FO240530(1.0V)

SOETECK

High Density Cooling Solution for Large Scale Data Center

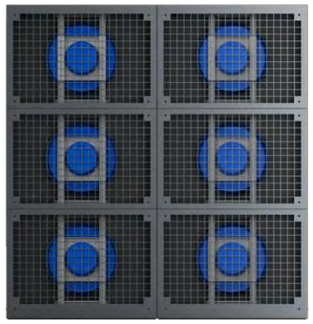
Fan Wall Modular Precision Air Conditioner

FO. WL Fan Wall

Product Introduction

High-energy wall-mounted wind wall air conditioning units are energy-saving products developed by our company. The units have high energy efficiency, low noise, modular prefabrication, fan redundancy design and other functions. High-efficiency series of high-energy wall-mounted wind wall air conditioning units are based on the customer's application perspective, committed to solving the challenges of energy consumption and space in data centers, and can be used in new computer rooms and renovation of old computer rooms.

High-energy wall-mounted wind wall air conditioning units are suitable for computer room environments such as data centers, communication centers, computer centers, and control centers.



Product Features

High Energy Efficiency

The unit adopts variable air volume, variable water flow control and hot and cold channel closure technology to achieve energy-saving operation.The unit has multiple operating modes and can select the most energy-saving mode according to the computer room environment and outdoor environment to reduce the PUE value of the computer room.

Modular Prefabrication

The high-energy wall-type wind wall series units adopt modular design. Each wind wall module can work independently or be combined according to user needs. This series of units has a large cooling capacity and a very flexible layout. The wind wall modules can be added or removed conveniently and quickly according to the needs of the room load changes.

Structural Design

The unit design breaks through tradition. The large cooling capacity and high energy coil and fan are embedded in the isolation wall of the data center, forming a closed heat channel in the return air area. The three-dimensional front unit is beautiful and neat. The cooling coil and circulating fan are separated and not contained in the same equipment housing, which greatly extends the specifications and sizes of different functional modules.

Redundant Design

The fan redundant design can meet different cooling requirements and is easy to install and maintain.

FO.WL Fan wall air conditioning wall

Product Introduction

FO.WL is a medium-to-large precision environmental control system with an integrated structure, large cooling capacity, and small footprint. The hot air from the server directly enters the air conditioner for cooling. This series of units is suitable for environmental control in equipment rooms or computer data centers, and is designed to ensure that precision equipment such as precision instruments, industrial process equipment, communication equipment, and computers have a reliable and safe operating environment.
Fan wall air conditioning wall series modular precision air conditioning wall computer room air conditioners and air conditioning walls are suitable for: data center, communication center, computer center, control center and other computer room environments.

Product Features

DC FAN

It uses high-efficiency DC fans, which have the advantages of energy saving, low noise, and continuously adjustable air volume.

Electric two-way valve

Adopt first-line brand, product performance is excellent, high sensitivity, easy to replace, and effective in regulating water flow.

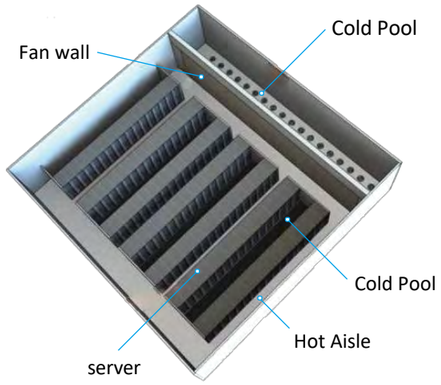
Cold water coil

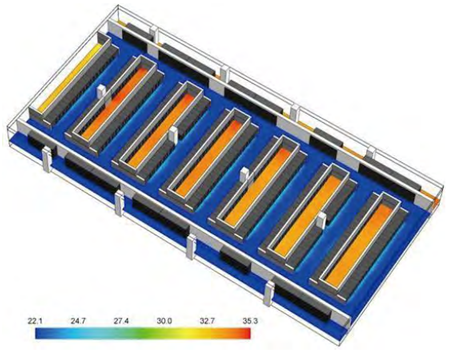
Use I-shaped cold water coil to increase the heat exchange area and make the airflow more uniform.

