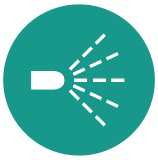
CANHIAC

Adiabatic

Cooling Capacity
(up to 50-250 kW)

ADIABATIC



EC FAN

Adiabatic basically means cooling by humidifying the air. The humidified air cools down and the desired area is cooled without using energy. Basically, the most efficient system is Adiabatic devices, since cooling is done without the use of electricity. If 100% fresh air taken from outside or, if desired, mixed air (free cooling) is insufficient to cool the environment, this air is humidified with a special spraying system and thus cooling is done using very little electricity. The efficiency ratio (EER value) of adiabatic devices is over 30 and is 10 times more efficient than existing systems.

- Special design and high efficiency adiabatic cooling Performance, hydrophilic adiabatic heat exchanger,
- Frost protection feature,
- Working down to -25 ° C,
- Tank system and water saving feature,
- Under normal conditions, fresh air fans save energy by working only at the rate needed to provide the total cooling capacity.
- In the worst case, fresh air fans can run at half the capacity of data center fans, capturing full cooling capacity. In this way, energy savings are achieved.
- Water hardness value measurement and drainage of water with high hardness value,
- Monoblock design,
- No screws are used on the device covers and easy access from each cover for service,
- Depending on the outside temperature and humidity, using the nozzle feed water only as needed and saving water,
- The energy efficiency rate can reach over 30. (EER> 30)
- PUE <1.05 energy saving can be achieved with high efficiency.
- Teamwork compatibility and the ability to work independently from each other,
- Ability to work according to the principle of pressure and temperature difference,

Counterflow Heat Exchanger

Within the CAN-IAC device, cooling takes place in a double plate counter flow heat exchanger with high energy efficiency. Proprietary plates made of polypropylene material are used in the heat exchanger. Inside these plates are channels through which primary air flow is provided. The primary airflow can be ambient air, recycled air, or a combination of the two. (Primary air: air return)

Benefits of Heat Exchanger

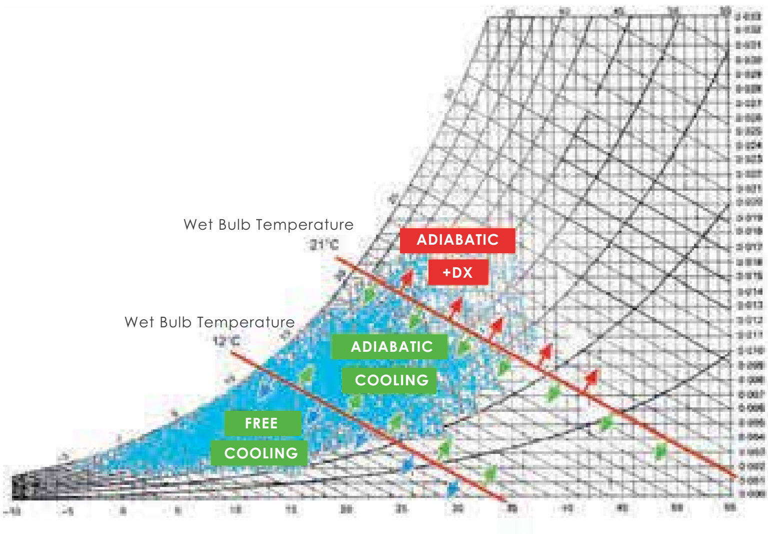
- Using polypropylene material counter flow heat exchanger,
- 100% corrosion protection
- Better heat transfer than all other IEC heat exchangers
- High evaporation rate thanks to the hydrophilic layer,
- Less water use for adiabatic cooling
- Most efficient adiabatic cooling by evaporation directly on the plates
- Cooling 100% of data center air using only 50% of outdoor air compared to indoor
- Saving fan power
- It is always hygienic and there are no bacterial problems.
- Minimizing moving parts
- It has been certified by Dutch TNO and German VDI 6022.
- Compliance with European standards
- Long lasting and more efficient

