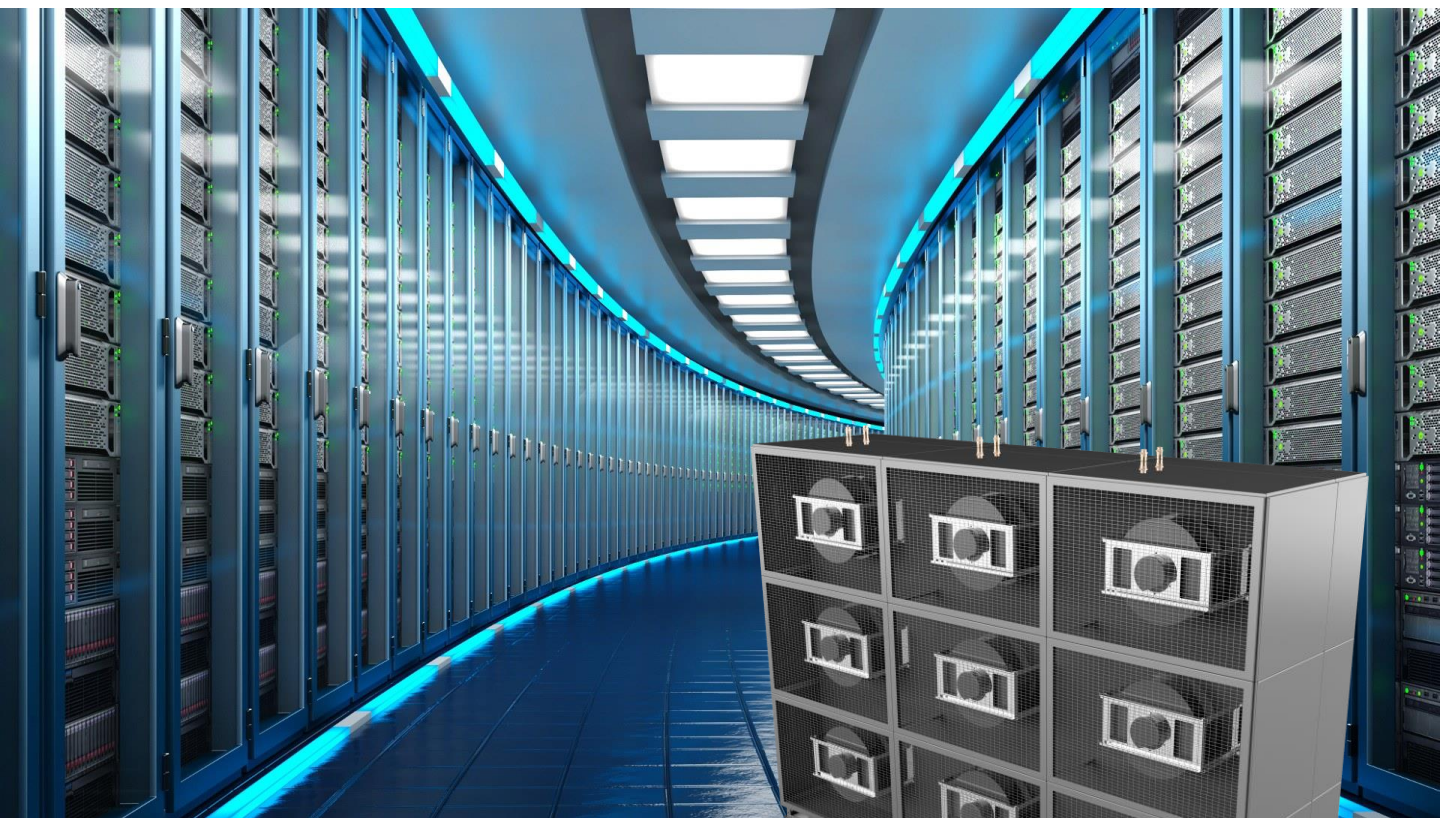


MaxAir³ Air Handling Units for Data Centers





PowerOne, a new solution for big Data centers

PowerOne is a complete service portfolio provided by AIRSYS for datacenter, it consist of indoor air handing units , Chillers , Dry Coolers and water pipe system four parts, the core value is to deliver a datacenter with PUE<1.2 anywhere in the world. How do we achieve this?

Push the boundary

Increasing the supply and return temperature to 19/35°C, the delta temperature to 16°C maximum. this will change fundamentally the usage of free-cooling, and significantly reduce the system water flow which will lead to a massive reduction of energy consumption and the size of the piping system.

Change the logic

The whole cooling system will be synergized and optimized toward IT load, and ambient condition, but not the temperature in the room, this fundamental change will allow the system always to operate proactively and predictably, increase the reliability and reducing the energy cost.