Product Characteristics

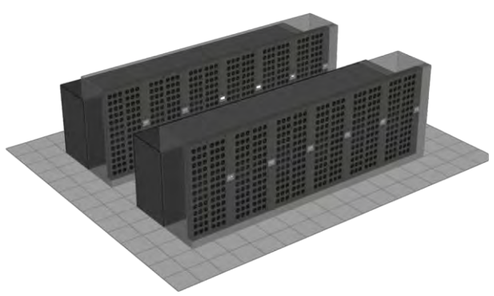
- Use high-quality components to ensure the highest performance of the whole machine.
- The unit adopts variable air volume and variable water flow control to achieve energy-saving operation.
- High sensible heat ratio design.
- The unit has large cooling capacity, occupies a small area, and can be maintained from the front.
- The units can be installed close together or dispersedly, and the equipment layout can be flexibly selected.
- The unit has various pipe outlet modes, including pipe outlet from the bottom of the unit and pipe outlet from the side door of the unit.

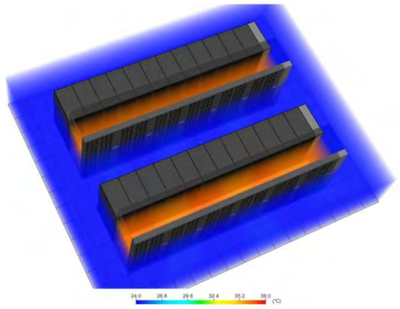
Energy-saving and Efficient





CFD cloud map after the wind wall, the temperature field of the cold channel is evenly distributed.





The temperature field of the air conditioning wall CFD cloud map is evenly distributed.

- Production
  The new generation EC blower is made of high-tech composite materials and 3D molded in one go.
- Design
  The new generation EC fans adopt excellent aerodynamic design to ensure high efficiency, fast adjustment and low noise.
- Cooperate
  Combined with SOETECK precision air conditioning control and adjustment, it provides good airflow organization and efficient operating conditions for the computer room.
- CFD simulation can intuitively display the temperature distribution of the machine room using high-energy wall-type fan wall series units, with more uniform airflow organization and high efficiency and energy saving.
- According to the temperature distribution, precision air supply units are installed in hot spots. The precision air supply unit uses energy-saving EC fans, which can adjust the wind speed according to the temperature, so that the cold air in the computer room can be evenly distributed according to the demand. After installing the precision air supply unit, the air supply distance can be increased and the air supply efficiency can be improved.

▶ Powerful Group Control function

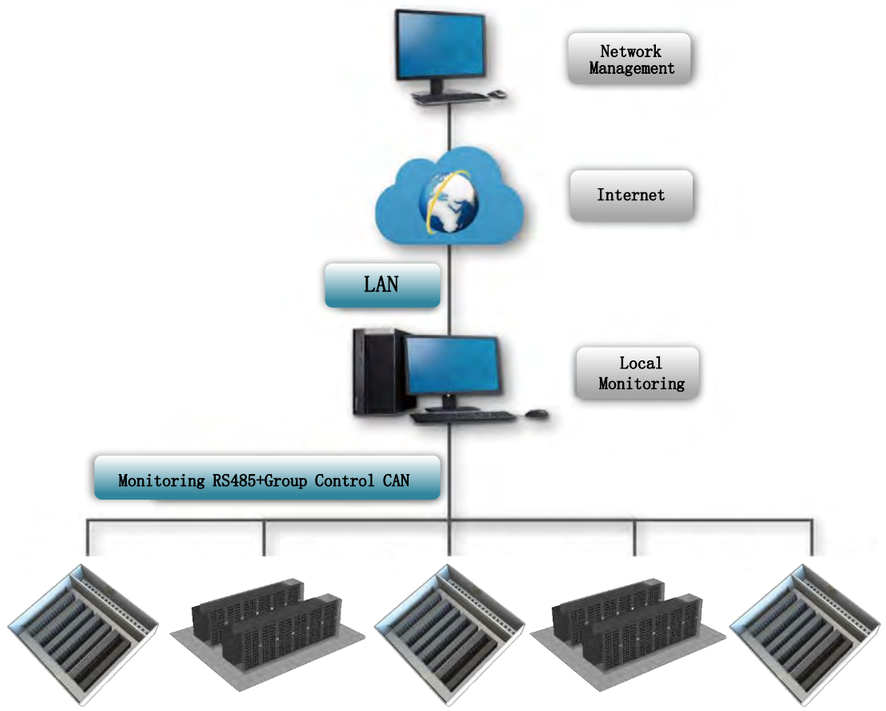
Various group control modes: rotation backup, same-direction autonomy, average distribution, and on-demand distribution. Supports rotation, backup, and cascading functions to avoid competitive operation.

