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EUROKLIMAT®

Give life to building, bring us back to nature™

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TAHVIEHSAIV

Cooling System Solutions

EK'S DATA CENTER COOLING SOLUTIONS

Authorized dealer of Euroklimat Air-Conditioning & Refrigeration Co., Ltd.

ISO9001：2008
Certificate of quality management system for enterprise

ISO14001：2004
Certificate of environmental management system

Production permit
(XK06-015-00361)

Testing
CNAS L5123

CNAS

EKCUMC1407-Catalog-AA

EK's Subscription ID and Public ID in WeChat

Introduction to EK

EuroKlimat (hereafter referred to as EK) is your most trusted data center cooling expert. As various services related to network increase, any loss caused by each service interruption becomes critical. Furthermore end users need to spend more resources to rectify the fault. The basic environmental requirements for safe and reliable operation become mandatory.

Founded in 1963, EK is one of the earliest manufacturers to engage in R&D on precision air-conditioning system for critical applications. Based on the European leading R&D and design platform, EK integrates more than 40 years of R&D experience in Europe and excellent engineering design philosophy to provide a wide variety of users with the most advanced and reliable data center cooling solutions. EK has become a professional leader in the field.

The data center cooling products by EK have successfully served world well-known users and institutions, such as Nokia, Allianz Insurance, DHL and European Aerospace industries. EK China comprehensively introduces European leading product design, R&D and manufacturing to provide products of the same quality to Chinese customers, such as switching rooms, computer rooms and data centers.

In 2012
EK's R&D Center launched the close-to-heat-source RACK Cooliaig solutions

In 2012
EK provided data equipment room guarantee for Allianz Insurance

In 2009
the R&D Center introduced European leading equipment room precision air-conditioning technology and InRow launched the whole series of equipment room precision air-conditioning products

In 2007
EK cooperated with European Space Agency to research and develop special aerospace air-conditioning system and successfully entered DLR

In 1975
EK started to produce special precision air-conditioning equipment in the industry

In 1968
EK became a dominant precision air-conditioning brand in Italy

In 1963
EK was founded in Italy

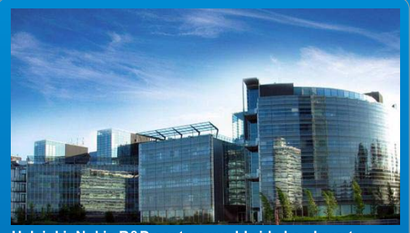
EUROKLIMAT®

EUROKLIMAT Air Conditioner,
Environmental & Energy-saving Technology from Europe.

EUROKLIMAT (EK) was established in 1963 in Italy. For the past half a century, it has become famous as an energy-saving air-conditioning manufacturer in Italy and globally. Continuous innovation, new product development and top manufacturing quality are the driving force behind this growth.

EUROKLIMAT (EK) pursues the ideals of protecting the environment, providing physical comfort and adopting energy-saving into the whole process of product R&D, manufacturing and service. Our products covering residential, commercial and close control air-conditioner are manufactured according to the global generally accepted standards.

BMW Central Data Center, Munich


Helsinki- Nokia R&D centers worldwide headquarters


Apple Central Shopping

DHL Central Data Center


ZTE Central Office

IBM Wien-Informatic centre

ENERGY EFFICIENCY
RENEWABLEENERGY

Give life to building, bring us back to nature™

EUROKLIMAT®

Data Center Solution

PUE (an energy-saving KPI For Data Center):

Cooling consumes the highest energy. Therefore, it is extremely important to reduce cooling power consumption in the data centers in order to improve the PUE.Since 1965, EK can provide data center with appropriate cooling solution to achieve the best PUE.

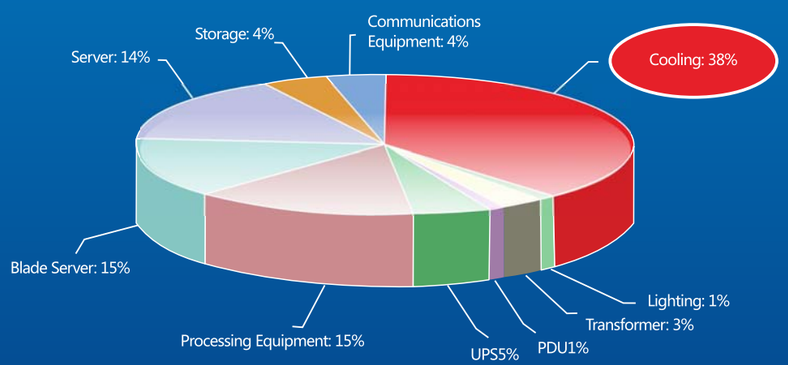
$$PUE = \frac{\text{Total Power Consumption of Data Center}}{\text{Equipment Power Consumption}} =$$

Ideal PUE	= Below 1.6
Target PUE	= 1.8
Common PUE	= 2.0-2.5

The closer the PUE to 1, the higher the greenization of a data center.

Energy consumption of all equipment in the Data Center:

Power consumption of all equipment in the Data Center:



EKCU TRADITIONAL PRECISION AIR CONDITIONING SOLUTION

Efficient and energy-saving

For the EKCU series of precision air conditioners for equipment room, each component is strictly designed, produced and tested to guarantee high efficiency of the whole equipment. It uses world's well-known scroll compressor and centrifugal fan, and works uninterruptedly for 7 x 24 hours. Under the control of a microprocessor, it can perfectly meet operating requirements and guarantee the unit's efficient energy saving. It uses an adjustable humidifier that features fast response, constant humidification and low water temperature. In addition, it uses a leading heat exchanger that can effectively increase the heat exchange area to gain better heat exchange effect.The full series of units use environment-friendly refrigerant, which guarantees the unit's high efficiency.
EKCU precision air conditioning unit is designed and produced strictly to provide 7x24 uninterruptible operations with proven Scroll compressor and centrifugal fans (EC fans are optional). The microprocessor meets the exact operating conditions with humidifier and reheat. EKCU unit uses environmental friendly refrigerants.

Intelligent control

It uses the ModBus protocol to implement remote control and advanced group control on multiple units.
Its microcomputer controller can monitor the system operating status and the system time in real time, and start or shut down the relevant air conditioning unit according to the actual demand on the refrigeration capacity.
In addition, it avoids the competitive operating mode, for example, a combination of cooling + heating or dehumidification + humidification.
The unit design and cabling comply with the ICE204-1/EN602041 standard. It is equipped with complete compressor and inner equipment protection, as well as a safety isolating switch that interlocks the door of electric cabinet.
It can implement group control on as many as eight units (free combination) and mutual backup of these units to guarantee stable and efficient operating of the air conditioning system.
The industrial standard microprocessor control center provides precision cooling unit with monitoring, data recording, safety protection and parameter setting. The operation is simple and information is clear.
Rs485 (BMS interface) is standard with SNMP interface as optional.
Comprehensive displayed information and alarm messages are provided with high resolution LCD display monitor.

