

freecooling

Free Energy



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Free cooling is an economical method used to reduce the energy consumed by the cooling systems or the time that the cooling units run by using the outside temperature of air to cool the data center or other facilities. When the outdoor temperatures are lower relative to the indoor temperatures, the system utilizes the cool outdoor air as a free cooling source. Moreover, the system directly uses the fresh air cooling by filtering (and adjusting the humidity of) the outside air which is piped to cool the data center. In the cold climates, the efficiency of the system can be better than the daily climate conditions under the limit value of the humidity of the outside air.

Free Cooling System

In Telecom Base Stations, air-conditioning units are still used for cooling. This means unnecessarily large amounts of energy are used for air-conditioning. "Barantech" Free Cooling System provides maximum cooling by consuming low energy. The working principle of the system is very simple. Instead of cooling the hot air, the system makes sure that the heat is transported out and transfers the cold air from outside by using fan. It doesn't let air-conditioning to run as much as possible. In case of insufficient cooling, FCS turns off and then lets to run the air-conditioning

unit. Thus, Free Cooling System ensures significantly energy saving for the customers..

The use of free cooling offers potential energy savings of up to %90. In this way, the investment cost for this solution – which depends on geographical locations and climate conditions – is frequently paid off within minimum six months and maximum one year merely.

Standard Components

- FCS 04 Control Unit
- Temperature and Humidity Sensor (for Indoor)
- Temperature Sensor (for Outdoor)
- 48V or 24V Fan (up to 400W)
- Cassette Filter (G2/G3)
- Analog Pressure Sensor
- User Manual
- CD (Technical Manual, GUI software)
- USB Data Cable

Optional Components

- Semiconductor Relays - SSR (for Air-Conditioning)
- External Alarm Card
- External Input Card
- External Output Control Card
- Digital Pressure Sensor

