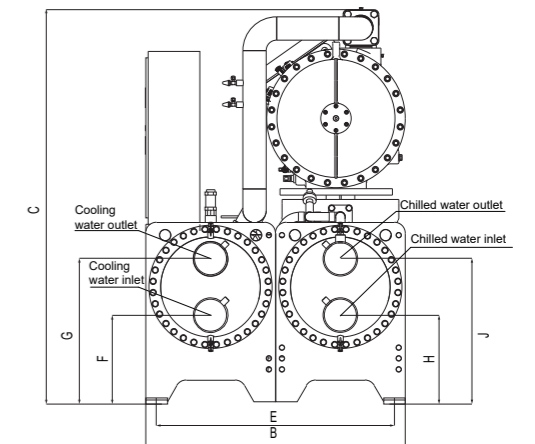
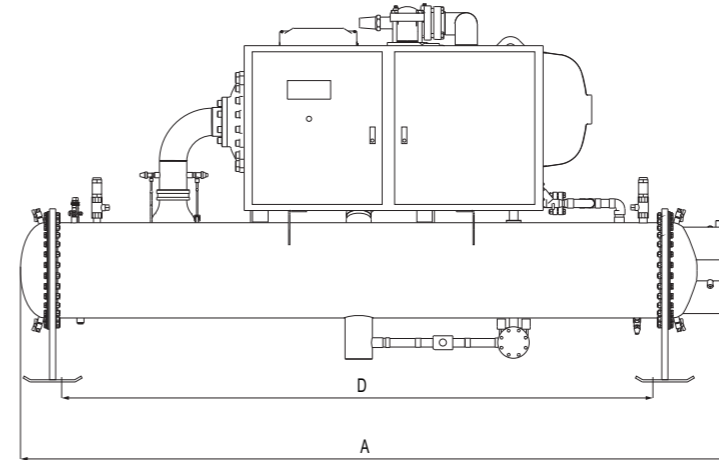
Model	SCWE	230H-A	220H-A	270H-A	300H-A	350H-A	390H-A	420H-A	470H-A	
Cooling capacity	RT	231.8	217.3	264.7	301.1	342.2	381.6	420.9	464.1	
	kW	815.2	764.2	930.9	1059	1203	1342	1480	1632	
Input power	kW	141.2	128.0	155.6	177.2	200.3	228.4	256.8	282.8	
Cooling COP	W/W	5.773	5.970	5.982	5.975	6.008	5.875	5.763	5.771	
Cooling IPLV	W/W	7.672	8.227	7.756	7.793	7.935	7.864	7.823	7.928	
Compressor	Quantity	1								
	Form	Semi-hermetic screw compressor								
	Starter	Star-delta								
Capacity adjust range	Stepless									
Refrigerant	Type	/								
	Charge	kg	200	210	270	280	300	320	350	380
Power supply	380V-3N-50Hz									
Rated current	A	225.8	215.1	248.7	282.6	310.2	369.1	406.7	452.5	
Max. operating current	A	333.4	319.3	374.7	423.9	470.4	543.0	604.9	666.8	
Starting current	A	844.0	536.9	601.6	689.6	741.3	918.5	1011.0	1209.0	
Evaporator	Water flow	m³/h	126.3	118.5	144.3	164.2	186.6	208.0	229.4	253.0
	Water pressure drop	kPa	60.6	45.0	64.2	61.6	61.4	59.3	60.5	61.3
	Connection pipe diameter	/	DN150	DN200	DN200	DN200	DN200	DN200	DN200	DN200
Condenser	Water flow	m³/h	157.9	148.1	180.4	205.2	233.2	260.0	286.8	316.2
	Water pressure drop	kPa	56.1	43.7	62.7	62.7	62.7	61.6	63.1	63.5
	Connection pipe diameter	/	DN200							
Dimension	Unit length	mm	3550	4600	4600	4600	4600	4600	4650	4650
	Unit width	mm	1400	1500	1500	1500	1500	1500	1600	1600
	Unit height	mm	1991	2188	2238	2238	2238	2238	2343	2343
Shipping weight	kg	3621	5257	6205	6324	6538	6685	7090	7216	
Running weight	kg	3781	5497	6465	6644	6908	7095	7600	7766	