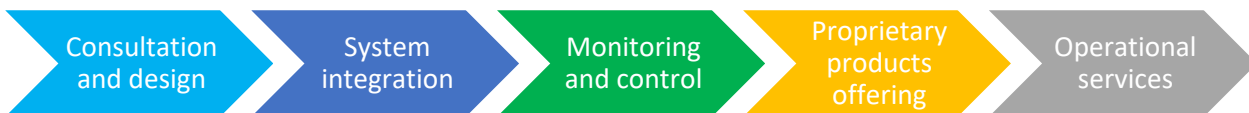
Adapt to new technology

Using the latest IoT, Cloud, AI, and ML technology, the monitoring and control system will give customer the full visibility of the performance, status and historical data of the system.

Value for our customers

- Energy saving
The amount of saving will range between 10-30% of the overall energy consumption of a Datacenter. In most of the cases, the CAPEX of the 3-5 years' time.
- High reliability
Reducing the mechanical cooling by 80%, proactive and predictive operation.
- Visibility for business decision making
The proprietary software will be able to simulate, at various IT load, the system real energy consumption vs the system CAPEX, helping the customer to make their investment decision smarter and more predictable.
- Shortened project cycle
With highly Standardized design, the project cycle will be shorten by 30-50%.
- Scalability
Easy for future expansion, more importantly, the system could be seamlessly transformed into NexGEN of cooling – Liquid Cooling Servers
- Performance Guaranteed
With our lifetime on-site operational service, all the design target could be achieved with a pay-for-performance business model.

AIRSYS provides a total solution for Data centers, a customer could either purchase the full package or any combination of the specific modules.



MaxAir³



MaxAir³ is one of the air handling units in PowerOne solution. It provides appropriate air flow into the Data center, after the air exchanges the heat with the chilled water heat exchanger coils, to ensure that the indoor environment of the data center is always within the required range.

MAXAIR³ is specially designed for high supply and return air temperatures, and maximizes the inlet and outlet water temperatures to 19/35°C, which change fundamentally the usage of free-cooling, and significantly reduce the system water flow, leading to a massive reduction of energy consumption and the size of the piping system.

Take a datacenter in Porto Alegre for example, the total IT load is 2,400kW, it is only when the outdoor temperature is higher than 30°C that the chiller is required to provide the total cooling capacity, which bring the total period of free cooling to 80% ,reducing the annual power consumption of the entire system by 60%.

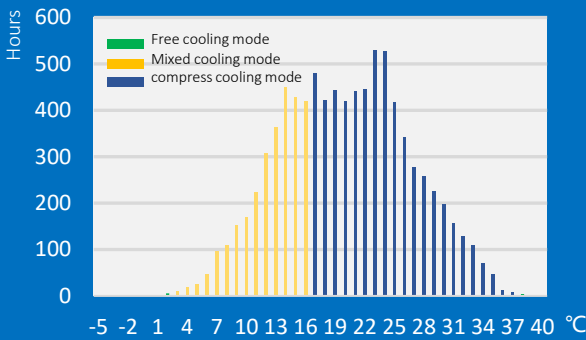


Fig.1 Working hours of outdoor units with inlet/outlet water temperatures 18/12°C

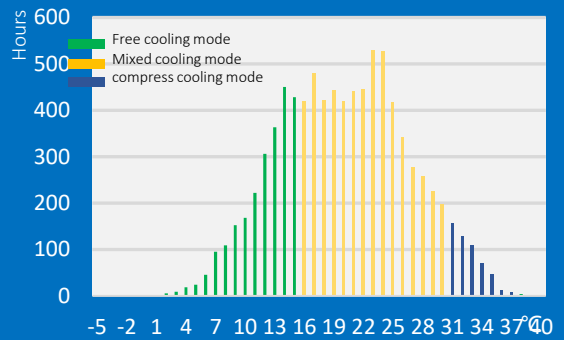


Fig.2 Working hours of outdoor units with inlet/outlet water temperatures 35/19°C