Free Cooling System

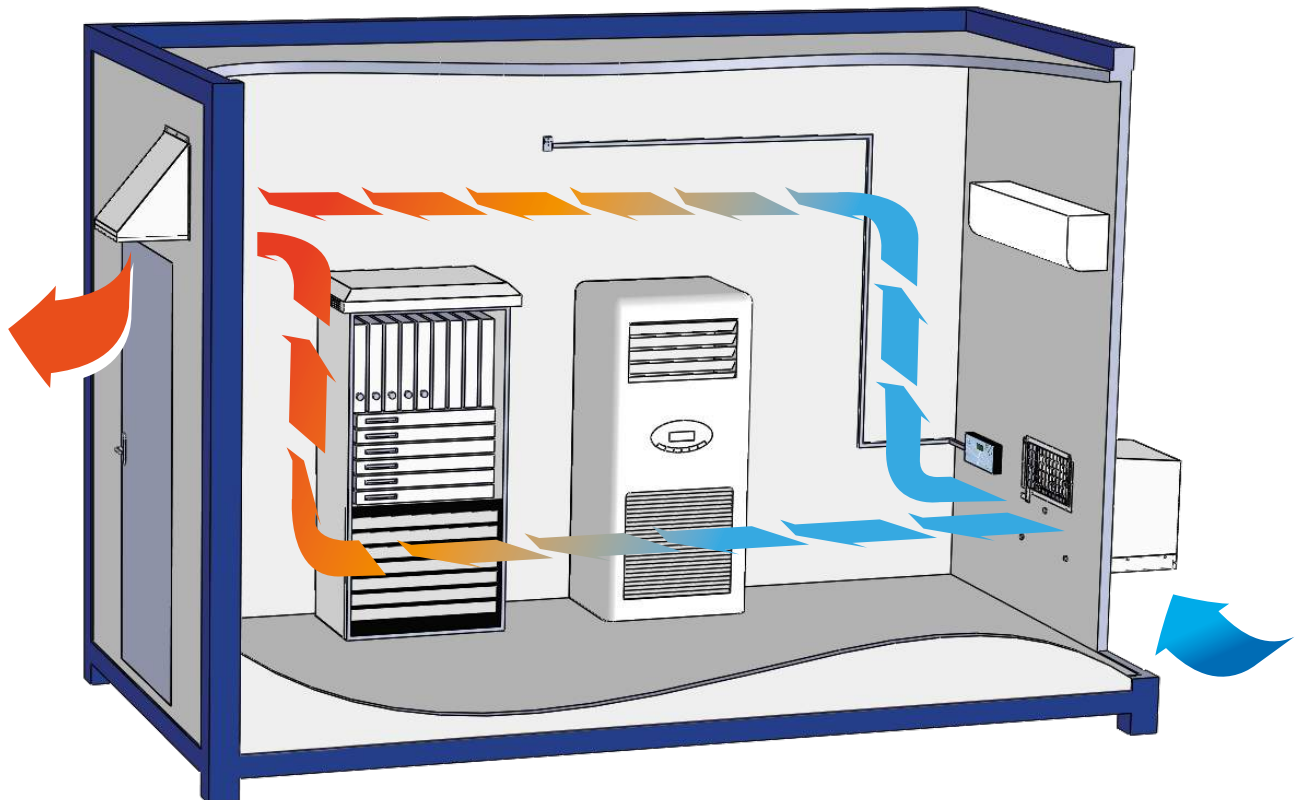
General Features

- Ability to run at +24/-48 VDC
- Proportional Speed Control
- Ethernet Connection
- Battery Voltage Indicator
- Mains Voltage Indicator
- Instant Fan Power Indicator
- Instant Air conditioning Power Indicator
- Ability to drive both AC and DC (EC) fan
- 16 External Alarm Output (Optional)
- Real-Time Clock
- Storing data and parameters
- Analog-Digital Differential Pressure Sensor
- Operating external air-conditioning unit and heater
- Testing sensor conditions frequently during operating time
- Ability to operate air-conditioning unit/s on by-pass mode in any case of trouble
- Fan speed data is received from tacho line
- System protects peripherals (air-conditioning unit&fan) itself in any case of faulty connection
- 18276 event reports about fan/air-conditioning unit logs for 12 months and amount of power consumptions can be saved in the log memory

- Menu Access requires password
- System prevents noise problem by using day/night mode
- Split fuses for main board and fan
- When fire alarm is active, system shuts down itself
- There are USB, RS485 and Ethernet inputs for remote and local access

Benefits

- Remote Monitoring & Controlling
- Sending 16 different alarms about the site to the customer as SNMP traps
- System reduces maintenance costs with Preventive Maintenance
- When air-conditioning unit operates inefficiently, system sends Poor Cooling & Heating warnings
- Humidity & Dew Point Controlling
- Free Cooling System provides GSM operators to reduce OPEX costs and redeem CAPEX investments in a very short time



Usage Areas

Barantech Free Cooling System is a ventilation system which also ensures system stability and helps user to decrease energy & service costs.

This exclusive system can be used in;

- **Telecom Shelters**
- **GSM base stations**
- **Radiolink stations**
- **Data Centers**
- **Satellite Earth Stations**
- **(POP) point-of-presence**
- **Bank ATMs**
- **Laboratories**
- **Industrial**

Free Cooling System can be applied in all type of closed cabinets.