▶ Powerful Monitoring Capabilities

Support RS485 and Ethernet interfaces.

Support MODBUS-RTU, MODBUS-TCP, SNMP, HTTP and other protocols.

Support WEB page access to the unit.



Application Scenario

- Data center
- Areas with low temperatures all year round

Innovative Energy-saving Data Center

The wind wall unit is combined with the building structure of the computer room, and a fan matrix air supply form can be adopted, which fully utilizes the advantages of closed cold and hot channels, with high density and low energy consumption.

Energy-saving Transformation of Data Centers

The combination of the computer room structure and the heat dissipation system can adopt direct fresh air or a mixed solution of fresh air and return air cooling. The airflow organization of the wind wall is better and the heat exchange effect is better. Under the same cooling demand, the air volume demand is reduced, the fan power consumption is further reduced, and the energy saving effect can reach more than 10%.

Data Center with Coordinated Building Structure Design

Combined with the characteristics of the building structure, a variety of personalized structural forms can be adopted to cooperate with the overall designed data center.

Areas with Low Temperatures All Year Round

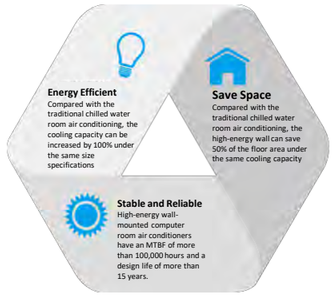
According to the characteristics of low temperature, the wind wall unit system can adopt fresh air direct cooling, fresh air return air mixed cooling, and fresh air indirect evaporative cooling for better energy saving effect.

Application Features

High Reliability

Continuous and stable temperature and humidity are the basis for the normal operation of the server. Business interruption caused by abnormal environment will bring huge losses. The reliability of precision air conditioning is the basis for maintaining environmental temperature and humidity. SOETECK always regards the reliability of precision air conditioning as a necessary requirement for equipment.

- Change the traditional airflow organization form, adopt matrix wind wall to supply air, and the airflow organization is more uniform.
- The resistance loss is small, and the fan power consumption is lower under the same wind fortress requirement.
- Change the air conditioning airflow organization to form a large cold pool in the computer room, reducing the construction investment in the computer room.
- Professionally customize a variety of structural forms, cooperate with the overall design of the building, and fully tailor-made.

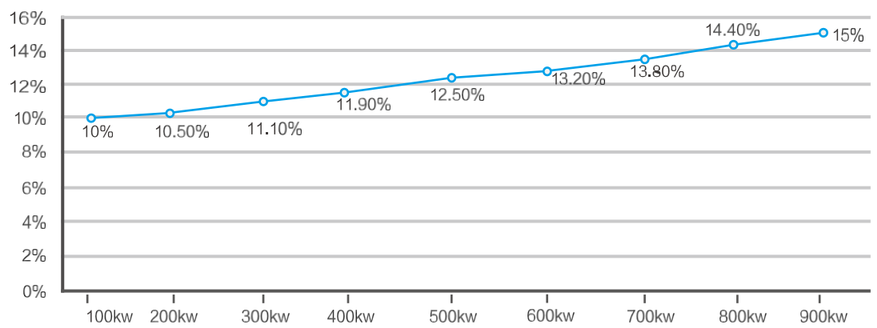


Energy-saving Features

Traditional computer rooms do not use high-energy wall fan wall units to isolate the computer room space from heat and cold. A lot of cooling energy does not enter the server cabinet but directly returns to the computer room air conditioner, resulting in serious waste of cold and hot air mixed cooling energy. When modifying the model of such computer rooms or updating equipment, high-energy wall wind wall units can be used to isolate the hot and cold channels of the computer room space.

