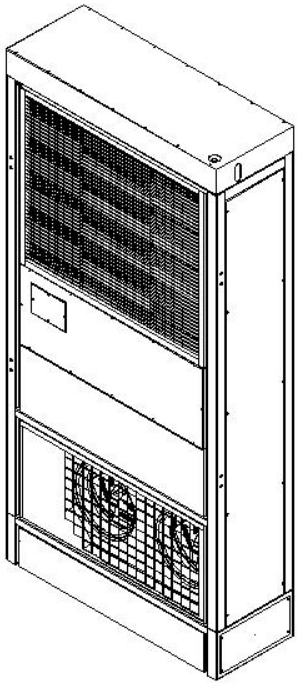
CHEN TONG YUAN

30KW energy storage system air-cooled chiller



Energy Storage System air-cooled chiller
CY-ESSC30
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Please read the data sheet carefully before application, and contact us for further technical information
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System Introduction

The air-cooled chiller is an integrated product developed by our company specifically for heat dissipation in the energy storage (such as battery) industry.
The applicable scenarios are as follows:

- The batteries inside the energy storage container generate a lot of heat.
- The equipment inside the energy storage container is sensitive to environmental temperature.

Technical characteristics of chillers

Technical characteristics	Illustrate
Advanced design	Adopting an integrated structure, all components are encapsulated in one cabinet, making installation convenient. Modular design, compact exterior structure, embedded in the client frame for installation, saving space.
Multiple functions	Support intelligent cooling and heating functions. Intelligent RS485 communication function. Support power outage memory and automatic start function. Support quick fluid replenishment by connecting fluid replenishment tools.
Safe and reliable	The liquid cooling method has a large flow rate and a small temperature difference, which can effectively extend the battery life and delay attenuation.
Efficient and energy-saving	Adopting an efficient controller to control the cooling output as needed, achieving optimal cooling and minimum energy consumption. Equipped with a variable frequency compressor to achieve variable frequency energy-saving in the refrigeration system.

Function Description

Intelligent cooling/heating:
The chiller controller monitors the outlet water temperature in real-time and intelligently adjusts it according to the target temperature setting, ensuring that the working temperature of the battery inside the container is stable within an appropriate range.

When the inlet temperature is higher than the refrigeration start temperature (refrigeration set temperature+refrigeration start lag temperature) and the refrigeration start conditions are met, the unit starts refrigeration and outputs different refrigeration quantities based on the actual temperature.

When the inlet temperature is lower than the refrigeration shutdown temperature (refrigeration setting temperature - refrigeration shutdown hysteresis temperature), the unit saves energy by shutting down the compressor and reducing the speed of the circulating water pump.

When the inlet temperature is lower than the heating start temperature (heating setting temperature - heating start hysteresis temperature) and the heating start condition is met, the unit starts electric heating.

When the inlet temperature is higher than the heating on temperature (heating set temperature+heating off lag temperature), the unit shuts down the electric heating.

Power outage memory and self start：
When the chiller loses power during operation, it remembers the parameter setting information before the power outage, starts automatically after powering on, and automatically runs intelligently based on the parameter settings before the power outage.

Coolant

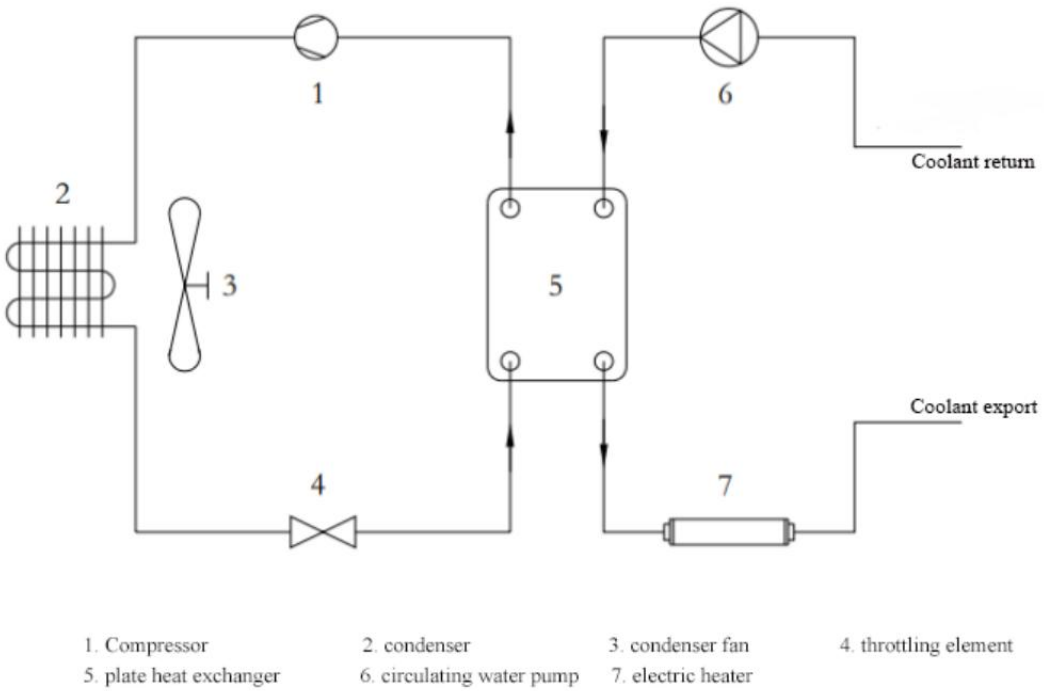
50% ethylene glycol aqueous solution

Operating environment

Operating voltage range：	380VAC±15%，50HZ
Operating ambient temperature range：	-30℃~+45℃
Operating relative humidity range：	5%~+95%
Working altitude：	0M~4000M （Performance decreases by 3% for every 1000m increase at an altitude of 1000m~4000m）

System principle

The air-cooled chiller consists of a refrigeration system and a coolant circulation system, and the system principle is shown in the figure:



1. Compressor 2. condenser 3. condenser fan 4. throttling element
5. plate heat exchanger 6. circulating water pump 7. electric heater

- Compressor: responsible for compressing the refrigerant and providing power for the refrigerant system.
- Condenser: Designed with a parallel flow microchannel heat exchanger, it has high heat transfer efficiency, and the refrigerant condenses and releases heat in the condenser.
- Condenser fan: centrifugal fan is used to provide high static pressure and large air volume, which is responsible for discharging the heat released by the refrigerant in the condenser to the outside.
- Throttling element: Electronic expansion valve is used to control the refrigerant flow rate through adjustment.
- Plate heat exchanger: The plate heat exchanger is the intersection of the refrigeration cycle system and the coolant cycle system, responsible for the heat exchange between the refrigerant and the coolant.
- Circulating water pump: responsible for conveying coolant and providing power for the coolant circulation system.
- Electric heating: responsible for heating the coolant.

Parameters of air-cooled chillers

Model	CY-ESSC30
Rated Voltage(V)	380VAC±15%
Rated frequency（Hz）	50±2%
Cooling capacity(KW) W18/L40	30.0
Heating load(KW)	12
Rated power(KW)　W18/L40	16
Rated current（A）W18/L40	35
Refrigerant	R32/4.2KG
Circulating water volume	500L/min@15m
Coolant	50% ethylene glycol aqueous solution
Working Ambient Temperature	-30℃~+55℃
Water inlet and outlet method	Bottom inlet and outlet water
IP grade	IPX5（total）/IP66（electric）
Weight	390Kg
Overall dimensions（W*D*H）	1200*440*2526mm

Equipment Outline Drawing