Outstanding Features

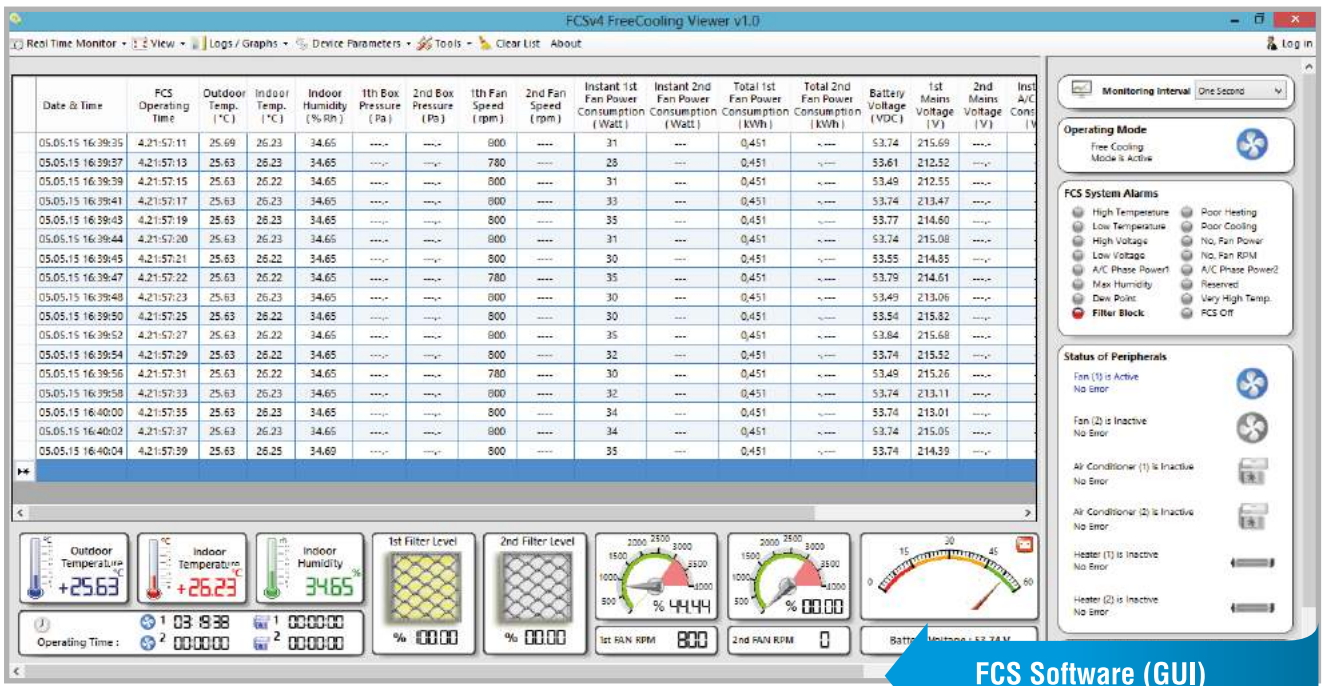
Barantech Free Cooling System has ability to;

- Send 16 different alarms and minimum 16 different input dry contact informations as SNMP traps in SNMP v1 & v2c formats.
(This is optional. User can choose v1 or v2c.)
- Monitor the system with embedded web interface
- Monitor and control the system with Graphical User Interface(GUI)
- Switch dry contact peripherals by using optional output card
- Receive dry contact status informations by using optional input card
- Control two air-conditioning units.
- Save logs and inform customer about poor cooling & heating.
- Deliver digital filter block information to the control unit which is set between 0-500 Pa with %0,1 error rate.
- Show power consumption of fan & air-conditioner and save these unit's total power consumption logs.
- Drive both EC centrifugal & EC axial compact fan between %20 and %100 speed.

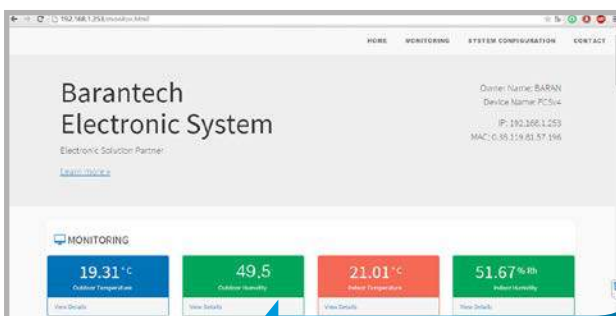
FCS System Alarms

Free Cooling System has ability to inform users about the site by using these alarms.