Note:

- Nominal cooling capacities are based on the AHRI STANDARD 550/590 (I-P)-2015;
- Cooling condition: chilled water outlet temp. is 6.67°C(44°F), cooling water inlet temp. is 29.44°C(85°F);
- The design fouling factor for evaporator is 0.0176m²·°C/kW(0.0001h·ft²·°F/Btu) ; and for condenser is 0.044m²·°C/kW(0.00025h·ft²·°F/Btu);
- The working pressure of the water side for both the evaporator and condenser are 1.0Mpa, 1.6Mpa,2.0Mpa can be customized;
- As a result of the continuous improvement of the product, the above parameters may be changed, please refer to the product nameplate parameters and in-kind.

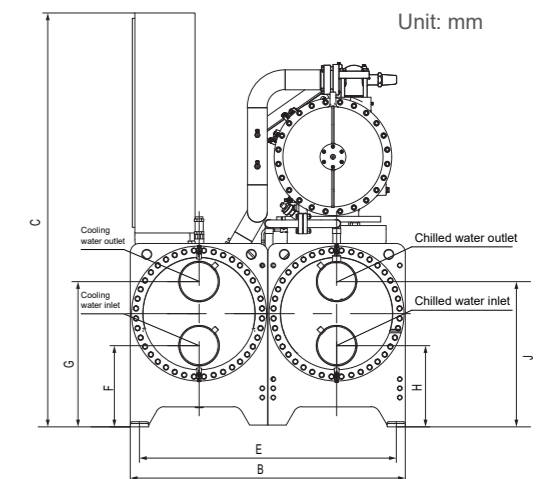
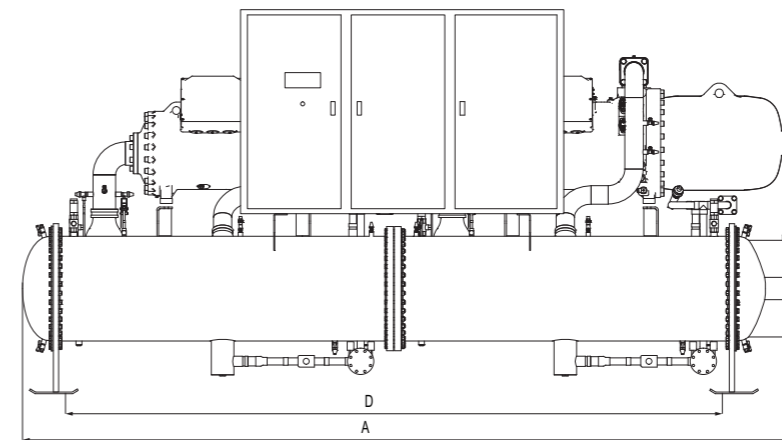
# Dimensions

## SCWE70H-A ~ SCWE230H-A



Model	A	B	C	D	E	F	G	H	J
SCWE70H-A	3500	1200	1741	2850	1100	411	671	411	671
SCWE90H-A	3500	1200	1741	2850	1100	411	671	411	671
SCWE100H-A	3500	1200	1791	2850	1100	411	671	411	671
SCWE110H-A	3500	1200	1791	2850	1100	411	671	411	671
SCWE130H-A	3500	1200	1807	2850	1100	411	671	411	671
SCWE150H-A	3500	1200	1807	2850	1100	411	671	411	671
SCWE170H-A	3500	1200	1841	2850	1100	411	671	411	671
SCWE200H-A	3550	1400	1941	2850	1300	441	741	436	696
SCWE210H-A	3550	1400	1991	2850	1300	441	741	436	696
SCWE230H-A	3550	1400	1991	2850	1300	441	741	436	696