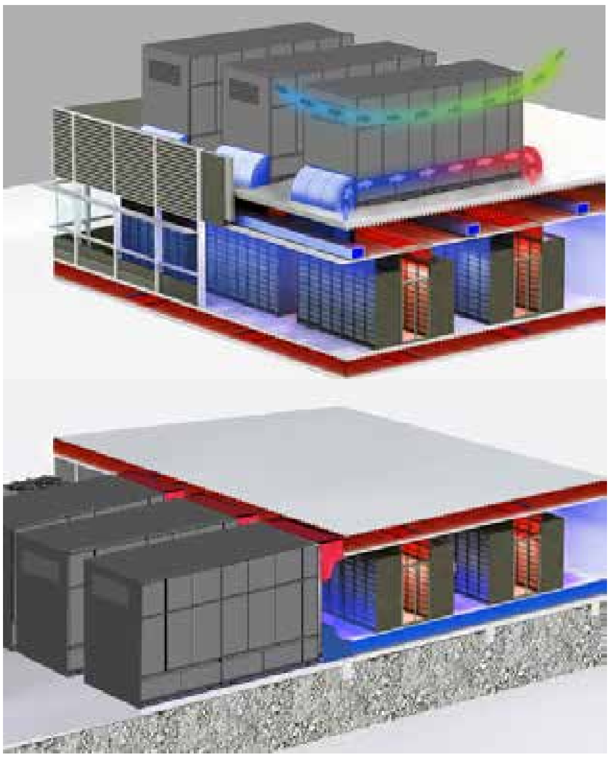
The surroundings of the heat exchangers are covered with hydrophilic material in order to increase the water retention and evaporation amount, that is, the cooling capacity. Outdoor air, which is secondary air, passes through these channels by holding onto hydrophilic surfaces.

CAN-IAC devices are designed appropriately in order to provide the desired capacity according to the temperature and pressure principle with the help of the controller without mixing the air in the heat exchanger.

Thanks to this Performance profile, CAN-IAC cooling systems comply with the new environmental standards set for data centers, the recommended maximum supply air temperature according to these standards is 27 °C, and outdoor air wet bulb temperature drops below 22 °C (dry bulb 35-40 °C in temperate climates) should reach the total cooling capacity without using DX.

Data center operators can reduce operating costs by saving up to 80% of the required energy. This is true for all temperate and cold climates in the world. The two crossed lines, wet-bulb 21°C (WB 21°C) and wet-bulb 12°C (WB 12°C), represent the estimated points of the operating ranges of the IAC device. The WB12 line shows the transition from freecooling to adiabatic cooling, while the WB 21 line shows the transition from adiabatic to DX cooling.
For example, when we consider that the supply air is 25³C below the WB 21 line, you can only reach the desired maximum capacity with adiabatic and freecooling cooling.
It can be seen that when CAN-IAC is used, there is no need for dx cooling in temperate climates (eg Europe).
This means less operating costs, less installation costs and, most importantly, lower consumption of both energy and water.





Roof Configuration

Outdoor air enters from the upper left part of the device, passes through the heat exchanger and exits from the upper floor of the right-hand side of the device. The hot air returning from the room enters from the lower right part of the device, passes through the heat exchanger in a straight line and is returned to the room from the lower left part of the device.

Wall Configuration

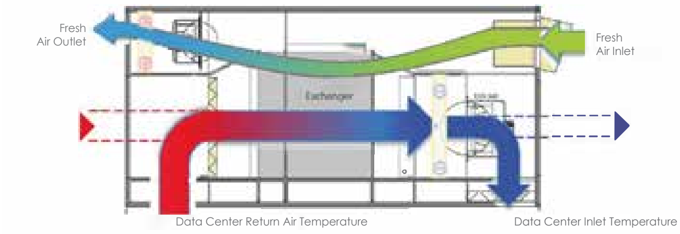
Outdoor air enters from the top of the device, passes through the plate heat exchanger and exits from the upper floor of the left side of the device.
The hot air returning from the IT room enters from the upper right part of the device and is sent back to the data center as cold after passing down the plate heat exchanger.

It complies with Green IT and energy saving requirements.

Energy Efficient Working Modes

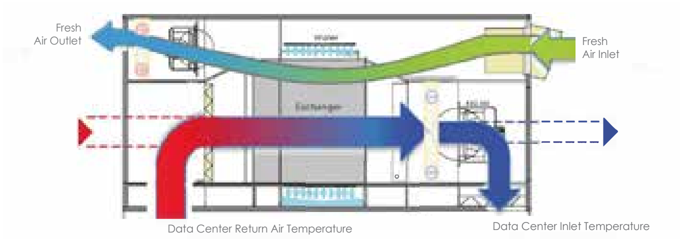
1- Freecooling Mode (DRY-WET) Mode (up to -25°C ~ 8°C)

CAN-IAC devices do not need adiabatic cooling and dx cooling in freecooling mode. By utilizing the coldness of the outside air, the hot air in the datacenter room can be cooled. Specially produced adiabatic heat exchangers, which are the heart of the system, are used only for heat conduction in freecooling mode. The hot datacenter air is cooled by the coldness of the outside air and the heat conduction in the adiabatic exchanger with the help of fans.



