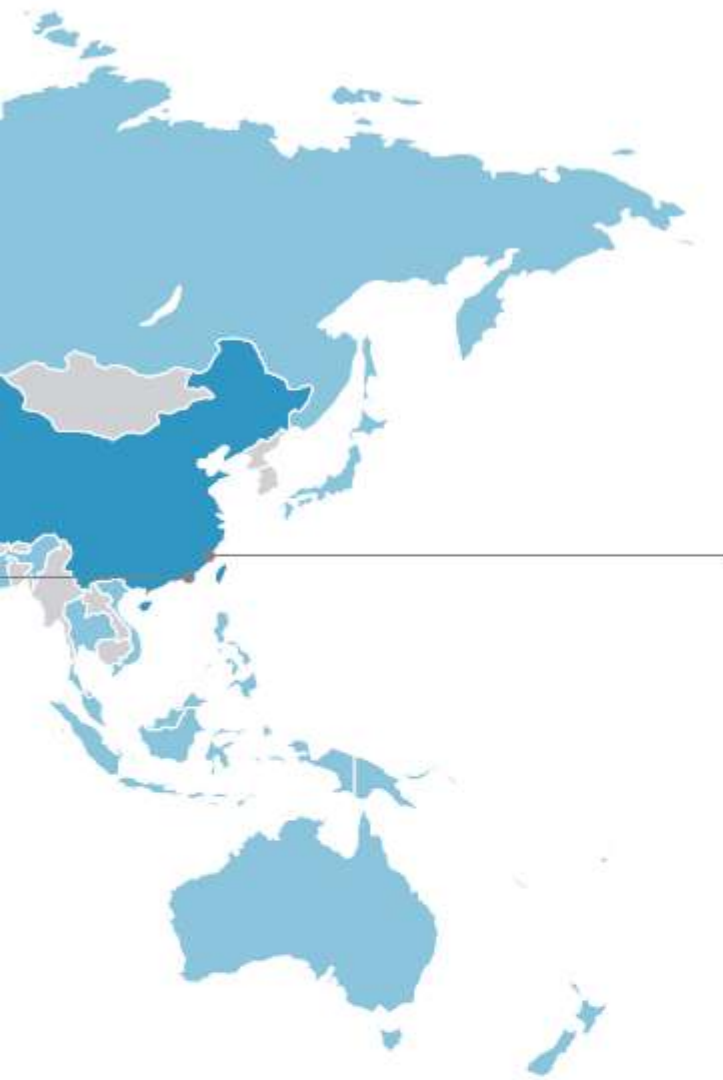




Snowman Co., Ltd, China

Snowman Co., Ltd uses its most advanced SRMTEC open-type screw compressors and launches full series of standard open-type screw brine units through optimized design. Brine unit is a general name for the units that use secondary coolant. The common secondary coolants include: solutions of ethylene glycol, propylene glycol, calcium chloride, sodium chloride and other special secondary coolants. The selected secondary coolants cannot be allowed to freeze under the evaporating temperature of refrigeration units and should have relatively good fluidity. When you consult Snowman Co., Ltd. for units, please tell us the secondary coolants to be used. We will make an optimized design for your application to ensure that the system can run safely and stably under correct designed working conditions in the future.

Snowman's open-type screw brine units can produce refrigeration power in various conditions like high, medium or low temperature to provide economical, energy saving, high efficiency and safe solutions to clients. The units can run safely and reliably with easy control. They can be extensively used in such fields as petroleum, chemical industry, coal, textile, medicine, aquatic product, business, food, shipbuilding, national defense and scientific research and others that need artificial refrigeration.

Wide applicable temperature range

CW series open type screw brine units, featuring wide applicable temperature range:

High temperature application: $-10^{\circ}\text{C} < \text{outlet brine water temperature} \leq 3^{\circ}\text{C}$;

Medium temperature application: $-25^{\circ}\text{C} < \text{outlet brine water temperature} \leq -10^{\circ}\text{C}$;

Low temperature application: $-35^{\circ}\text{C} < \text{outlet brine water temperature} \leq -25^{\circ}\text{C}$.

Temperature is subject to special design required by customers.

Highly integrated design

The optimal structural design, high integration, small occupation, convenient transportation and installation, short engineering installation period.

Efficient oil separation system

Adopt 4-stage oil separation system. Oil separation by collision, gravity, packing, efficient molecular sieve increase oil separation efficiency to 3-5 ppm, effectively reducing lubrication oil enter refrigeration system and improving system running efficiency.

Efficient heat exchanger

- Optimized heat exchange design, which ensures efficient heat exchange and improves the efficiency of unit;
- High scaling factor design, which allows for long-period running without cleaning.

Fine and removable filter

To ensure the cleanness of system, the package is equipped with precision large capacity oil filter, suction filter to stop foreign matters which might occur during installation and keep package running efficiently and stably. Filters are easy to use and can be removed for clean.

Anti-reverse flow design

In order to prevent the reverse flow during machine shut down, the package is equipped with check valves on discharge side and suction side. The check valve on discharge side locates on the discharge port of oil separator, and it can also prevent the liquid refrigerant of evaporating condenser from flowing back to oil separator during shut down.

Stable product quality

- Swedish hundred years' technology of SRM has been proved by global applications;
- Full performance test before delivery ensures product stability.

Control center

The system adopts international famous brand PLC as control core, equipped with 64 k true color touch screen, the whole operation process can be controlled, historical data can be saved.