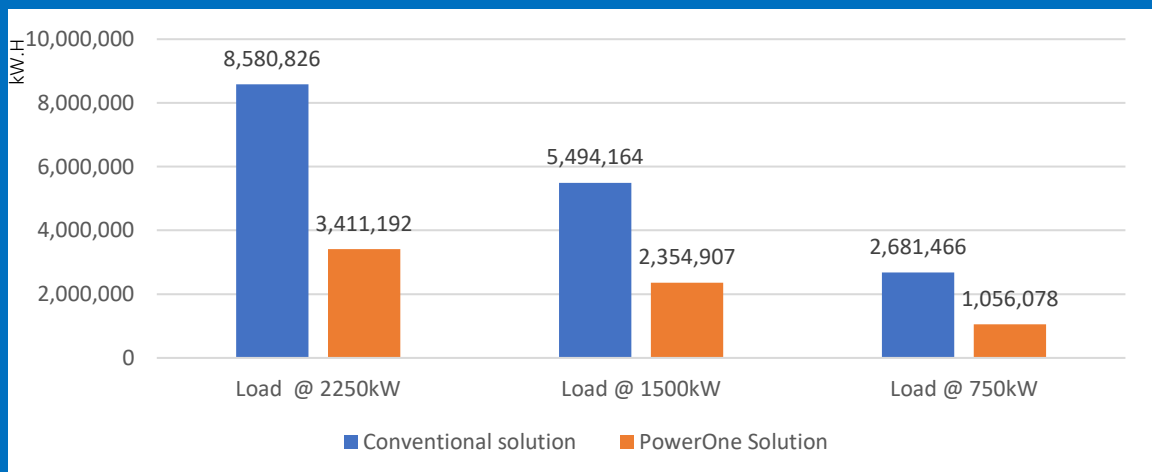


Fig.3 Annual power consumption comparison

Advantages of MaxAir³

Modular design

- Flexible Layout

Modules can be deployed horizontally or vertically, to adapt to project-specific room size and different site conditions.

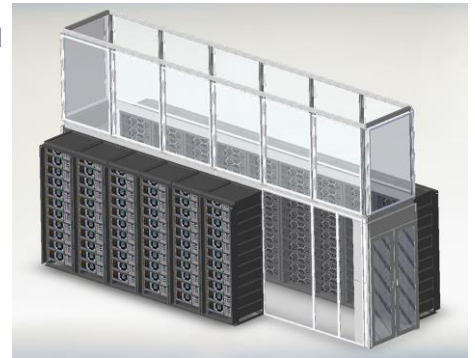
- Scalability

Easy to increase IT load and expand cooling capacity gradually.

- Ease transportation, installation and service.

Hot aisle containment

- Eliminates cool and hot air mixing, increase cooling capacity and efficiency
- Supports higher-density server applications
- Eliminates data center hot spots
- CFD simulation, optimize air flow
- Data Centers open space is a cold environment, creates a cooler environment for workers



Variable rack densities

Accommodates high, low and mixed rack power capacities. The racks with different loads of 1-50kW can be mixed placed in the same row, without reconfiguring infrastructure or layout.

Small footprint with maximum cooling capacity

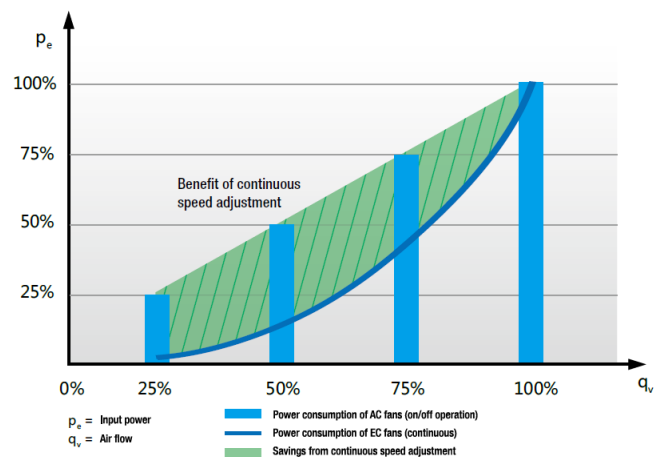
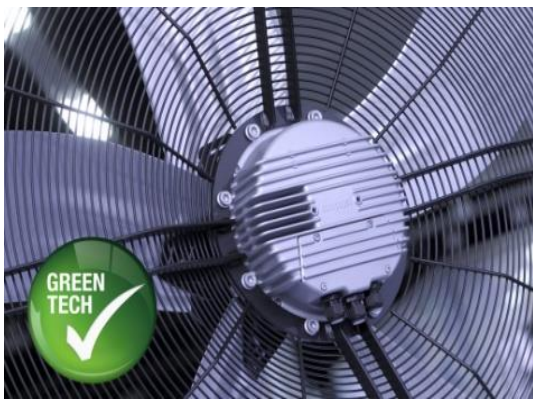
MaxAir³ removes heat at the source, utilizing anemometry to measure velocity between hot and cold aisle to enable a higher Delta-T. Hot air is drawn from the racks exhaust and channeled through our highly efficient coils. Absorbing up to 200kW of heat in only 1620mm of linear space.

Advantages of MaxAir³

Energy efficiency

- Designed for high ΔT between supply and return water, maximum is 16 °C
- Key technologies lead to low pPUE value achievable
- EC fans

The MaxAir³ adopts high energy efficiency EC fan, and the power of the EC fan is only 30% of AC fan. When the indoor load decreases, the fan speed also decreases. The control system continues to optimize fan operation, reducing fan power to 2% of the IT load.