2- Adiabatic Cooling (DRY-WET) Mode (down to -9°C ~ 35°C)

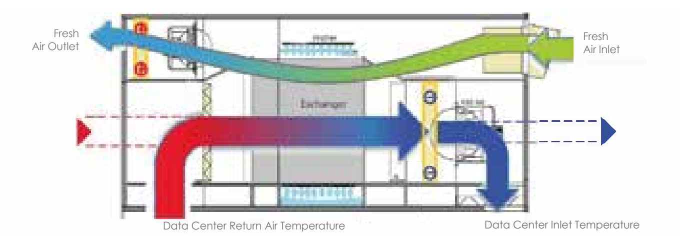
Adiabatic cooling mode is the cooling mode with the highest cooling efficiency depending on the outside temperature and humidity. If the outside temperature is suitable and the humidity is low, EER degrees above 30 can be seen. Cooling is carried out by the aqueous process. Only the energy consumption of the fans is calculated. Since the fresh air fan, which we call the process fan, will work proportionally according to the need, savings are also provided here.



Due to the design structure of Can-IAC devices, fresh air flow is used in adiabatic mode and maximum 50% of the data center air flow is used in rising outside air temperatures and can meet the need in this way. Thus, energy savings are also achieved on the fresh air side.

3- Adiabatic cooling mode combined with DX cooling (up to 30°C ~ 45°C)

Dx cooling mode is activated when the adiabatic mode is insufficient. Also, when there is a water cut (no mains water alarm is given), dx mode is activated because the cooling must continue. It is activated to supplement the maximum load that cannot be met by adiabatic cooling in outdoor environments where the outside temperature is too high or the humidity is high.



CoolAer

Control and Tracking

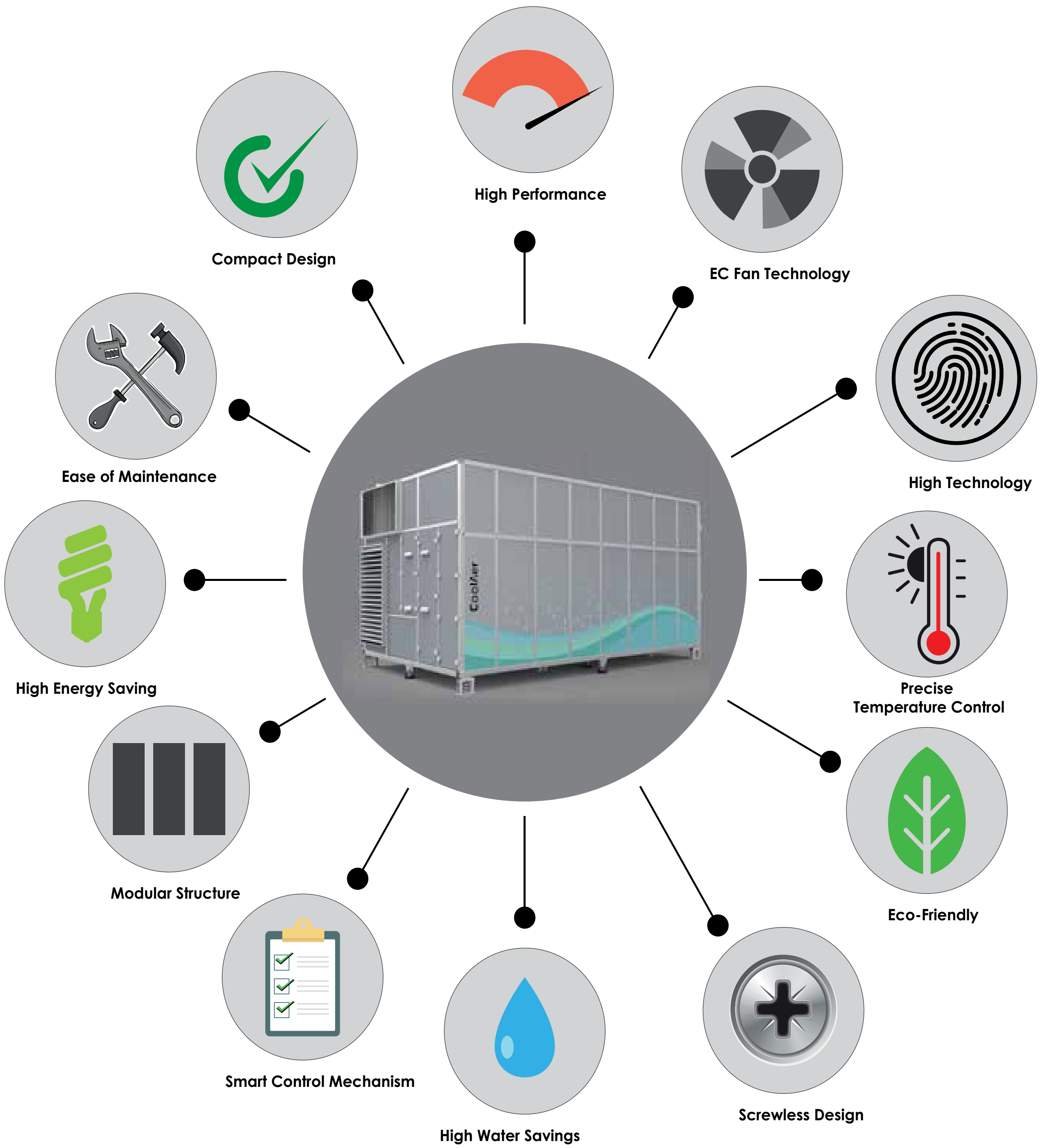
To cool IT systems efficiently and reliably, cooling equipment and controls must work in strict harmony with each other. Therefore, we carried out the Research and Development process of our control mechanism as CoolAer under our own roof, so that we can constantly update our hardware and software to ensure the reliability of all applications and the efficiency of IT system cooling at the highest standards.