The use of the high-energy wall wind wall unit cabinet has a great energy-saving effect compared to the traditional computer room cooling method.

Energy saving ratio of high-energy wall fan wall compared with traditional computer room cooling method



It can be seen from the above figure that: under the same cooling demand, the fan pressure loss of the high-energy wall wind wall is smaller and the fan power consumption is further reduced. In summary, the energy saving effect can reach more than 10%.

Scheme Introduction

Operating System

Chilled water refrigeration system/direct expansion refrigeration system

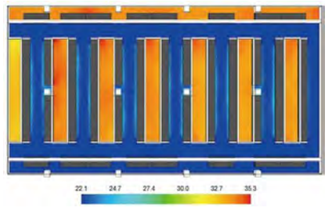
Adopting fan wall design, the fan pressure loss is smaller, the power is smaller under the same air volume, and the energy saving rate can reach more than 10%.

Fresh air direct cooling + fresh air evaporative cooling + chilled water refrigeration system / direct expansion refrigeration system

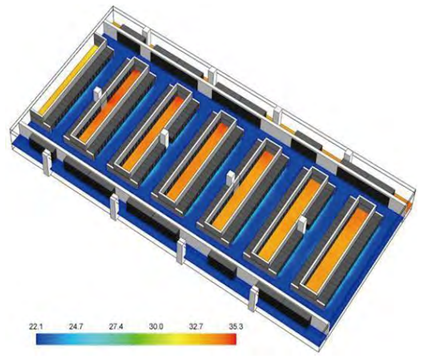
When the outdoor temperature is low, the outdoor cold air can be directly sent to the data room after filtering and humidity treatment. The high-energy wall wind wall system can be matched with a wet film humidifier; when the outdoor temperature is high and the air humidity is low, the air is sent to the data room after being cooled and filtered by wet film spraying;
When the outdoor temperature is high and cannot meet the cooling demand, it can be supplemented by a chilled water system or direct expansion refrigeration. Make full use of outdoor low temperature and low humidity to cool down, reduce the operation of air conditioning units and save energy.

Application Mode

FO.GBE fan wall closed hot channel application



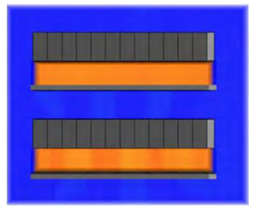
Temperature distribution diagram of hot channel room



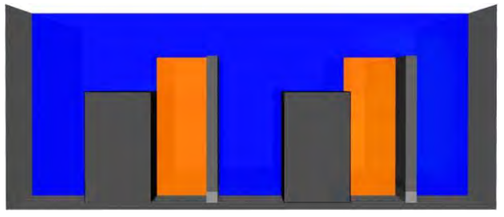
Temperature distribution diagram of hot channel room

According to the temperature distribution of the closed hot aisle room, the temperature flow field of the closed hot aisle is evenly distributed, there is no mixing of cold and hot air, and the cooling efficiency is high

FO. WL fan wall air conditioning wall closed heat channel application



Temperature distribution diagram of the equipment room



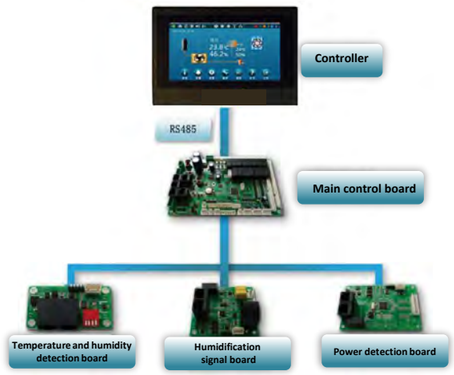
Temperature distribution diagram of the equipment room

According to the temperature distribution of the equipment room, the temperature flow field is evenly distributed, there is no mixing of cold and hot air, and the cooling efficiency is high.

High-quality Components

▶ High-quality control components

- 7-inch TFT true color touch screen, friendly human-machine interface, easy to operate.
- With the function of automatic start-up upon incoming call, the start-up time is adjustable from 0 to 300 seconds.
- Supports USB flash drive for convenient local maintenance.
- Supports Ethernet interface for convenient remote monitoring and maintenance.
- Powerful group control function, four group control modes to adapt to different load conditions.
- Modular design, flexible system configuration, and convenient function expansion.
- The communication interface uses RJ45 terminal for convenient on-site wiring.