Stable and reliable

It uses European leading reliability design philosophy and optimum components to guarantee system reliability and stability.
The components are high-quality components that have passed strict tests.
The advanced controller can automatically balance the load of components to prolong the unit's service time.
The air conditioner supports high pressure and low pressure switches, discharge temperature protection, and external balanced thermal expansion valve, which make the unit operate in a more precise and reliable manner.
It supports professional self-diagnosis and fault pre-warning.
The stainless steel pan is created through a punching process on high-quality cool-rolled stainless steel plates, which features outstanding appearance, corrosion resistance, condensate resistance, and strong fire resistance.
The standard configuration includes a washable air filter with strong and corrosion-resistant aluminum-alloy frame and grid protector. The air filter can be a G3 filter or an electrical screen filter.
EKCU uses European leading reliability design philosophy and proven components to guarantee system reliability and stability.
The advanced microprocessor balances the run time of components to prolong the unit's service time.

Cooling source

AX water-cooled type　BX air-cooled type　CW chilled water type

Naming Rule for Indoor Units

EKCU	32	A	H	0	BX	C	T	F	AA
1	2	3	4	5	6	7	8	9	10

1	EKCU	EK precision air conditioning for data centers
2	32	Unit code08,12,14,20…
3	A	Design serial number: A refers to technique
4	H	Function form: H refers to constant temperature and humidity. The default value is refrigerating-type unit
5	0	Refrigerant: 0: R407C; 1: R410A
6	BX	Unit form: AX: water-cooled type; BX: air-cooled type; CW: chilled water type
7	C	Dimensions code: As, A, Bs, B, C, D, E, F
8	T	Air outlet method: T for top outlet and U for bottom outlet
9	F	Power: A: 220 V~/50 Hz; F: 380 V/3N~/50 Hz
10	AA	Specific descriptions on changes in product specification

Naming Rule for Outdoor Units

EKCU	04	A	0	ST	CT	A	AA
1	2	3	4	5	6	7	8

1	EKCU	EK precision air conditioning for data centers
2	04	Unit code 04,05,08,10,12…
3	A	Design serial number；A，B
4	0	Refrigerant；0：R407C;1：R410A
5	ST	Function form: ST: standard type
6	CT	Unit form: CT: outdoor unit
7	A	Power: A: 200~240 V/50 Hz
8	AA	Specific descriptions on changes in product specification

EKCU TRADITIONAL PRECISION AIR CONDITIONING SOLUTION

AX Water-Cooled Unit		EKCU07	EKCU12	EKCU20	EKCU26	EKCU29	EKCU33
Cooling Capacity	kW	7.2	12	20.5	26.3	28.5	32.8
Sensible Cooling Capacity	kW	6.5	10.8	18.5	23.7	25.7	29.5
Power Supply		380V/3N~/50Hz					
Compressor Quantity/Loop Quantity	No.	1/1	1/1	1/1	1/1	1/1	1/1
*Input Power for Cooling	kW	2.36	3.93	6.71	8.60	9.15	10.33
*Working Current for Cooling	A	4.5	7.6	12.9	16.5	17.6	19.9
Air Volume	m^3/h	2300	3300	5600	8200	8200	8200
Outside Static Pressure	Pa	50	50	80	100	100	100
Joint of Inlet Pipe	inch	3/4	1	1 1/4	1 1/4	1 1/4	1 1/4
Refrigerant		R407C					
Diameter of Condensate Drain Pipe	mm	ф22Steel Pipe					
Water Flow	m^3/h	1.64	2.73	4.66	5.98	6.32	7.39
Electrical Heater	kW	3	6	6	9	9	9
Humidifier	kg/h	8	8	8	8	8	8
Weight of Unit During Running	kg	185	210	320	420	430	440

AX Water-Cooled Unit		EKCU42	EKCU47	EKCU48	EKCU53	EKCU58	EKCU69
Cooling Capacity	kW	41.6	46.9	48.2	53.2	58.1	69.3
Sensible Cooling Capacity	kW	37.4	42.2	43.4	47.9	52.3	62.4
Power Supply		380V/3N~/50Hz					
Compressor Quantity/Loop Quantity	No.	2/2	2/2	2/2	2/2	2/2	2/2
*Input Power for Cooling	kW	13.10	14.77	15.17	16.14	17.62	21.02
*Working Current for Cooling	A	25.2	28.4	29.2	31.0	33.9	40.4
Air Volume	m^3/h	10500	10500	14000	14000	14000	16000
Outside Static Pressure	Pa	100	100	150	150	150	150
Joint of Inlet Pipe	inch	2	2	2	2	2	2
Refrigerant		R407C					
Diameter of Condensate Drain Pipe	mm	ф22Steel Pipe					
Water Flow	m^3/h	9.38	10.57	10.86	11.89	12.98	15.48
Electrical Heater	kW	12	12	18	18	18	18
Humidifier	kg/h	8	8	8	8	8	15
Weight of Unit During Running	kg	520	540	720	740	760	960

Note:
- The indoor dry-bulb temperature is 24℃, wet-bulb temperature is 17℃, and condenser water inlet/outlet temperature is 30℃/35℃.
- The above outside static pressure refers to the static pressure of a standard unit. The outside static pressure may change with customer requirements. For specific parameters, refer to the unit nameplate.
- The specifications of electrical heater and humidifier may change with customer requirements. For specific parameters, refer to the unit nameplate.
- *Input Power for Cooling and *Working Current for Cooling do not include the input power and current of the electrical heater and humidifier. For the input power and current of the electrical heater, refer to its specifications.

BX Air-Cooled Unit		08 As	10 As	12 A	14 A	16 Bs	20 B	24 B
Cooling Capacity	kW	7.6	9.6	12.5	14.1	16.6	20.1	24.5
Sensible Cooling Capacity	kW	6.8	8.6	11.2	12.7	14.9	18.1	22.1
Power Supply	-	380V/3N～/50Hz						
Compressor Quantity/Loop Quantity	No.	1/1	1/1	1/1	1/1	1/1	1/1	1/1
*Input Power for Cooling	kW	3.04	3.7	4.72	5.64	5.93	7.18	8.44
*Working Current for Cooling	A	5.8	7.2	9.1	10.8	11.4	13.8	16.2
Air Volume	m^3/h	2300	3000	3300	3300	4200	5600	5600
Outside Static Pressure	Pa	50	50	50	50	80	80	80
Size of Air Pipe Connector	mm	1xø15.88	1xø15.88	1xø15.88	1xø15.88	1xø15.88	1xø22.23	1xø22.23
Size of Liquid Pipe Connector	mm	1xø12.7	1xø12.7	1xø12.7	1xø12.7	1xø12.7	1xø15.88	1xø15.88
Indoor and Outdoor Unit Connection	-	(Bell-Mouthed) Threaded Connection					(Bell-Mouthed) Threaded Connection + Welding	
Refrigerant	-	R407C						
Diameter of Condensate Drain Pipe	mm	ф22Steel Pipe						
Electrical Heater (Optional)	kW	3	3	6	6	6	6	6
Humidifier (Optional)	kg/h	8	8	8	8	8	8	8
Condenser CT Standard Combination	-	04 ST	05 ST	05 ST	05 ST	08 ST	08 ST	08 ST
Weight of Unit During Running	kg	175	180	200	210	240	320	340