## SCWE220H-A ~ SCWE470H-A

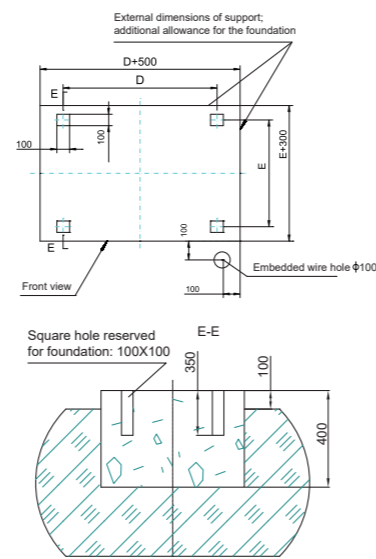
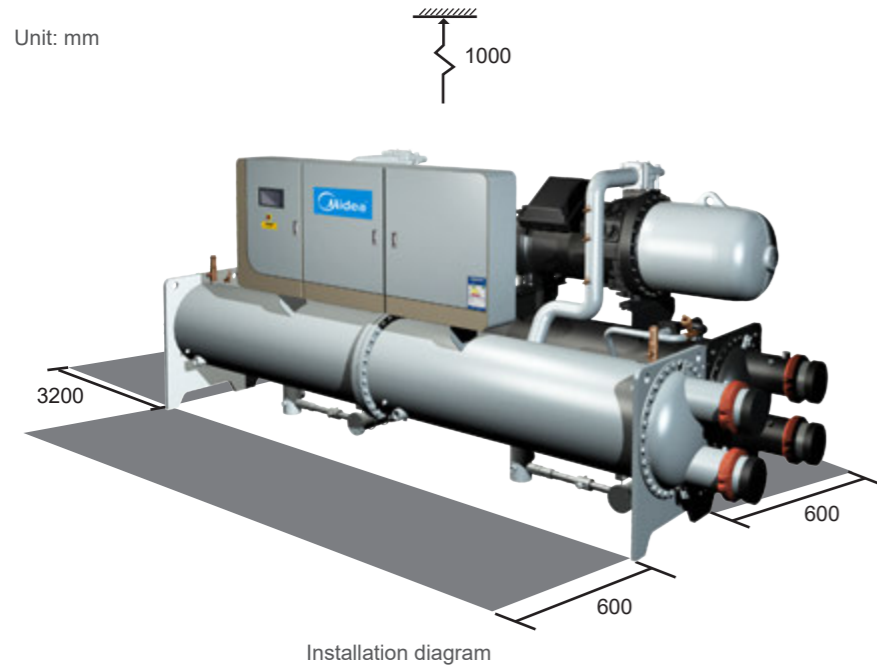


Model	A	B	C	D	E	F	G	H	J
SCWE220H-A	4600	1500	2188	3860	1400	443	793	443	793
SCWE270H-A	4600	1500	2238	3860	1400	443	793	443	793
SCWE300H-A	4600	1500	2238	3860	1400	443	793	443	793
SCWE350H-A	4600	1500	2238	3860	1400	443	793	443	793
SCWE390H-A	4600	1500	2238	3860	1400	443	793	443	793
SCWE420H-A	4650	1600	2343	3860	1500	468	818	468	818
SCWE470H-A	4650	1600	2343	3860	1500	468	818	468	818



# Installation

- ❖ Keep the unit away from fire or flammables. When the unit needs to be installed near a heating source such as a boiler, take the impact of thermal radiation into full consideration.
- ❖ Preferably install the unit in a well-ventilated place where the room temperature is below 43°C and relative humidity is under 90%. Do not install or put the unit outdoors or in open air.
- ❖ Select a dust-free place.
- ❖ The site should be well lit for maintenance and checks.
- ❖ To meet the demand for servicing the heat exchange pipe between evaporator and condenser, keep sufficient clearance around the unit (see the following figure).