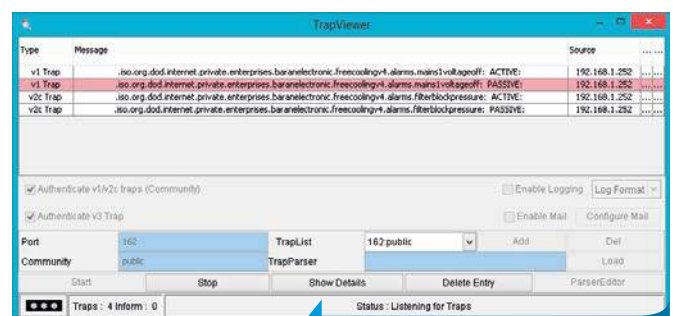
- high temperature
- very high temperature
- low temperature
- high voltage
- low voltage
- poor heating
- poor cooling
- 1st mains phase failure
- 2nd mains phase failure
- maximum humidity
- dew point temperature
- blocked filter
- no fan power
- no fan speed (rpm)



FCS Software (GUI)



Embedded Web Interface



SNMP Trap v1 / v2c

Software and Interface

FCSv4 Free Cooling Viewer v1.0

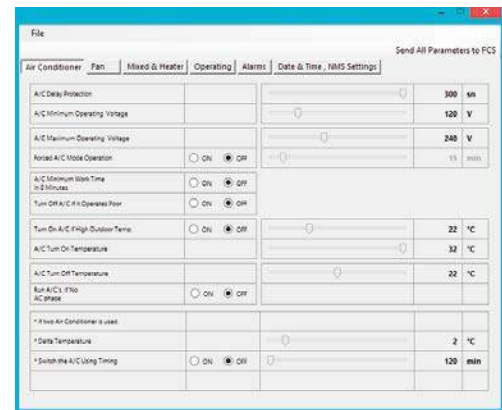
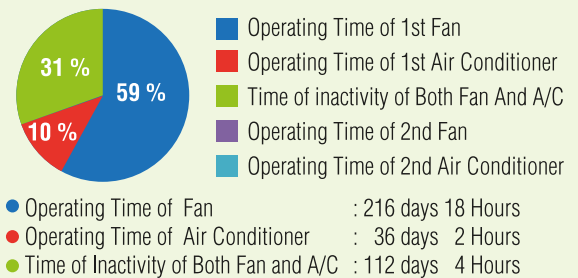
"FCSv4 Free Cooling Viewer v1.0" is a third party Windows application. User can easily achieve to manage the FCS system from PC with an interface by using one of the USB, RS485 or Ethernet Connection.

Features

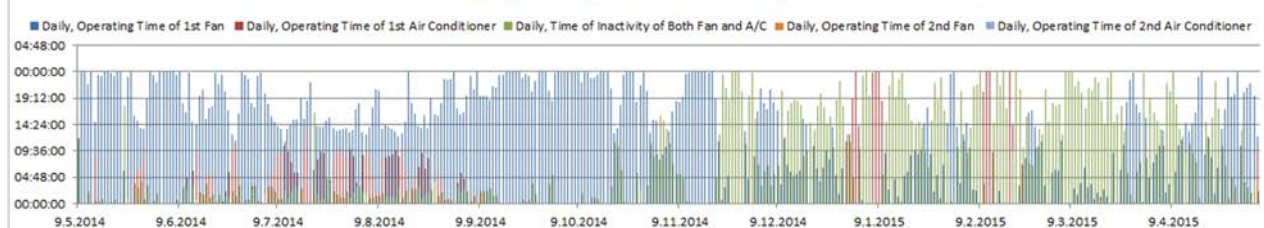
FCSv4 has ability to;

- Remote real time chasing and graphically monitoring
- Show, change and reset the operating parameters
- Enable/disable keypad
- Restart FCS and air-conditioning systems
- Switch FCS to bypass mode
- Erase data in memory
- Download datas as Excel file.
(fan & air-conditioner operating times, temperature curves..)