BX Air-Cooled Unit		29 C	32 C	35 D	39 D	43 D	51 E	58 E	61 F
Cooling Capacity	kW	28.5	32.2	35	39.2	43.1	50.6	58.3	60.7
Sensible Cooling Capacity	kW	25.9	29.3	31.5	35.3	38.8	45.5	52.5	54.6
Power Supply	-	380V/3N～/50Hz							
Compressor Quantity/Loop Quantity	No.	1/1	1/1	2/2	2/2	2/2	2/2	2/2	2/2
*Input Power for Cooling	kW	9.9	11.18	12.15	14.25	15.96	18.07	21.2	22.48
*Working Current for Cooling	A	19	21.5	23.4	27.4	30.7	34.8	40.8	43.2
Air Volume	m^3/h	8200	8200	10500	10500	10500	14000	14000	16000
Outside Static Pressure	Pa	100	100	100	100	100	150	150	150
Size of Air Pipe Connector	mm	1xø22.23	1xø22.23	2xø22.23	2xø22.23	2xø22.23	2xø22.23	2xø22.23	2xø22.23
Size of Liquid Pipe Connector	mm	1xø15·88	1xø15.88	2xø15.88	2xø15.88	2xø15.88	2xø15.88	2xø15.88	2xø15.88
Indoor and Outdoor Unit Connection	-	(Bell-Mouthed) Threaded Connection + Welding							
Refrigerant	mm	ф22Steel Pipe							
Diameter of Condensate Drain Pipe	-	R407C							
Electrical Heater (Optional)	kW	9	9	12	12	12	18	18	18
Humidifier (Optional)	kg/h	8	8	8	8	8	8	8	15
Condenser CT Standard Combination	-	12 ST	12 ST	2x05 ST	2x08 ST	2x08 ST	2x10 ST	2x12 ST	2x12 ST
Weight of Unit During Running	kg	410	415	500	520	530	700	720	950

Note:
- The indoor dry-bulb temperature is 24℃ and the wet-bulb temperature is 17℃.
- The above outside static pressure refers to the static pressure of a standard unit. The outside static pressure may change with customer requirements. For specific parameters, refer to the unit nameplate.
- The specifications of electrical heater and humidifier may change with customer requirements. For specific parameters, refer to the unit nameplate.
- *Input Power for Cooling and *Working Current for Cooling do not include the input power and current of the electrical heater and humidifier. For the input power and current of the electrical heater, refer to its specifications.

EKCU TRADITIONAL PRECISION AIR CONDITIONING SOLUTION

CoolCloud Series Modular Precision Air Conditioner for Equipment Room

- The modular design facilitates maintenance
- The modular combination improves the standby capability of cooling and spacing the data center room with more reliable cooling measures.
- The modular design makes the external appearance more pceasing.
- The modular design makes the external size more compact, which facilitates transportation and installation.
- The master/slave design facilitates site expansion. It enables you to increase the number of cooling units as the equipment in the data center increase in the future.
- The unit supports front-side maintenance and occupies a small area, which efficiently saves the space in the data center.

Efficient and Energy-saving EC Fan

The EC fan is an all-new air handling apparatus that breaks traditional restrictions. It supports stepless speed change driven by an aircraft-grade DC motor. Its accurate electric control provides fast response to output demands and non-normal load is more economical and energy-saving.It supports as high as 92% operating efficiency, saving 30% energy compared with ordinary AC fans and therefore effectively reducing the unit's OPEX.The EC fan has a longer service time and lower vibration noise. It can operate stably and continuously without maintenance, which improves the unit's operating stability.

Efficient and Energy-saving Electrical Heater

The electrical heater uses the Positive Temperature Coefficient (PTC). The PTCV thermo-sensitive ceramic component features low thermal resistance, high heat exchange efficiency, and fast and stable heating. It supports temperature self-restriction, that is, it sharply decreases the power to lower the temperature within the Curie temperature when a rotation fault occurs and the heater fails to dissipate heat. In this way, open fire and a flame heating pipe never happen. It eliminates potential safety hazards.Each PTC electric heater supports dual protection: restorable temperature protection and ultimate fuse protection. What's more, its pressure difference protection can also protect the system by cutting off the PTC power supply in case of any fan or motor failure.

Stepless Speed-Change Air-Cooled Condenser

The EKCU-BE series air-cooled condenser is made of highly corrosion-resistant materials. Its fan is equipped with an imported speed controller. The controller can implement stepless speed change to guarantee normal unit operating. No matter a cold winter night or a hot summer afternoon, it always meets your cooling requirements. The condenser can be horizontally or vertically installed on site.

Precision Control System

It uses a controller specially designed for equipment room, equipped with a color backlight LCD. The system provides professional control functions to monitor the operating status and system time in real time. It correctly reports and shows alarms, and starts or shuts down the unit according to the actual cooling requirements. It helps the unit operate in backup or shift mode and avoids the competitive operating mode, for example, a combination of cooling + heating or dehumidification + humidification. In addition, the system supports automatic startup once the power supply recovers. It can access the centralized management system of equipment room through the ModBus protocol to implement remote monitoring and operation. It provides a colored touch screen for you to implement free settings.

Naming Rule for Indoor Units

EKCU	35	A	H	1	BE	C	T	F	AA
1	2	3	4	5	6	7	8	9	10

1	EKCU	EK precision air conditioning for data center.
2	35	Unit code 20, 25, 30, 35...
3	A	Design serial number: A refers to technique.
4	H	Function form: H refers to constant temperature and humidity. The default value is refrigerating-type unit.
5	1	Refrigerant: 1: R410A
6	BE	Unit form: BE: air-cooled type; CE: chilled water type
7	C	Dimensions code: A, B, C, D, E, F
8	T	Air outlet method: T for top outlet and U for bottom outlet
9	F	Power: A: 220 V~/50 Hz; F: 380 V/3N~/50 Hz
10	AA	Specific descriptions on changes in product specification

Naming Rule for Outdoor Units

EKCU	12	A	1	ST	CT	A	AA
1	2	3	4	5	6	7	8

1	EKCU	EK precision air conditioning for data center.
2	12	Unit code 10, 12, 15...
3	A	Design serial number: A, B
4	1	Refrigerant: 1: R410A
5	ST	Function form: ST: standard type
6	CT	Unit form: CT: outdoor unit
7	A	Power: A: 200~240 V/50 Hz
8	AA	Specific descriptions on changes in product specification

