BoostAir®

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BoostAir®

Type W

Adiabatic Cooling Wall

A BoostAir® Type W

In addition to the compact BoostAir® Type A cooling unit, our product range also includes the **BoostAir® Type W** adiabatic cooling wall.

Compared to the compact Type A device, the Type W adiabatic cooling wall provides an economical and energy-efficient cooling solution within its scope of application.

Area of Use

Due to its simple and robust design, the BoostAir® Type W is an ideal, cost-effective cooling solution for livestock facilities, and it is also highly suitable for reducing the energy consumption of existing chiller units and extending their operating range during periods of extreme summer heat.

Manufactured by: AUTENT SOLUTIONS

Product description

The BoostAir® Type W is an adiabatic pre-cooling device designed 100% for industrial application.

The system is built from modular elements that can be assembled in any required size and mounted either onto the wall opening of the industrial hall or onto the inlet side of existing chiller systems.

Functions

Fresh air pre-cooling

Due to its simple construction, the BoostAir® Type W contains no built-in fan unit. When the system is used for supplying pre-cooled fresh air into the hall, the cooling wall can be mounted onto a wall opening or installed in front of the inlet connection of an existing air-handling unit. In this case, an exhaust fan must be installed in the hall to ensure the required airflow through the adiabatic panels. When connected to an existing air-handling unit, the AHU's own fan provides the necessary airflow, so no additional mechanical modification is required beyond installing the cooling wall itself.

Pre-cooling the incoming fresh air allows the internal temperature of the industrial hall to be reduced in a cost-effective way, with low investment and operating costs.

Chiller pre-cooling

The performance of traditional heat pumps and chiller systems is highly dependent on outdoor air temperature. During periods of extreme heat - when the cooling demand is at its highest -the cooling capacity and efficiency of air-cooled chillers significantly decrease.

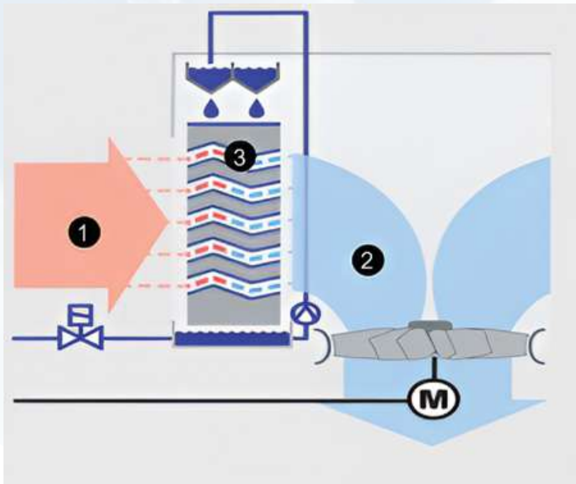
In this case, the chiller's own condenser fan unit provides sufficient airflow for cooling, so no additional fan installation is required for chiller applications either.

Pre-cooling the chiller units improves the overall performance of the cooling system during the periods when the demand is the highest, while keeping both the investment and operating costs low. In addition, no modification of the existing mechanical system is required.

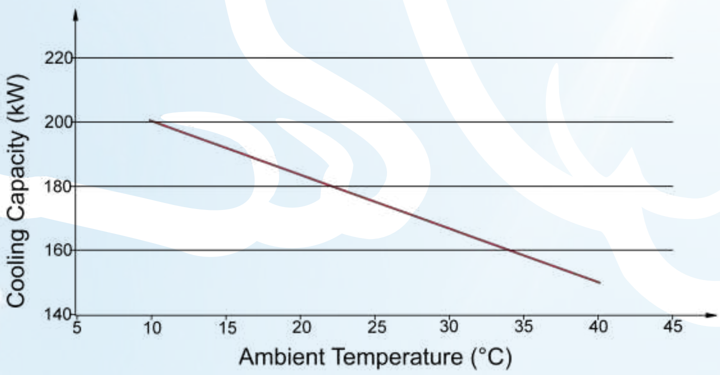
What is adiabatic cooling?

When the outdoor air temperature is ideally high while its relative humidity is low, high potential heat energy is removable from the air. The heat removal is realized by evaporation of water in the cooling pads in the course of adiabatic process, where the energy required for evaporation is ensured by the heat energy of the air.

During the process, the heat contained in the air is used to evaporate the water, without changing the total energy of the system. This evaporation causes the temperature of the air to drop.



1. dry, warm air
2. humid, cold air
3. refrigerant agent



Technical data

The BoostAir® Type W system has a modular design: one water-treatment module can supply up to four cooling modules, allowing the system's capacity and performance to be expanded flexibly as required. A system consisting of four modules is capable of delivering approximately 200 kW of cooling performance at an air velocity of 1.5 m/s (under outdoor air conditions of 35 °C and 30% rH).