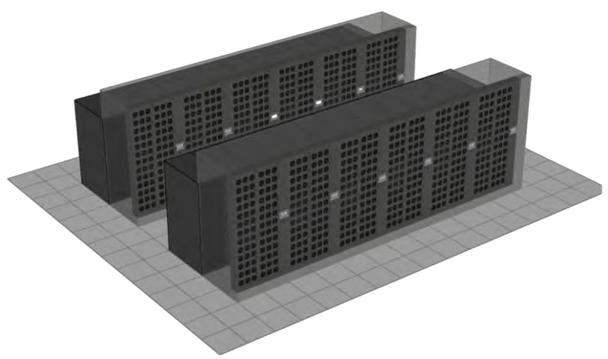


▶ High Efficiency EC Fan

The new generation of EC fans are made of high-tech composite materials and 3D one-step molding. They adopt excellent aerodynamic design to ensure high efficiency, fast adjustment and low noise. Combined with IMICON precision air conditioning control and adjustment, they provide good air flow and efficient operating conditions for the computer room.

▶ Fan Wall Technology

The fans form a wind wall which is embedded in the machine room and adopts fan redundant design and modular design to improve fan efficiency and reduce unit energy consumption.



Technical Parameters

FO.GBE Modular Fan Wall Unit Parameters

Model FO.GBE	Unit	1500 R-H	2000-R-H	2500-R-H	3000-R-H
Cooling capacity		37℃-30%RH	37℃-30%RH	37℃-30%RH	37℃-30%RH
Total cooling capacity	kW	150.10	200.10	250.10	300.10
Sensible cooling capacity	kW	150.10	200.10	250.10	300.10
Inlet and outlet water temperature	℃	15/21	15/21	15/21	15/21
Water flow rate	m³/h	21.51	28.68	35.84	43.01
Pressure drop	kPa	115.00	120.00	125.00	130.00
EC Fan					
Quantity	n°	4	4	4	6
Air supply volume	m³/h	35000	40000	49000	56000
Residual pressure	Pa	200.0			
Rated power	kW	7.008.0010.1013.20			
Dimensions-weight					
Length	mm	2400	2400	3000	3000
Width	mm	1100	1100	1100	1100
Height	mm	2150	2150	2150	2150
Connection	DN	65	65	65	65
Electrical Parameters					
Input power	380V±10%50HZ±3HZ				

FO. WL Wind Wall Air Conditioning Unit Parameters

Model FO. WL	Unit	600	300
Cooling capacity		37℃-30%RH	37℃-30%RH
Total cooling capacity	kW	60.10	30.20
Sensible cooling capacity	kW	60.10	30.20
Inlet and outlet water temperature	℃	18/24	18/24
Water flow rate	m³/h	8.61	4.32
Pressure drop	kPa	61.00	41.00
EC fan			
Quantity	n°	78	39
Air supply volume	m³/h	14100	7000
Residual pressure	Pa	20.0	
Rated power	kW	1.04	0.39
Dimensions-weight			
Length	mm	1200	600
Width	mm	200	200
Height	mm	2200	2200
Weight	kg	165	95
Connection	DN	32	32
Electrical parameters			
Input power		220V±10% 50HZ±3HZ	

FOAC Series

Product Introduction

SOETECK FOAC system is a high efficient chilled water cooling solution designed to cater for high density cooling demand in large size data center application.

FOAC is designed with a large air discharge area and deliver the cold air directly to the cold aisle with shorten air path, improving the cooling system performance.

With flooded aisle concept, uniform air flow along the cold aisle can be achieved and cooling can be optimized to taller and denser racks.

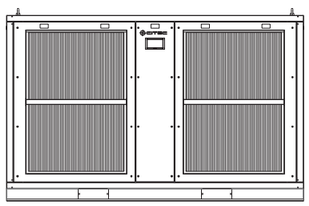
Without the need of a raised floor system, initial investment and operating cost can be reduced besides eliminating the concern of ceiling height limitations.