Application scenarios of EK's COOLING SOLUTIONS FOR DATA CENTERS:

1. Low-density data center (2-5 kW/cabinet)
2. Computer room/data center
3. UPS room
4. Precision control room
5. Industrial operation lab
6. Hospital or financial data center

EKCU DATA CENTER ROOM COOLING SOLUTION

CE Chilled-Water Unit		EKCU10	EKCU30	EKCU40	EKCU50	EKCU70	EKCU80	EKCU100	EKCU130	EKCU150	EKCU210
Total Cooling Capacity		The indoor dry-bulb temperature of return air is 24°C, wet-bulb temperature is 17°C, and chilled water inlet/outlet temperature is 7°C/12°C.									
Sensible Cooling Capacity (kW)	kW	11	30.5	40.3	50	69.6	80.5	100.5	128.5	148.5	200.8
Water	kW	10.1	27.5	37.5	48.5	62.8	75	95.5	120	140	190.8
Flow	m^3/h	1.9	5.2	6.9	8.6	11.9	13.8	17.2	22.0	25.4	34.4
Working Condition 2		The indoor dry-bulb temperature of return air is 30oC, wet-bulb temperature is 18.4oC, and chilled water inlet/outlet temperature is 12oC/18oC.									
Total Cooling Capacity	kW	11.5	32.5	41	51	71.5	82	103	130.2	145.5	185.5
Sensible Cooling Capacity (kW)	kW	11.5	32.5	41	51	71.5	82	103	130.2	145.5	185.5
Water Flow	m^3/h	1.6	4.6	6.5	7.3	10.2	12.0	14.7	18.6	20.8	26.5
Power Supply		380V/3N~/50Hz									
Motor Power	kW	0.95	3.08	3.08	3.08	4	5.6	5.6	8	8	8
Air Volume	m^3/h	3200	9000	10100	12500	17400	20000	23500	29000	30000	33000
Outside Static Pressure (Pa)	Pa	50	50	50	50	50	100	150	150	150	150
Fan Form		EC Backward Centrifugal Fan									
Electrical Heater	KW	6	6	12	12	12	18	18	18	18	18
Humidifier	kg/h	8	8	8	8	8	8	8	15	15	15
(L*W*H) Unit Dimensions (L x W x H)	mm	700*840*1950	1320*840*1950	1320*840*1950	1320*890*1950	1760*890*1950	2200*890*1950	2200*890*1950	2200*890*1950	2200*890*1950	2640*890*1950

Note:
- The indoor dry-bulb temperature is 24℃ and the wet-bulb temperature is 17℃.
- The above outside static pressure refers to the static pressure of a standard unit. The outside static pressure may change with customer requirements. For specific parameters, refer to the unit nameplate.
- The specifications of electrical heater and humidifier may change with customer requirements.

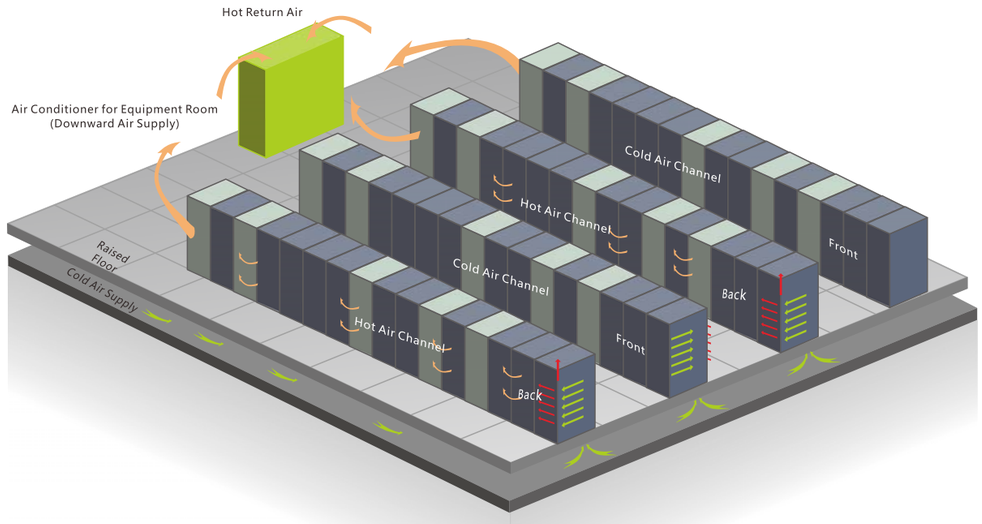
BE Air-Cooled Unit		EKCU20	EKCU25	EKCU30	EKCU35	EKCU40	EKCU50	EKCU58	EKCU70
Cooling Capacity	kW	20	25	29	35	40	50	58	70
Sensible Cooling Capacity	kW	18.8	23.0	27.3	32.3	37.6	46.0	54.5	64.7
Power Supply		380-415V/3N ~ /50Hz							
Compressor Quantity/ Loop Quantity	No.	1/1	1/1	1/1	1/1	2/2	2/2	2/2	2/2
*Input Power for Cooling	kW	7.1	9.3	10.2	12.7	14.3	18.5	20.4	25.5
*Working Current for Cooling	A	14.3	18.5	20.3	25.4	28.6	37.0	40.7	50.9
Air Volume	m^3/h	6600	8300	10000	11000	13200	16600	20000	22000
Outside Static Pressure	Pa	50	50	50	50	50	50	50	50
Fan Form		EC Backward Centrifugal Fan							
Fan Quantity	No.	1	1	1	1	2	2	2	2
Size of Air Pipe Connector	mm	1xØ15.88	1xØ22.23	1xØ22.23	1xØ22.23	2xØ15.88	2xØ22.23	2xØ22.23	2xØ22.23
Size of Liquid Pipe Connector	mm	1xØ12.7	1xØ15.88	1xØ15.88	1xØ15.88	2xØ12.7	2xØ15.88	2xØ15.88	2xØ15.88
Indoor and Outdoor Unit Connection		(Bell-Mouthed) Threaded Connectio	(Bell-Mouthed) Threaded Connection + Welding			(Bell-Mouthed) Threaded Connection	(Bell-Mouthed) Threaded Connection + Welding		
Refrigerant		R410A							
Diameter of Condensate Drain Pipe	mm	ф22 Steel Pipe							
Electrical Heater (Optional)	kW	6	6	6	6	6	6	6	6
Humidifier (Optional)	kg/h	8	8	8	8	8	8	8	8
(LxWxH) Unit Dimensions (L x W x H)	mm	880x840x1950	880x840x1950	1320x840x1950	1320x840x1950	2x880x840x1950	2x880x840x1950	2x1320x840x1950	2x1320x840x1950
Weight of Unit During Running	kg	330	350	395	415	660	700	790	830
External Size		A	A	C	C	D	D	F	F