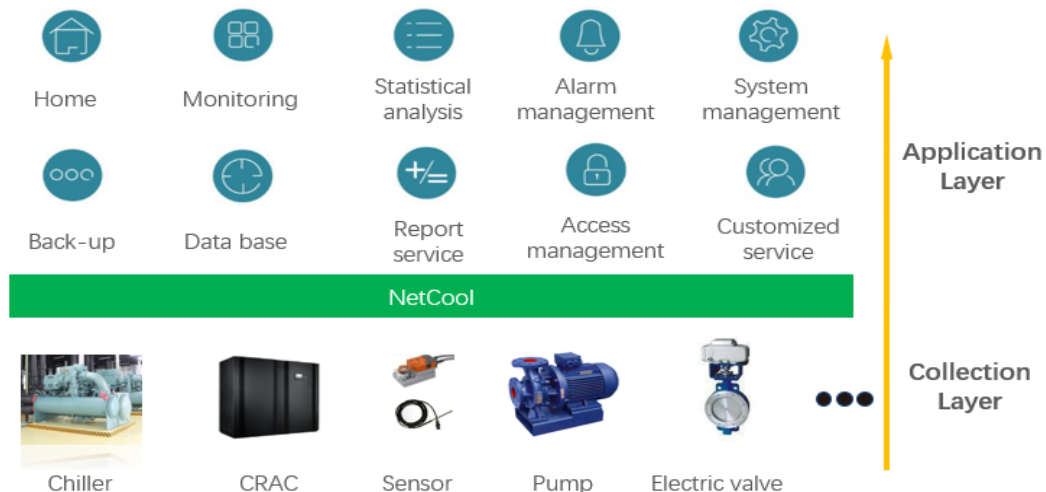
Sustainability

Our cooling system delivers efficiency at any load, in any climate, and regardless of location to support your stewardship goals.

- The system utilizes up to 80% less energy and 85% less water to reduce resource usage
- Reduces environmental impact and lowers your Total Cost of Ownership (TCO)

NetOne-An Intelligent Control & Monitoring System

- Latest technology from IoT, Cloud, AI and ML.
- Synergized System operation based on IT load and ambient condition.
- Full visibility on PUE performance, equipment status and alarms; Providing operation and maintenance guidance and instruction.
- Continuous optimization.
- Either local or cloud based.



Technical parameters

Units combination		A single unit	4 Modules	6 Modules	9 Modules
Air supply/return scheme		Front supply, back return			
Cooling capacity					
Total(1)	kW	66.1	264.4	396.6	594.9
Sensible(1)	kW	66.1	264.4	396.6	594.9
Total(2)	kW	83.4	333.7	500.5	750.8
Sensible(2)	kW	83.4	333.7	500.5	750.8
Total(3)	kW	86.0	343.9	515.9	773.8
Sensible(3)	kW	86.0	343.9	515.9	773.8
CW coils					
Water flow(1)	m ³ /h	3.7	14.8	22.2	33.3
Water pressure drop(1)	kPa	33.5	33.5	33.5	33.5
Water flow(2)	m ³ /h	4.8	19.2	28.8	43.2
Water pressure drop(2)	kPa	89.6	89.6	89.6	89.6
Water flow(3)	m ³ /h	9.3	9.3	9.3	9.3
Water pressure drop(3)	kPa	123.0	123.0	123.0	123.0
Supply fan					
Air volume	m ³ /h	15500	62000	93000	139500
Qty. of fan	n.	1	4	6	9
Type		Caseless backward EC centrifugal fan			
Power	kW	3.1	12.4	18.6	27.9
Current	A	4.8	19.2	28.8	43.2
Power supply					
Power source		400V/3Ph/50Hz			
Unit max. operating power input	kW	3.3	13.2	19.8	29.7
Unit max. operating current	A	5.1	20.4	30.6	45.9
Unit piping connection					
Condensing water drainage Φ	in	3/4"			
Inlet/outlet water pipe of a Single unit	in	1 1/2"			
Inlet/outlet water pipe of multiple module units (4)	in	–	2 "	2 1/2"	2 1/2"
Unit dimensions and Weight					
Width	mm	1620	3240	4860/3240	4860
Depth	mm	1200	1200	1200	1200
Hight	mm	1130	2180	2180/3230	3230
Weight	kg	260	1040	1560	2340

(1) Return air dry bulb temperature 38°C, RH35%, inlet/outlet chilled water temperature 19°C/35°C;

(2) Return air dry bulb temperature 37°C, RH25%, inlet/outlet chilled water temperature 16°C/30°C;

(3) Return air dry bulb temperature 35°C, RH30%, inlet/outlet chilled water temperature 16°C/24°C;

(4) The header of a set of multiple module units, provided by installer.



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