



# Cool Breeze Evaporative coolers

TECHNICAL MANUAL





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## INTRODUCTION

The new innovative evaporative coolers, with automatic control of all functions, are available in three models: D225, D500, S240.

Sabiana's Cool Breeze cooler uses the natural principle of water evaporation to lower the air temperature, just as a sea breeze provides cool relief on a hot day at the beach.

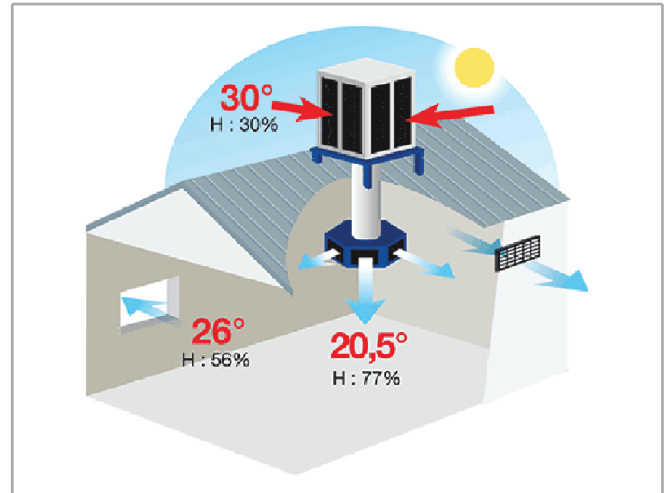
External warm air is pulled through the water-wet pads, reducing its temperature, and is then immediately blown into the building via the fan and air diffuser.

This evaporation process also has the advantage of filtering out dust (>10 micron) and pollen in the air, not only fresh air but cleaner air.

Evaporative cooling provides a continuous flow of new, fresh air; the warm air in the building is expelled and never recirculated.

Industries, shops, sports facilities and in general premises with large volumes can find in this product the solution for the hot periods of the year, the given drop in temperature combined with air ventilation given by the large air changes supplied result in an excellent comfort level in the building.

It's a completely natural cooling method!



Mod. D225  
11.000 m<sup>3</sup>/h



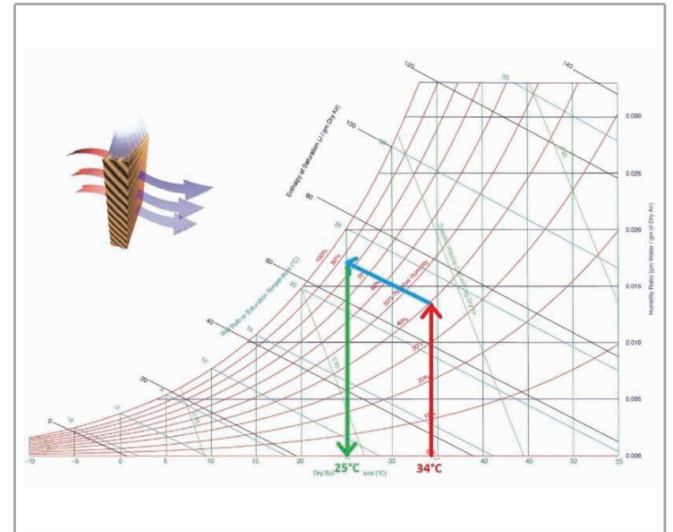
Mod. D500  
21.000 m<sup>3</sup>/h



Mod. S240  
10.500 m<sup>3</sup>/h

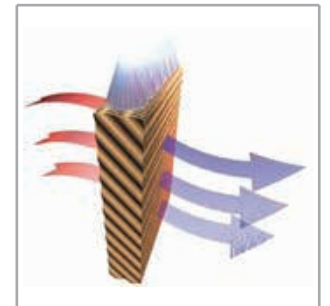
## FUNCTION

The Cool Breeze evaporative cooler lowers the temperature in the building by accumulating multiple principles of air conditioning: temperature reduction, elimination of accumulated heat, constant ventilation.