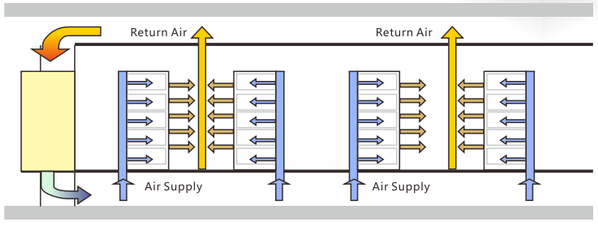
Note:
- The indoor dry-bulb temperature is 24℃ and the wet-bulb temperature is 17℃.
- The above outside static pressure refers to the static pressure of a standard unit. The outside static pressure may change with customer requirements. For specific parameters, refer to the unit nameplate.
- The specifications of electrical heater and humidifier may change with customer requirements. For specific parameters, refer to the unit nameplate.
- *Input Power for Cooling and *Working Current for Cooling do not include the input power and current of the electrical heater and humidifier. For the input power and current of the electrical heater, refer to its specifications.

Major Application of EKCU

The temperature control range and precision are as follows:

If the temperature control range is 18 - 30℃, the control precision is ±1℃.
If the humiditycontrol range is 40% - 80%, the control precision is ±5%.





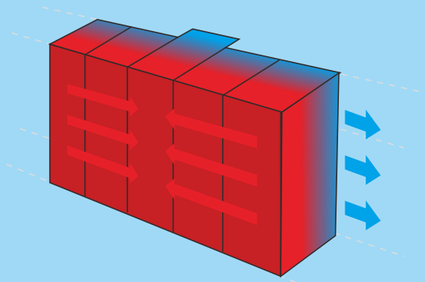
EKMC MODULAR RACK COOLING SOLUTION

EKMC Modular Rack Cooling

Rack cooling
Cooling capacity: 10 - 70 kW
Systems:-Air cooled(DX)
-Chilled waten(CW)

EKMC

The hot air from the server returns to the EKMC through the inside of the back cabinet which forms the Rack Hot Air Containment (RHAC)



Horizontac airflow provides a cold air curtain for even and direct air supply to servens with energy saving in fans.

Selection of Modern Data Center

Close-to-heat-source cooling solution reduces energy costs.

EKMC

- The modular design supports expansion as business of the data center develops.
- EK RHAC eliminates any mixing of cold and hot air to increase cooling efficiency without the need for raised floor and additional hardware for either cold aisle containment or hot aisle containment

The modular design saves investment

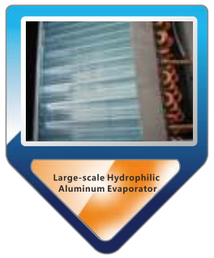
EKMC

Like a server, the unit can be installed in any IT cabinet.

Modular Rack Cooling can be added conveniently at any time and any location.

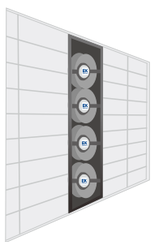
EKMC MODULAR RACK COOLING SOLUTION

Introduction to Main Components of EKMC Products



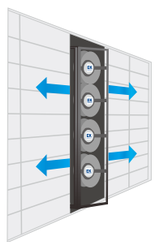
The main components come from well-known brands, for example, EBM EC fan and Johnson electrical water valve. These components effectively guarantee the unit's stable and reliable operation. The fan supports hot-pluggable replacement, which facilitates maintenance. The EK's large-scale hydrophilic aluminum evaporator guarantees that the unit operates with high sensible heat ratio.

Installation Type



Fully recessed installation

- Applies to all cabinets



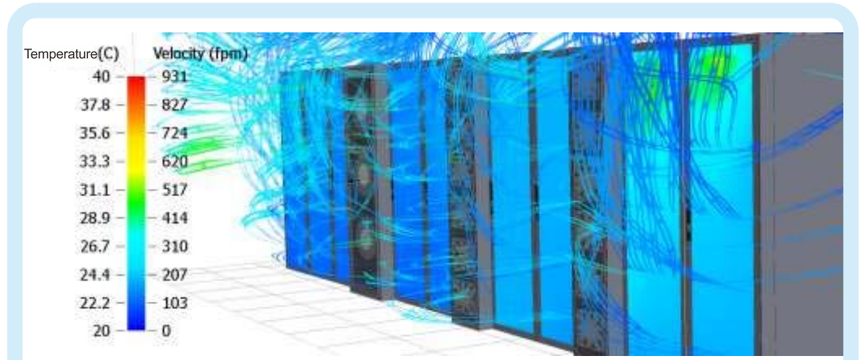
Semi recessed installation

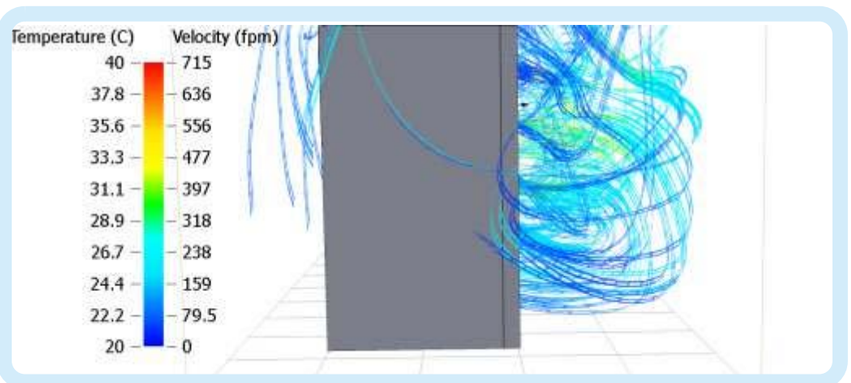
- Low fan power
- Horizontal air supply
- Applies to all cabinets

Scalable design.EKMC unit can be inserted into a cabinet like a server, which minimizes the impact on layout of the data center without any raised floor or top cabling. The layout is flexible and simple, and the installation is efficient.