Product Features

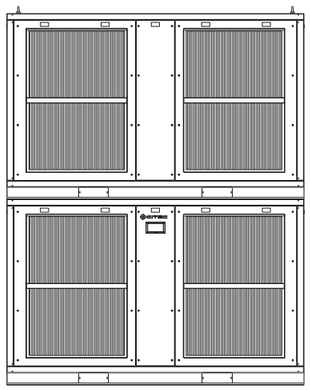
- High efficiency cooling solution with low PUE
- Front access for main components such as Control panel, EC fan and Filter for easy service and maintenance Enhanced data center security
- Modular and Stackable system which minimize footprint and maximize redundancy
- Customizable according to requirements

Configurable Through Modularity

- Citec FOAC modular and stackable design allow various configuration to fit various site condition and requirement. Allow optimal solution for maximum capacity per foot print / maximum reliability through redundancy.



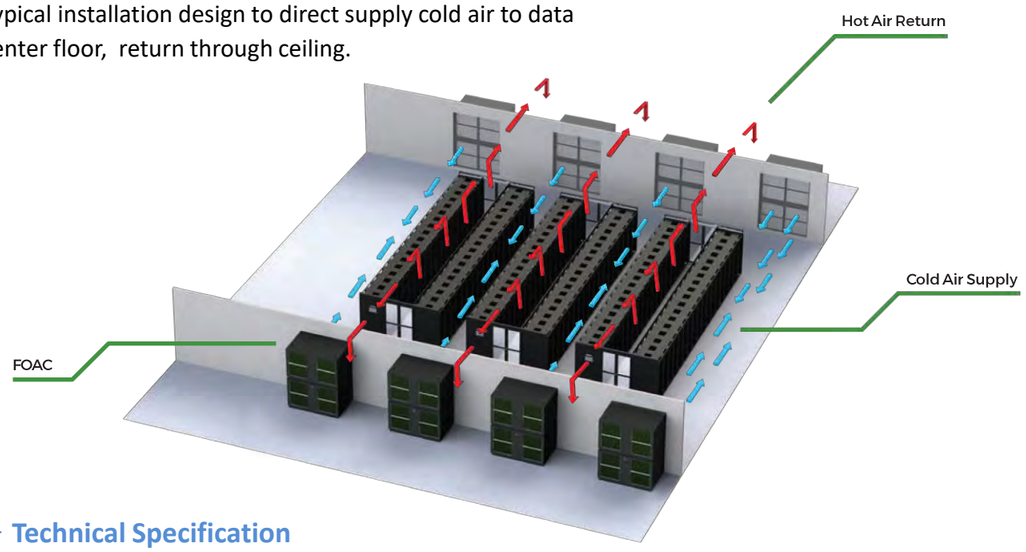
FOAC100CEH



FOAC200CEH with 200kW / 100kW N+1 redundancy

Typical Installation

Typical installation design to direct supply cold air to data center floor, return through ceiling.



Technical Specification

Model FOAC	Unit	100 CEH	200 CEH
Gross Total Capacity	kW	108.64	217.27
Gross Sensible Capacity	kW	108.64	217.27
S.H.R.		1	1
General data		100 CEH	200 CEH
Nominal Air Flow	m3/s	5.5	11
No. of Fans		2	4
Sound Level	dBA	73	76
Chilled Water		100 CEH	200 CEH
Nominal Water Flow Rate	l/s	2.52	5.04
Water Pressure Drop	kPa	34.5	43
Air Filter		100 CEH	200 CEH
Type		Washable	Washable
Rating		G4, MERV8	G4, MERV8
Unit piping connection		100 CEH	200 CEH
Water In/Out	mm	54	67
Drain	mm	22	22
Dimensions and weight		100 CEH	200 CEH
Length	mm	2400	2400
Depth	mm	1550	1550
Height	mm	1500	3000
Gross Weight	kg	700	1400

Notes:
1. Cooling capacity is based on return air condition 35ºC, 25.4%RH, Chilled Water in/out based on 12/22ºC, 400V/3ph+N/50Hz power supply, 50Pa ESP.
2. Height shown is inclusive of base frame.
3. Sound level is measured at 1min free field conditions at rated air flow.