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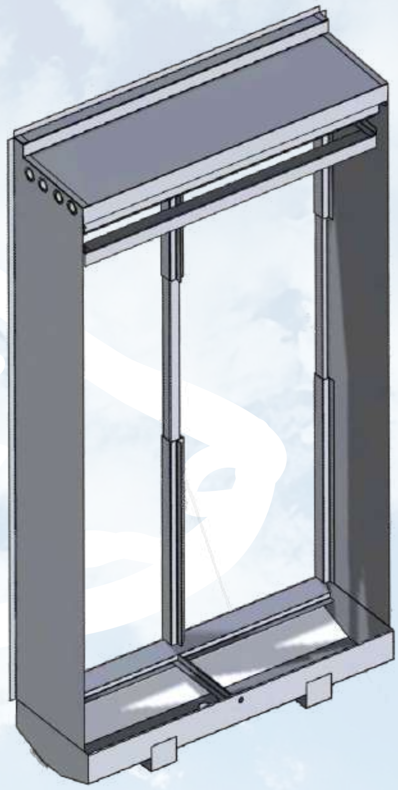
Type W



Nominal physical dimensions (mm)
Module (w x h): 1200 x 2000

With a fixed module width, the height can be adjusted, while the total width increases with the number of modules.

Water connection
Connection size: 3/4" solenoid valve
Inst. water consumption: 20 l / min

Electrical data
Electrical input: 230V/1ph/50Hz
Electrical performance: 0.5 kW

Manufactured from high-quality materials, 98% of which are recyclable, in line with environmentally conscious design principles.

Own development

The BoostAir® Type W device is completely developed and manufactured by Autent Solutions Ltd. The developement was carried out by an engineering team with decades of expertise in the field of industrial cooling, to ensure the products high level of quality.

The product is made of premium quality materials and is dedicated 100% to industrial environment.

In the development phase the main goal was to create an extremely reliable and cost-effective product while utilizing the maximal cooling and ventilation performance without compromises.

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Hygienic safety

The device operates with drinking water quality water which possesses adequately low biological and chemical pollutant content.

The system's control automatically dries the surface of the humidifying media at least once a day based on operating parameters and water temperature changes. This prevents the formation of a suitable breeding ground of bacteria, thereby reducing the risk of Legionella infection.

The device fulfills the hygienic requirements defined by the VDI 6022 standard.

BoostAir® type A water distribution system

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Performance Table

The data below refer to a four-module system at a nominal air velocity of 1.5 m/s. The minimum supply-air temperature depends greatly on the outdoor air conditions, the operating environment and the wear level of the evaporative media.

Outdoor temperature	Parameters	Outdoor relative humidity					
		20%	30%	40%	50%	60%	70%
20 °C	Supply air temperature [°C]	10	11.7	13.2	14.7	16.1	17.5
	Cooling capacity [kW]	170.8	142.6	115.8	90.4	66.2	43.2
	Evaporative water loss [l/h]	244.8	204.2	165.6	129.2	94.4	61.4
24 °C	Supply air temperature [°C]	12.7	14.6	16.4	18.1	19.7	21.2
	Cooling capacity [kW]	191.8	159.4	128.8	100.2	73	47.4
	Evaporative water loss [l/h]	274.4	227.6	183.8	142.6	104	67.4
28 °C	Supply air temperature [°C]	15.3	17.5	19.6	21.5	23.3	24.9
	Cooling capacity [kW]	213.2	176	141.6	109.6	79.6	51.6
	Evaporative water loss [l/h]	304.4	251	201.6	155.8	113.2	73
32 °C	Supply air temperature [°C]	17.9	20.4	22.7	24.9	26.8	28.7
	Cooling capacity [kW]	234.4	192.6	154.2	118.8	86.2	55.6
	Evaporative water loss [l/h]	334.2	274	219	168.6	122	78.6
36 °C	Supply air temperature [°C]	20.5	23.3	25.9	28.3	30.4	32.1
	Cooling capacity [kW]	255.6	208.8	166.6	127.8	92.4	64.6
	Evaporative water loss [l/h]	363.6	296.4	236	180.8	130.4	91.2
40 °C	Supply air temperature [°C]	23.1	26.3	29.1	31.7	32.9	33.7
	Cooling capacity [kW]	276.6	224.8	178.4	136.6	116.8	94.8
	Evaporative water loss [l/h]	392.6	318.2	252.2	192.6	164.6	135.4

Cost-efficiency

The BoostAir® Type W adiabatic cooling wall is among the most efficient solutions in terms of the ratio between energy consumption and cooling performance. When installed in front of chillers or heat pumps, it can reduce cooling energy demand by 30–40%, while significantly increasing system efficiency even during the hottest periods.

Operating on the principle of natural evaporation, the system requires very low water and electrical energy consumption, as the Type W contains no fan unit.

Thanks to its simple construction and automatic water treatment, the unit requires minimal maintenance, ensuring a cost-effective and sustainable long-term cooling solution for industrial applications.

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