High RACK Density Application

Chilled water and direct expansion can be used. The cooling capacity ranges from 15 kW to 70 kW. The EKMC unit can be widely used in server cabinets with low medium and high density:
4 kW to 60 kW + standard server
80 kW + blade server





EKMC MODULAR RACK COOLING SOLUTION

Naming Rule for Indoor Units

EKMC	25	A	1	D	22	A	AA	E
1	2	3	4	5	6	7	8	9

1	EKMC	EK Modular Rack cooling unit
2	25	Unit code 15, 25, 35, 50...
3	A	Design serial number: A, B, C
4	1	Refrigerant code: 1: R410A (applicable to DX air-conditioning unit)
5	D	Unit type: D: direct expansion (DX); C: chilled water (CW)
6	22	Applicable cabinet specification: 19: 19 U; 22: 22 U; 52: 52 U
7	A	Power: A: 220 V~/50 Hz; F: 380 V/3N~/50 Hz
8	AA	Specific descriptions on changes in product specification
9	E	Product feature code: E indicates external sales (default setting: domestic sales)

Air-Cooled DX Unit

Model		EKMC15	EKMC30
Fan Quantity	No.	1	2
Rated Air Volume (80% Rotating Speed)	m^3/h	2,175	4,350
Noise	dB(A)	60	67
Maximum Air Volume (100% Rotating Speed)	m^3/h	2,725	5,450
Power Supply	V/Ph/Hz	220/1/50	220/1/50
Maximum Curren	A	1.8	3.52
Maximum Power	kW	0.367	0.733
Power Consumption (Maximum Air Volume)	kW	0.367	0.733
Power Consumption (Rated Air Volume)	kW	0.194	0.388
Total Refrigerating Capacity (Rated Air Volume)	kW	14.0	27.3
Total Refrigerating Capacity (Maximum Air Volume)	kW	15.9	31.2
Number of DX Cooling Coils	No.	3	3
Material of Coil		Copper Pipe with Aluminum Fin	
Refrigerant		R407C/R410A	
Size of Liquid Pipe/Air Pipe Connector (Copper Pipe)	mm	9.52/15.88	12.7/22.23
Size of Condensate Pump Connector (Optional)		6 mm PE Soft Pipe	
Transport Weight of the Unit	kg	45	80
Weight of the Unit	kg	35	65
Weight of Unit During Running	kg	37	69
Weight of Unit During Running Dimensions (H x W x D)	mm	413 x 435 x1005	826 x 435 x1005

Note: Evaporating temperature: 15℃; outdoor ambient temperature: 35℃; air return temperature of the unit: 38℃; air supply temperature of the unit: 24℃ (at the entrance of the server); Rated air volume: at 80% fan speed; Maximum air volume: at 100% fan speed

Chilled-Water Unit

Model		EKMC25H (52U)	EKMC25H (46U)	EKMC25H (42U)
Rated Air Volume (80% Rotating Speed)	m^3/h	4300	3655	3655
Maximum Air Volume (100% Rotating Speed)	m^3/h	5000	4300	4300
Power Supply	V/Ph/Hz		220/1/50	
Power Consumption (Maximum Air Volume)	kW	0.86	0.737	0.737
Power Consumption (Rated Air Volume)	kW	0.584	0.501	0.501
chilled water inlet/outlet temperature			7℃/12℃	
Total Refrigerating Capacity(Rated Air Volume)	kW	39.0	32.1	30.9
Sensible Refrigerating Capacity(Rated Air Volume)		33.5	27.6	26.9
Total Refrigerating Capacity(Maximum Air Volume)	kW	42.5	35.4	33.9
Sensible Refrigerating Capacity(Maximum Air Volume)		37.4	31.2	30.4
Refrigerating Water Flow Rate(Rated Air Volume)	m^3/h	6.2	4.9	4.4
Refrigerating Water Flow Rate(Maximum Air Volume)	m^3/h	6.2	4.9	4.4
chilled water inlet/outlet temperature			12℃/18℃	
Total Refrigerating Capacity(Rated Air Volume)	kW	27.7	23.1	22.4
Sensible Refrigerating Capacity(Rated Air Volume)		27.7	23.1	
Total Refrigerating Capacity(Maximum Air Volume)	kW	31.3	26.1	25.3
Sensible Refrigerating Capacity(Maximum Air Volume)		31.3	26.1	
Refrigerating Water Flow Rate(Rated Air Volume)	m^3/h	4.0	3.3	3.2
Refrigerating Water Flow Rate(Maximum Air Volume)	m^3/h	4.5	3.7	3.6
Size of Water Pipe Connector	mm		DN25	
Dimensions (W×D)	mm		300*1200	

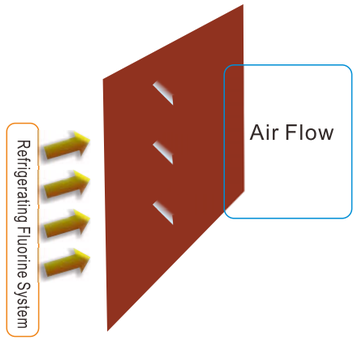
Note：Air return temperature to the unit: 38(DB)℃ (、22.3(WB)℃；Rated air volume: at 80% fan speed; Maximum air volume: at 100% fan speed

Chilled-Water Unit

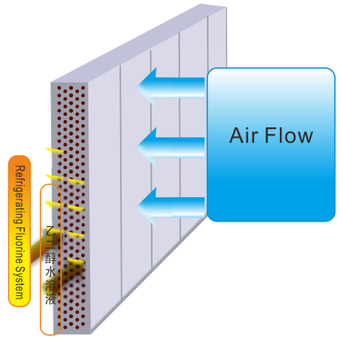
Model		EKMC35
Fan Quantity	No.	2
Rated Air Volume (80% Rotating Speed)	m^3/h	4350
Noise	dB(A)	67
Maximum Air Volume (100% Rotating Speed)	m^3/h	5450
Power Supply	V/Ph/Hz	220/1/50
Maximum Curren	A	3.52
Maximum Power	kW	0.733
Power Consumption (Maximum Air Volume)	kW	0.733
Power Consumption (Rated Air Volume)	kW	0.388
Total Refrigerating Capacity (Rated Air Volume)	kW	28.9
Total Refrigerating Capacity (Maximum Air Volume)	kW	34.2
Number of Coils	No.	3
Refrigerating Water Flow Rate	m^3/h	3.99
Size of Water Pipe Connector	mm	DN25
Transport Weight of the Unit	kg	80
Weight of the Unit	kg	65
Weight of Unit During Running	kg	69
Dimensions (H x W x D)	mm	826 x 435 x1005

Note: Chilled water inlet/outlet temperature: 7/12℃, air return temperature of the unit: 38℃; air supply temperature of the unit: 24℃ (at the entrance of the server); Rated air volume: at 80% fan speed; Maximum air volume: at 100% fan speed

EKAS FREE COOLING CHILLER

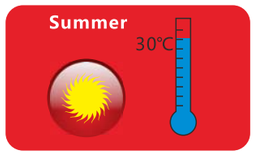


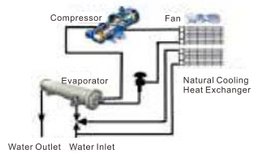
Ordinary Condenser Coil



free Cooling Coil

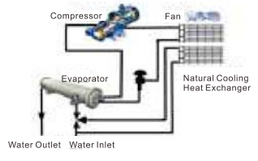
Summer





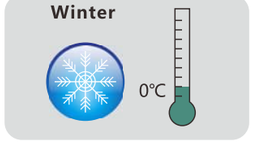
1. The outdoor ambient temperature is too high to use natural cooling
2. The three-way valve is closed
3. No water flows through the natural cooling coil
4. The chilled water directly returns through the evaporator
5. The air conditioner's compressor and fan start (100% compressor output)