Data Center Cooling Control Principle and Communication

- A data center can be cooled by multiple CAN-IACs in team-work or independently.
- Cooling continues 24/7, continuously.
- Independent operation is guaranteed by controlling each device separately.
- The system is controlled using the unique sensors of each device, no sensors are shared, and there is no physical connection between device controls.
- The set points can be changed by the authorized engineer.
- Features Performance and data visualization by the data center operator.
- Preservation of parameters during software update
- Modbus RTU, CAN BUS embedded protocols (Modbus data point list editable)
- Freely configurable digital alarm inputs
- Integrated data logger
- Communication bus with internal Modbus component
- Supported BMS protocols: BACnet IP,
- BACnet MS/TP, Modbus TCP and LonWorks

ADIABATIC

PRODUCT SPECIFICATIONS



CoolAer

CAN-IAC100

CAN-IAC200

			CAN-IAC				
	Operating Temperatures	°C	36-22	36-24	37-25	40-25	42-27
	DT	K	14	12	12	15	15
"CAN-IAC50 Cooling Capacity 30-75 kW"	Air Flow	m3/h	7.000	10.500	12.500	12.500	15.500
	Adiabatic Cooling Capacity	kW	30	41	50	60	75
	Static Pressure	Pa	146/156	219/250	262/309	265/311	330/407
	Water Consumption	kg/h	52,9	74,9	89,4	99,2	124
	Dx Cooling	kW	0% - 100%	max.	50	-	-
	Dimensions (WxHxL)	cm	200x280x500				
"CAN-IAC100 Cooling Capacity 60-150 kW"	Air Flow	m3/h	14.000	21.000	25.300	25.300	28.000
	Adiabatic Cooling Capacity	kw	60	80	100	120	140
	Pressure Drop	Pa	146/156	219/250	262/309	265/311	330/407
	Water Consumption	kg/h	106	150	180	188	254
	Dx Cooling	kW	0% - 80%	max	80	-	-
	Dimensions (WxHxL)	cm	400x280x500				
"CAN-IAC150 Cooling Capacity 90-220 kW"	Air Flow	m3/h	19.000	29.800	37.300	39.800	43.800
	Adiabatic Cooling Capacity	kw	90	120	150	200	220
	Pressure Drop	Pa	146/156	219/250	262/309	265/311	330/407
	Water Consumption	kg/h	125	181	231	286	327
	Dx Cooling	kW	0% - 80%	max	120	-	-
	Dimensions (WxHxL)	cm	570x385x350				
"CAN-IAC200 Cooling Capacity 120-300 kW"	Air Flow	m3/h	29.000	42.500	51.000	51.000	55.000
	Adiabatic Cooling Capacity	kW	120	160	200	240	280
	Pressure Drop	Pa	146/156	219/250	262/309	265/311	330/407
	Water Consumption	kg/h	210	274	341	380	403
	Dx Cooling	kW	0% - 80%	max	160	-	-
	Dimensions (WxHxL)	cm	710x385x350				
"CAN-IAC250 150-375 kw"	Air Flow	m3/h	36.000	50.000	63.500	63.500	65.000
	Adiabatic Cooling Capacity	kW	150	200	250	300	340
	Pressure Drop	Pa	146/156	219/250	262/309	265/311	277/329
	Water Consumption	kg/h	263	343	389	421	489
	Dx Cooling	kW	0% - 80%	max	200	-	-
	Dimensions (WxHxL)	cm	850x385x350				