Model Dimension	SCWE70 H-A	SCWE90 H-A	SCWE100 H-A	SCWE110 H-A	SCWE130 H-A	SCWE150 H-A	SCWE170 H-A	SCWE200 H-A	SCWE210 H-A	SCWE230 H-A
D(mm)	2850	2850	2850	2850	2850	2850	2850	2850	2850	2850
E(mm)	1100	1100	1100	1100	1100	1100	1100	1300	1300	1300

Model Dimension	SCWE220 H-A	SCWE270 H-A	SCWE300 H-A	SCWE350 H-A	SCWE390 H-A	SCWE420 H-A	SCWE470 H-A
D(mm)	3860	3860	3860	3860	3860	3860	3860
E(mm)	1400	1400	1400	1400	1400	1500	1500

Foundation bolt mounting dimension of each model

# Options/Accessories

## Optional accessories >>

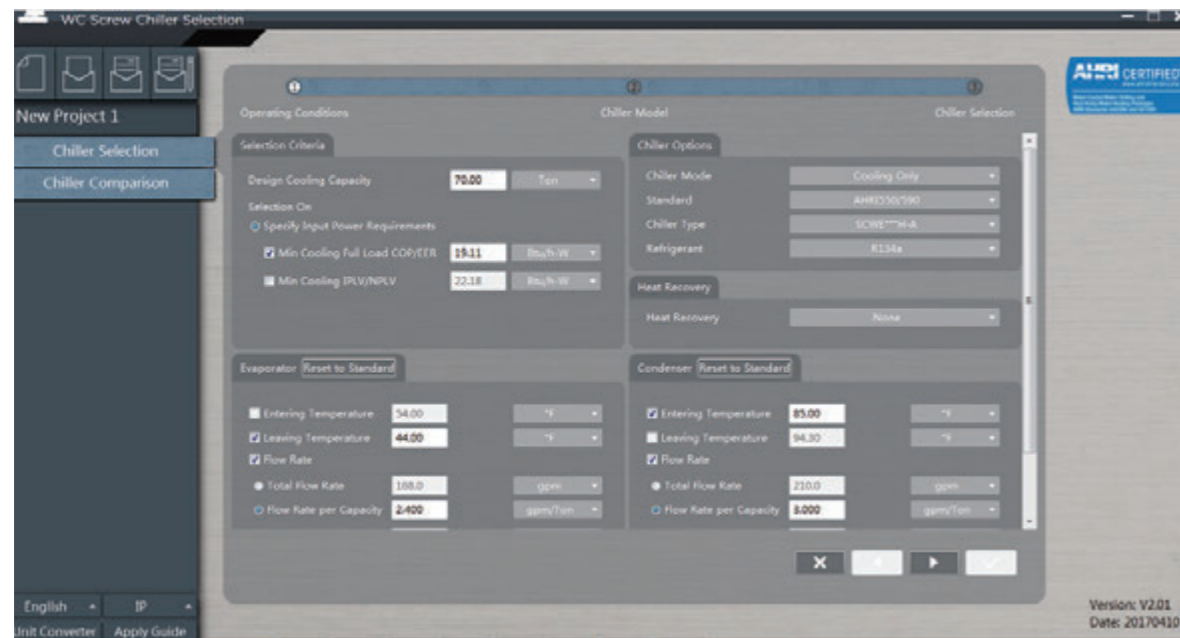
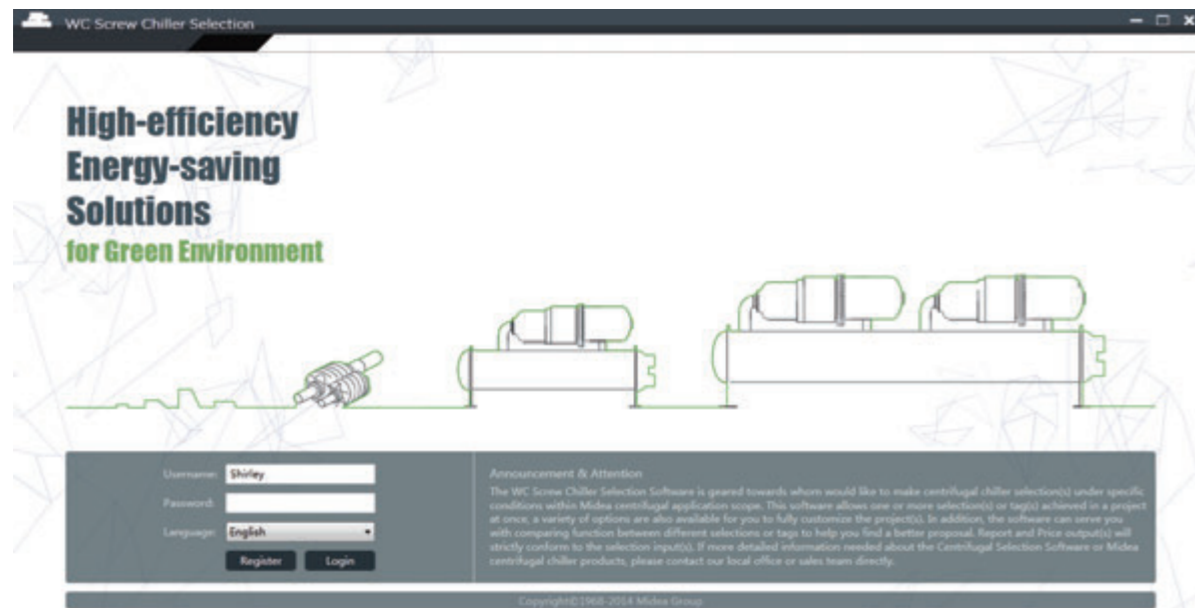
NO.	Name	Model	Instructions	Picture	Quantity
1	Vibration damper	SHA series	Vibration damper reduces vibration and noise by isolating the supports from the floor.		4
2	Remote control cabinet	YCKZ-P	Can be installed in the control room through the cable connected to the unit touch screen. It can display all status information and complete all the unit operations (startup/shutdown, error confirm, etc.)		1
3	Flange	HG/T20592-2009 Standard flange	Flange connection can be chosen for water pipe connection. Customer can choose water side pressure 1.6MPa according to requirements.		8