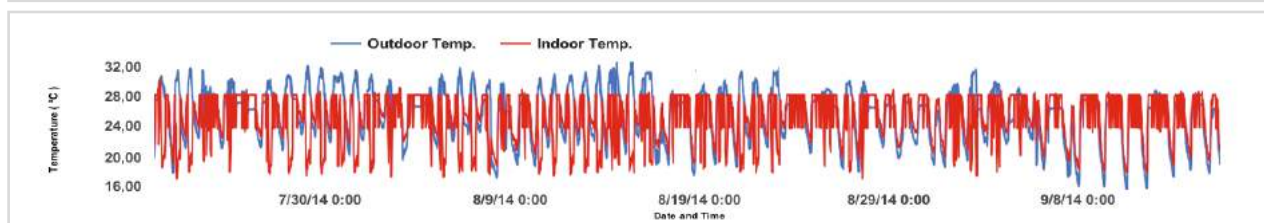
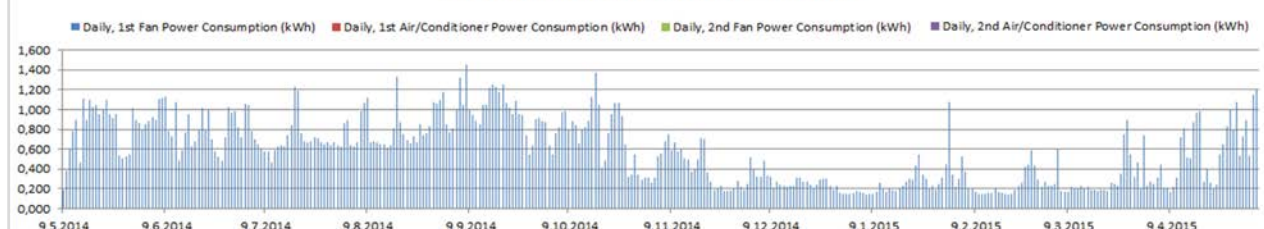
Total Operating Time of Fan And Air Conditioner for 365 Days