Easy Operation

Friendly interactive interface, multiple languages to choose from. One-button operation mode simplifies the boot process.

Dynamic tracking

Real-time monitoring of the unit, touch panel capable of displaying system pressure, energy regulation load position, run time, operation mode, and operating condition in real time.

Unit automatically records all fault messages, the fault messages include the detailed description of the abnormal situation and the corresponding solution, makes it convenient for maintenance staff to do rapid diagnosis and troubleshooting.

Safety protection

Equipped with preventive safety protection system, unattended operation is also safe..

Hierarchical password access

Provide the operator with hierarchical security access passwords; in case non-professionals input incorrect parameters. There are 3 levels of access, and each level has its own password.

Inverter control

Frequency conversion control can be used. It can properly distribute motor rotational torque, and enhance the unit efficiency.

Various communication modes

The system adopts remote/local control mode to start or stop; it can also be linked to the monitoring center by reserved bus protocol in real time.

Compressor

Rotor

- SRM " i " patented screw rotor profile, the optimal 5+7 tooth mesh combination, high efficiency, low vibration, running stably;
- Use high quality forged steel material, high wear resistance, high strength, strong liquid impact resistance, applicable to all kinds of refrigerants;
- Big shaft dimension, large torque.

Housing

- Use ductile cast iron material for high strength housing design, working pressure can be up to 2.8MPa;
- Can change the economizer port according to real conditions.

Bearing

Precision high wear resistant composition rolling bearings can apply to high density refrigerant load; the design lifetime is 100,000 hours.

Shaft seal

- Innovative shaft seal structure, even stress distribution, stable running, low wear, high sealing, prevent leakage effectively.
- SiC wear-resistant sealing surface, applicable to the rotation speed of 10,000 rpm.

VI control

- VI control can help achieve the optimal pressure ratio, high efficiency and energy-saving.
- Compressor is equipped with manual VI control function, which is independent from capacity control to ensure efficient running under different working conditions. The automatic VI control also can be selected to realize the switch between different working conditions.

Capacity control

- 10%–100% step-less capacity control and intelligent controller with accurate positioning;
- Capacity control system is highly sensitive, the load changes can be achieved in 30 s.
- When without electricity, slide valve design can realize the unloading control
- World unique explosion-proof device for capacity regulation cylinder.

Multi-points oil injection cooling

Multi-points oil injection cooling can ensure efficient and stable running of compressor.

Sealing for whole package

- Adopt high quality O-ring, super sealing, safe with no leakage;
- Highly precise alignment, the compressor can run smoothly.

Motor

- Open type synchronous motor is used. The motor design is safe and reliable, with high efficiency, low vibration and low noise;
- The unit is equipped with 380V motor, 6 KV, 10 KV motors or other special electrical motors are optional.
- For start-up methods, it can select star-delta start-up, soft start-up or variable frequency start-up;
- Motor installation type can be B35 or B3;
- Customers can select motors of different IP grades or explosion-proof motors according to actual working environment.

Adapter

Adaptors are provided to integrate the compressor and motor, achieving good center alignment and more stable operation of compressor and motor.

Heat Exchanger

Optimized heat exchange design, which greatly improves the efficiency of heat exchange and ensures the efficient running of unit.

Condenser—Evaporative, water cooled, air cooled and other types of condensers can be selected based on the customers' requirements to meet the demands in different regions.

Evaporator—Dry, flooded, thermosyphon and other types of heat exchangers can be selected according to the different physical properties of secondary coolants, to ensure efficient running of the unit.

Economizer—unit is equipped with economizer under low-temperature working condition, which increases the liquid subcooling before it goes through the throttling valve before the evaporator, thus greatly increasing the Refrigeration capacity and refrigerationcoefficient of the unit.

Others

Refrigerant

Suitable for R507A, R22, R717, etc.

Accessories

All the parts in the system are produced by well-known manufacturers and of high reliability and quality assurance.

Design standard

The pressure vessel is designed as per ASME code.

Variable-frequency motor

Variable-frequency motor can be selected.

Explosion protection design

The unit can be designed with explosion protection according to customers' requirements.

Preventive protection

- An exhaust non-return valve is configured to prevent the backflow during shut-down so as to protect the compressor;
- Function of high-low pressure protection can protect the compressor and system to run in severe working conditions;
- Function of water flow protection can prevent the units from running in the case of lack of water to ensure the system in safety;
- Function of water temperature protection can prevent heat exchangers from being damaged by freezing;
- With oil level protection function, compressors can be prevented from being damaged by lack of oil;
- Safety valves are configured to prevent the system pressure from rising too high;
- High and low pressure side can be automatically isolated during sudden power failure.

Specifications and standards

- TSGR004-2009 Fixed Pressure Vessels Safety and Technical Supervision;
- GB/T 18430.1-2007 Water Chilling (Heat Pump) Units Using the Vapor Compression Cycle—Water Chilling (Heat Pump) Units for Industrial & Commercial and Similar Usage;
- GB19577-2004 Energy Efficiency Limit and Grade of Water Chilling Units;
- GB/T10870-2014 Performance Testing Methods for Water Chilling (Heat Pump) Units Using the Vapor Cycle;
- GB25131-2010 Safety Requirements Cold Water Chiller (Heat Pump) Units Using the Vapor Cycle;
- GB5226.1-2008 Safety of Machinery -Electrical Equipment of Machines -Part 1: General Requirements;
- JB/T4330-1999 Determination of Noise Emitted by Refrigeration and Air Conditioning Equipments.

Models and parameters