## Optional items >>

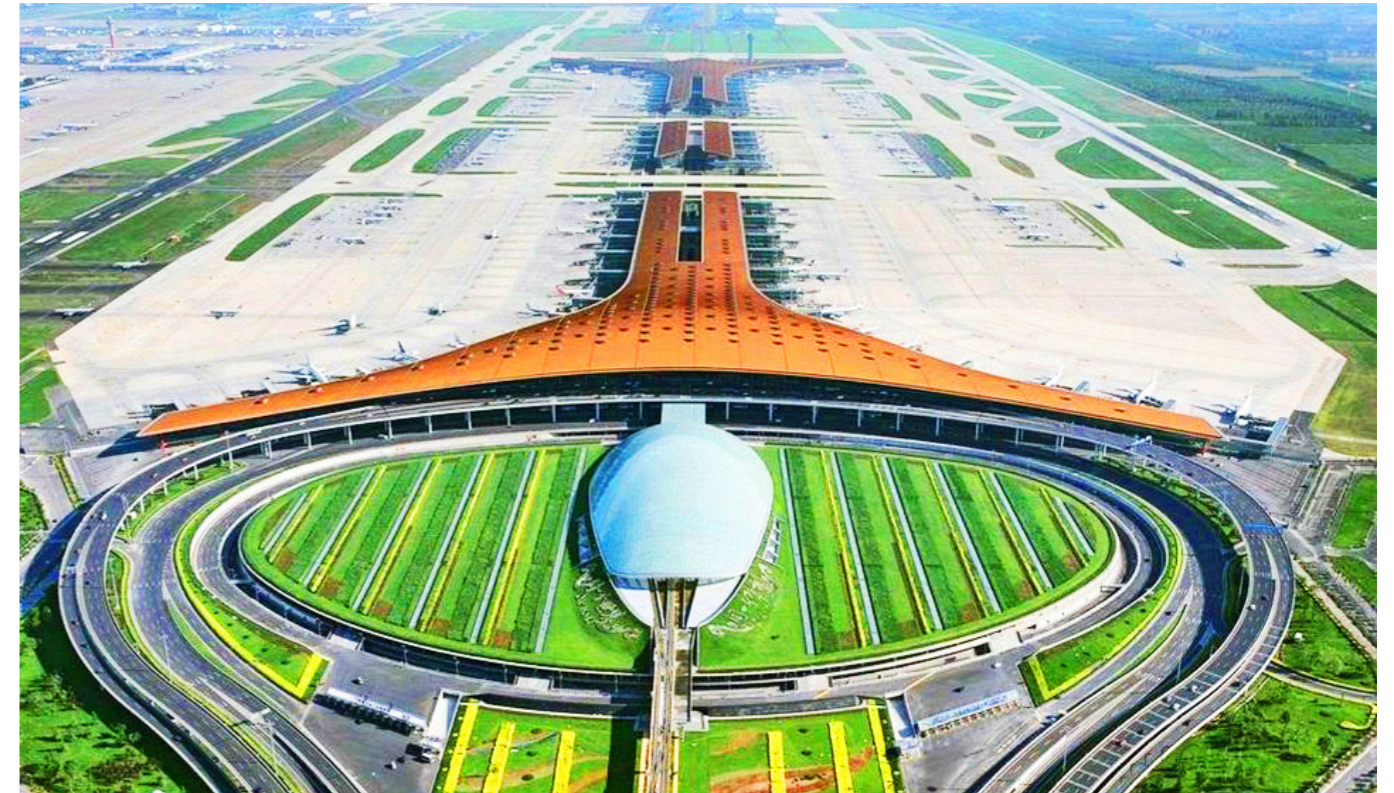
Name	Content
Power supply	380V 3Ph 50Hz is standard and 400 is optional. 380/460V 3Ph 60Hz is also available.
Water inlet/outlet connection	Victaulic type connection is standard for the condenser and evaporator. Flange type connection is optional.
High pressure water box	Standard water box can sustain 1.0Mpa pressure. 1.6Mpa or 2.0Mpa pressure is optional.
Chiller vibration isolator	Spring isolator and rubber pad are the optional accessories from the factory.
Four steps compressor control	Stepless compressor control is standard and stage control is optional.
High entering condenser water temperature	High entering condenser water entering temperature up to 35°C.
Multi unit centralized control	Multiple units centralized control is optional (Chiller plant manager).
PLC (Programmable Logic Control)	The standard electrical controller is Midea Microprocessor and PLC is optional for various applications.
Remote control & monitor panel	Remote control & monitor panel for easy operation on site.
BMS (Building management system)	Open protocol Modbus (RS485 interface) which is BMS compatible BACnet or Lonworks is optional.
Witness performance testing	Factory can arrange testing observation for customers.