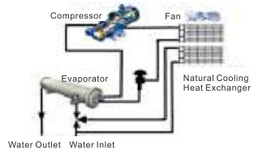
Transitional Season



1. The outdoor ambient temperature is lower than the indoor temperature so that natural cooling is practicable
2. The three-way valve is open
3. The chilled water returns through the natural cooling coil for pre-cooling
4. The chilled water flows through the natural cooling coil and then the evaporator
5. The air conditioner's compressor and fan start (partial compressor output)

Winter





1. The outdoor ambient temperature is low enough to provide the energy that can meet all indoor demands.
2. The three-way valve is open
3. The chilled water returns through the natural cooling coil
4. The chilled water is all made through outdoor environment
5. The air conditioner's compressor is closed and the fan starts (no compressor output)

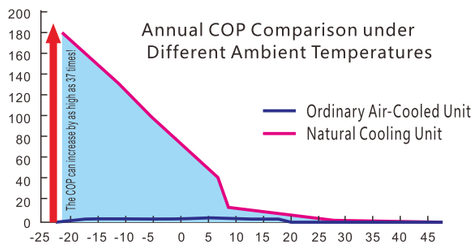
EKAS FREE COOLING CHILLER

1、The 1250 kW unit is used as an example.

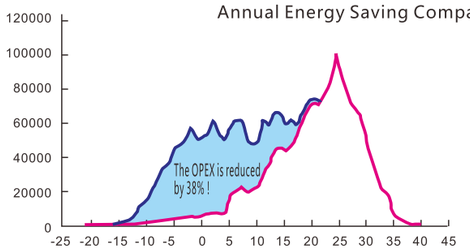
2、 7 x 24 hours, 18/12℃ chilled water.

The annual OPEX is reduced by 38%

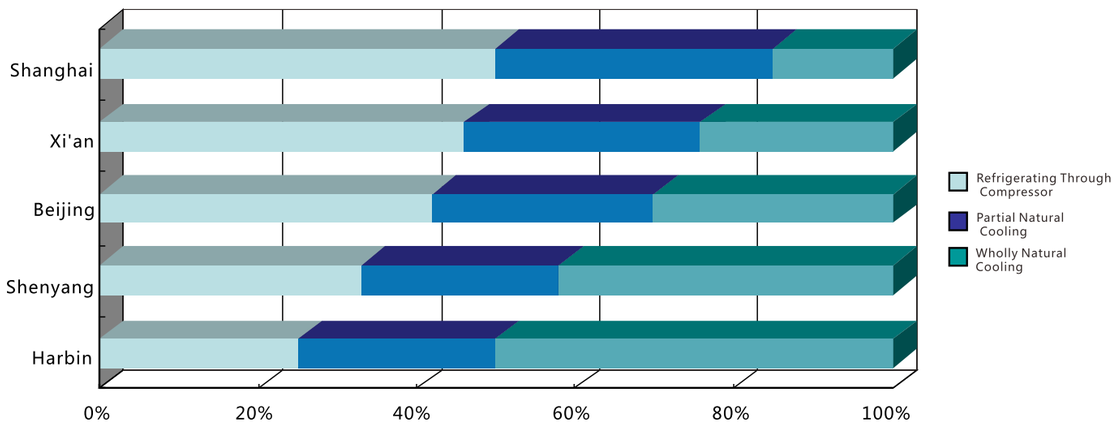
The COP can increase by as high as 37 times !



The annual OPEX is reduced by 38%. !



Time Proportion of Different Operating Modes Based on Different Cities :



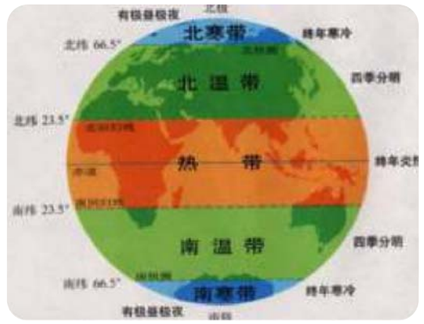
From South to North, more energy is saved and the PUE of equipment room is lower.

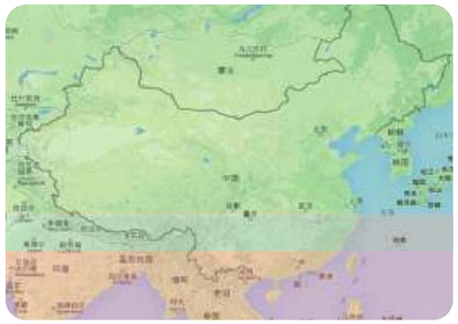
Applicable Places for free Cooling

- Applicable Places Requiring Full-Year Cooled-Air Supply
- Applicable Places Requiring Full-Year Cooled-Air Supply
- Regions with Low Ambient Temperature
- Regions That Lack Water Resources

In fact, free cooling can be used in the buildings that have cooling demands in the whole year, for example, large-sized data centers, switching rooms, IDC rooms, communications rooms, etc stations, and industrial uninterrupted technique devices.

Applicable Regions FOR FREE Cooling





Teopical region is not suitable for free cooling application.
For the Northern and Southern 7 latitude free higher than 23.5°, that is, the regions north to the Yangtze River of China, it is suitable to use negions with cooling.

Model		EKAS065	EKAS075	EKAS085	EKAS095	EKAS110	EKAS120	EKAS140	EKAS150	EKAS170	EKAS190
Nominal Refrigerating Capacity	kW	226.3	270.0	299.5	322.7	392.9	437.1	502.9	548.8	619.5	683.7
	USRT	64.3	76.8	85.2	91.7	111.7	124.3	143.0	156.0	176.1	194.4
	$x10^4$kcal/h	19.5	23.2	25.8	27.7	33.8	37.6	43.2	47.2	53.3	58.8

Model		EKAS200	EKAS220	EKAS240	EKAS260	EKAS280	EKAS300	EKAS320	EKAS340	EKAS380	EKAS400
Nominal Refrigerating Capacity	kW	719.6	801.9	874.2	939.9	1005.7	1097.6	1168.3	1239.0	1367.3	1439.1
	USRT	204.6	228.0	248.6	267.3	286.0	312.1	332.2	352.3	388.8	409.2
	$x10^4$kcal/h	61.9	69.0	75.2	80.8	86.5	94.4	100.5	106.6	117.6	123.8

Note: ■ Working conditions of free cooling chiller: outdoor dry-bulb temperature 35℃; outlet water temperature 7℃; water flow 0.172 m3/(h·kW)
■ For specfc requlicements, contact EK's Marketing Department.

Shanghai Jinqiao Data Center

Project Introduction :

It consists of 600㎡ IT equipment room, 240㎡ substation, 110㎡ diesel generator room, 52㎡ OAM space, and many offices.