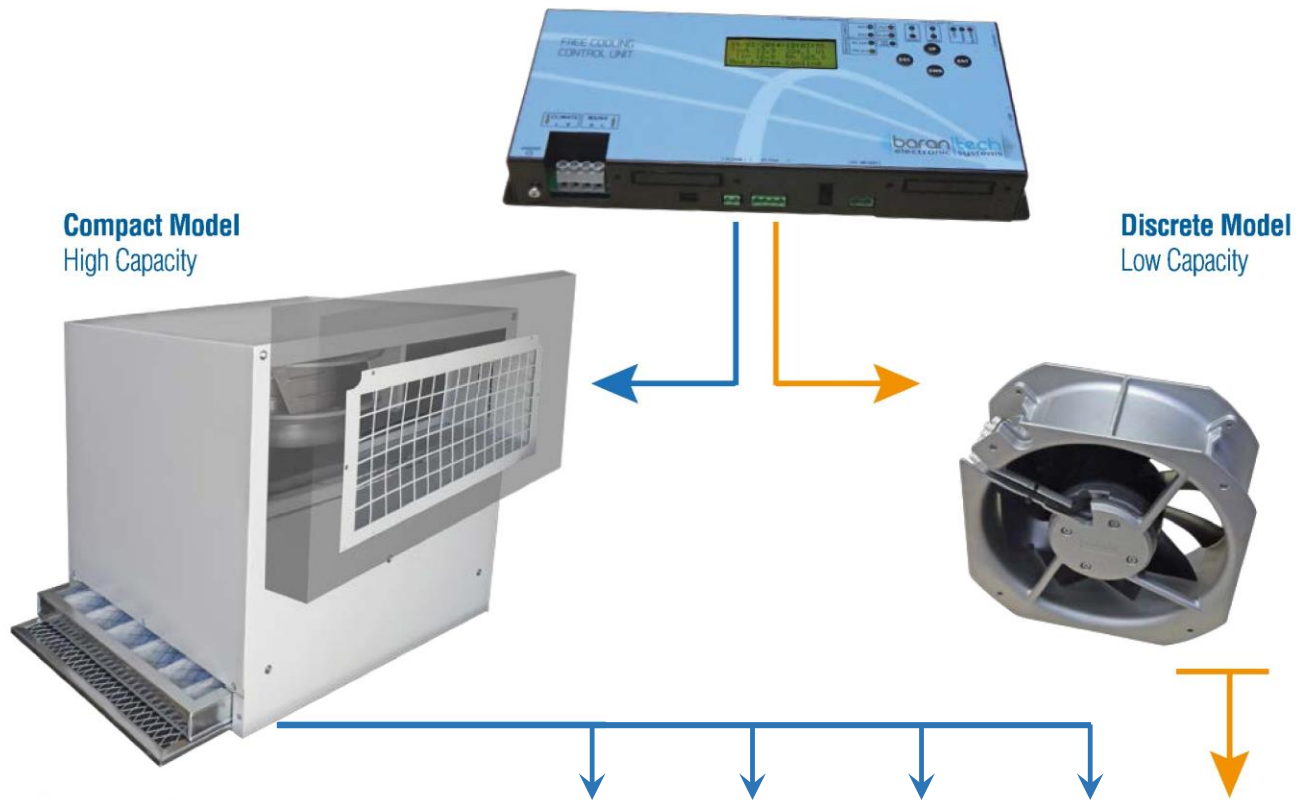
Daily Operating Hours for 365 Days



Daily Power Consumption for 365 Days



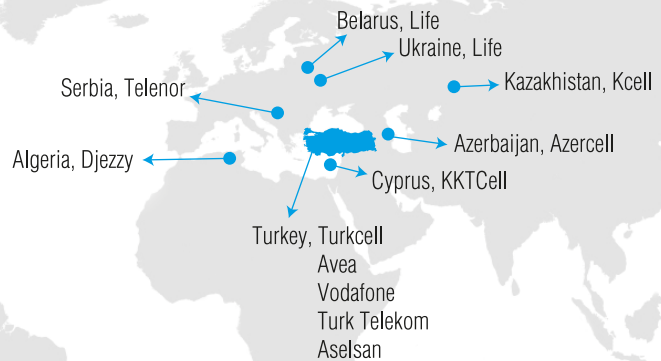
Free Cooling Models



Features		Unit	FCS750C	FCS380C	FCS190C	FCS120C	FCS55D
Fan Voltage		V	230 AC	+24/-48 DC	+24/-48 DC	+24/-48 DC	+24/-48 DC
Maximum Fan Flow		l/s	1690	1130	595	570	302
		m ³ /h	6110	4070	2145	2055	1090
Cooling Capacity	$\Delta t = 5^{\circ}\text{C}$	kW	10,0	6,9	3,6	3,5	1,8
	$\Delta t = 7^{\circ}\text{C}$	kW	15,0	9,7	5,1	4,9	2,5
	$\Delta t = 10^{\circ}\text{C}$	kW	20,0	13,9	7,3	7,0	3,6
Maximum Fan Current		A	3,24	12,70	6,15	3,55	2,60
Max. power consumption of fan's nominal voltage		W	750	497	225	131	80
Filter		Class	G2/G3	G2/G3	G2/G3	G2/G3	G2/G3
Filter Space		m ²	1	0,75	0,75	0,75	0,55
Height		mm	830	550	550	550	592
Width		mm	700	540	540	540	305
Depth		mm	710	500	500	500	100

Barantech is registered brand of “Baran Elektronik Sistemleri” with 9 years of experience, providing high-tech, cost effective and customer oriented solutions in electronic design. Barantech is an R&D Company which manufactures products for telecommunication industry.

Barantech's specialty is Free Cooling Systems. Our other important products are Battery Backup Systems, Energy Management Systems, Radiolink Antenna Heaters and Power Converters.



Head Office **Baran Elektronik Sistemleri San. Tic. Ltd. Sti.**
Address : Cakmak Mah. Kartanesi Sok. No: 3
Umraniye / ISTANBUL / **TURKEY**
Phone : +90 216 466 88 02
Fax : +90 216 466 88 03
e-Mail : info@barantech.com.tr



References