# Selection Software

Professional selection software makes the product selection process much easier and more efficient than conventional manual selection. Simple operating interface and smart arithmetic greatly improves selection efficiency. The user simply needs to provide several basic parameters, such as cooling capacity, fouling factor, power supply, etc. The program will then display all suitable models for easy selection. This software can be conveniently updated online. If you have any questions please feel free to contact us.



# Reference projects



## Beijing Airport T3 Terminal

Country:	China
City:	Beijing
Total Capacity:	9556RT
Outdoor Unit:	Centrifugal Chiller & Water-cooled screw chiller
Indoor Unit:	FCU
Control System:	BMS
Completion Year:	2007
Total Floor Area:	900,000m <sup>2</sup>

We reserve the right to make change in design and construction at any time without notice.



**The Prime Minister Office Building**

Country: Tajikistan  
 City: Dushanbe  
 Total Capacity: 2880kW  
 Outdoor Unit: Water-cooled screw chiller  
 Indoor Unit: Cassette & Duct FCU  
 Control System: Wired Control & Remote Control  
 Completion Year: 2015



**The Ministry of Foreign Affairs Building**

Country: Tajikistan  
 City: Dushanbe  
 Total Capacity: 1480kW  
 Outdoor Unit: Water-cooled screw chiller  
 Indoor Unit: Cassette & Floor standing FCU  
 Control System: Wired Control & Remote Control  
 Completion Year: 2012



**Hilton Hotel in Foshan (Five Star)**

Country: China  
 City: Foshan  
 Total Capacity: 3,700RT  
 Outdoor Unit: Centrifugal chiller & Water-cooled screw chiller  
 Indoor Unit: AHU & FCU  
 Control System: BMS  
 Completion Year: 2013  
 Total Floor Area: 90,000m<sup>2</sup>