Project Analysis :

Each MDC(modular data center) consissts of 12 standard cabinets.The total IT power consumption is 800 kW and the planned power consumption per cabinet is 6 kW. There are 10 MDC and the IT load of each MDC is 72 kW. When the power consumption of other devices is taken into consideration, the total cooling load is 75 kW. There are two network MDC and the IT load of each network MDC is 64 kW. When the power consumption of other devices is taken into consideration, the total cooling load is 67 kW.

General Planning :

3 MDC for phase I project (2 IT MDC and 1 network MDC)
3MDC for phase II project (3 IT MDC)
6 MDC for phase III project (5 IT MDC and 1 network MDC)

There are 12 MDC in total and each MDC consists 12 cabinets. The density per cabinet is 6 kW.

Total: 12 x 12 x 6 = 864 kW。

According to the statistics on electrical capacity, the capacity of the fofae system is calculated as follows:

Equipment Room Name	Equipment Load (kW)	Room Area (m2)	Total Load (kW)	Designed Load
Main Equipment Room	795.60	612.00	856.80	899.64
UPS Room	138.93	200.00	158.93	166.87
Battery Room	15.91	57.6	21.67	22.76
Total	869.60	1037.40	1089.27	

Free cooling chillers :

According to the power capacity and the requirements of phased construction, 3 free cooling chillers are used to operate in N+1 configuration.
In first phase, two 1+1 systems are installed.
The MDC uses inrow cooling units with cold aisce containment.

IBM Wien-Informatic centre (IBM Wien Informatic Center in Austria)

Project Introduction :

This project is one of the data centers constructed by IBM in Wien Austria.
EK's all-new displacement air supply unit and chilled-water CWK series unit are used in this project.

Cooling capacity: 600 kW

Project Analysis :

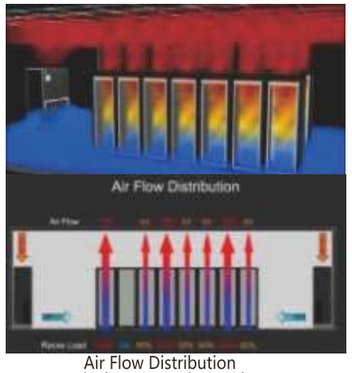
This project is one of the data centers constructed by IBM in Wien Austria. The total area of equipment rooms is about 1000㎡, the load per unit is about 600 W/m, and the total load is about 600 kW.
According to the equipment room's dissipation density, cabinet density and distribution form, the EK air conditioners use the all-new displacement air supply to guarantee good refrigerating effect and long-term stable operation of the equipment room.

Displacement air supply :

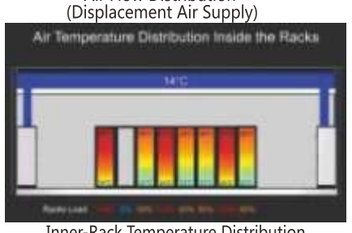
Cold air is supplied to indoor environment through the bottom grid of indoor unit. A low-temperature air layer forms in the bottom space indoor and flows into racks to cool the heating electrical devices.

Advantages :

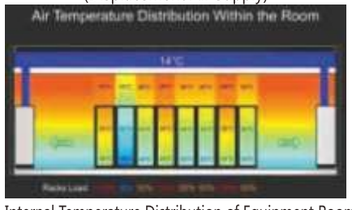
1. No raised floor, ceiling, or air duct am required
2. The inlet and outlet water temperature is the same, the refrigerating capacity increases by 27%, and the equipment investment decreases by 20%
3. The inlet water temperature of the unit increases by 40℃ and the load of refrigerating equipment decreases to guarantee more energy-saving operation
4. The unit can adjust the air supply according to the load, so as to reduce the power consumption of indoor fan.



Air Flow Distribution
(Displacement Air Supply)



Inner-Rack Temperature Distribution
(Displacement Air Supply)



Internal Temperature Distribution of Equipment Room
(Displacement Air Supply)

Railway Cooling Solution for Equipment Room

Project Introduction :

The Xiang-Gui high-speed railway is also called Xiang-Gui passenger railway. It is the most important high-speed railway in Guangxi province and also the most important part of Datong-Zhanjiang railway that is known as one of China's eight vertical railways and eight horizontal railways. EK provides a total number of 115 air conditioners for the communications rooms, signal rooms, and IT equipment rooms in the railway stations along the line.

Cooling capacity: 1202.7 kW

Project Summary :

With the development of THIS railway construction, the railway communications network becomes an important tool for assuring driving safety and improving transportation efficiency. The characteristics of railways make most of communications rooms and equipment distributed along the railways and equipment rooms are usually constructed in remote areas and unattended for long time.As a guarantee to stable operation of the equipment in equipment rooms, the stable and reliable operation of air conditioning systems become more important.

All units that EK provides for this project use Copeland efficient scroll compressors that are built in indoor units. Such compressors can guarantee long-term stable operation without any fault. Outdoor condensers are made of high-strength corrosion-resistant sprayed steel plates and are applicable to various severe ambient environment (-15℃ - 48℃). The units use Italy CAREL DDC controllers that can provide fine control on indoor temperature and humidity. The controllers have RS485 interfaces that can implement centralized remote monitoring and convenient unit control and supervision. All units support power-off memory, power-on start, phase sequence tolerance, and HA switching.

EK precision air conditioners for equipment room assure a stable guarantee to your high-speed travel.

Project Name: Bayer Material Science (Qingdao) Co., Ltd.

Project Introduction : Bayer is one of the top 500 enterprises around the world.
This project is Bayer's Polyurethane Material Expansion Project (annual output: 30,000 tons)
All units of this project will be used in the plants for processing precision parts

Project Name: Sihui Rural Credit Cooperative

Project Introduction : Project Introduction: Sihui Rural Credit Cooperative is in the Dongcheng district of Sihui. In this project, EK provides a full set of air conditioners for its bank data storage and exchange equipment rooms.

Project Name: Continental

Project Introduction: Continental was founded in 1871 and headquartered in Hanover Germany. It is the third largest tire manufacturing enterprise around the world and the largest auto parts supplier in the Europe. This project is a reconstruction project and all units will be used in the IDC data center.

Project Name: Huma Data Center of China Telecom

Project Introduction : Project Introduction: Shanghai Huma Data Center is constructed according to the T4 standard. It belongs to IDC Data Center of China Telecom Shanghai Branch.
In this reconstruction project, EK provides chilled-water air conditioners for equipment room.

Project Name: Chongqing Kaixian first People's Hospital

Project Introduction: The hospital is constructed according to the standards of level-3 general hospitals. It covers an area of 118 mu (1 mu = 666.67 m2) and has a building area of 65,000 m2.
In this project, EK provides prevision air conditioners for its NMR room.