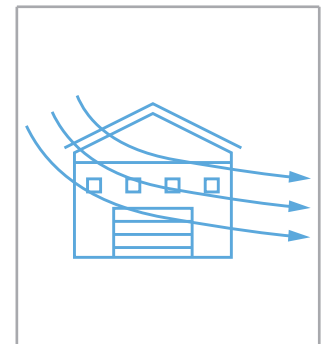
### Temperature reduction

Hot external air is passed through the water-saturated cooling pads, the air in contact with the water triggers the water evaporation process which automatically decreases the air temperature, the resulting fresh air is introduced in the building by the fan in the cooler. The cooling effect obtained depends on the efficiency of the cooling pads, the number of air changes supplied, the temperature and humidity of the external air in that moment.



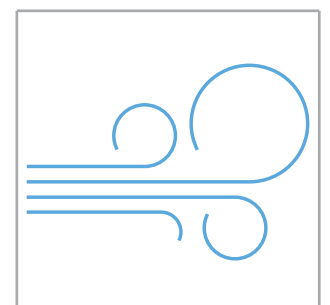
### Elimination of accumulated heat

During the summer season heat continues to accumulate in the building due to both the sun's radiation and the activity that takes place inside (machinery, work, etc...). The Cool Breeze cooler constantly introduces new air into the building and expels the accumulated warm air outside, this results in supplying large air changes in the premises allowing to decrease the temperature by replacing exhausted air with new air. It is able to reduce the thermal load that accumulates in the building during the summer season.



### Constant ventilation

The movement of air over the body creates a feeling of coolness, the typical feeling you get on a hot day by turning on a fan that blows directly at us, the feeling is that the air is cooler even if its temperature has not really changed. By supplying many air changes, the Cool Breeze evaporative cooler creates a constant air movement in the building which gives an additional feeling of temperature decrease.



## ADVANTAGES

### 100% fresh air



The evaporative cooler always introduces new air in the building ensuring constant air changes in the premises, it never recirculates the same air.

### Zero emissions



Cool Breeze does not emit pollutants into the environment, it is a completely green product. It does not use refrigerant gases or fuels to reduce the air temperature but only a natural principle.

### Low running costs



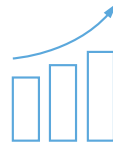
Cool Breeze uses only water and very little electricity to reduce the air temperature, an electrical consumption of 1-2 kW/h (depending on the model) and about 30-60 l/h of water. The annual running costs are really minimal.

### Low installation costs



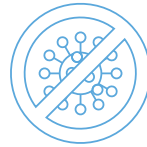
Evaporative coolers are typically installed on the roof of the building. They are supplied in assembly kits and have a total weight of 60-120 Kg (depending on the model), so that they can be lifted and moved without the need for expensive mechanical lifts. It has no need of support structures as it is designed to be fixed directly on the air duct which will support the weight.

### Increased productivity and attentiveness



Reducing the indoor temperature allows workers to produce more efficiently and reduce errors during the hottest period of the year. Increased temperature in a work environment leads to a drop in productivity of up to 80% and an increase in errors of up to 700% (NASA report CR-1205-VOL-1) The Cool Breeze evaporative cooler creates a comfortable temperature in the building for employees, who can carry out work more efficiently and accurately.

### Viral load reduction



The evaporative cooler guarantees constant air changes in the building lowering the possibility of viruses and bacteria spreading between employees. Cool Breeze supplies the premises always with new air that replaces air containing bacteria, viruses or other pollutants, this is expelled outside the building. In large buildings, air renewal is extremely important for the health of employees.

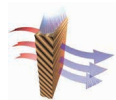
## FEATURES

### Plastic structure



Cool Breeze is designed with UV-resistant ABS plastics and tested in the driest climates to ensure optimum durability in both function and aesthetics.

### Cooling pads



The cooling pads used are made of cellulose with a thickness of 100 mm, the honeycomb shape optimises the maximum contact of the water with the cooling pad allowing to reach saturation efficiencies above 90%.

Cool Breeze cooling pads do not use formaldehyde in the production process so they do not produce an unpleasant smell during the first few weeks of use.

### Motor



The fan is run by a high efficiency 1 kW motor (two motors for the D500 model), does not use belts and pulleys and no maintenance is required. It can also run in reverse for the air extraction function.

### Tangential fan



High efficiency fan with low noise thanks to the unique dimple design (like a golf ball); this feature increases the air flow produced and reduces the sound impact of the fan.

### Electronic board



All the functions and safety measures of the product are managed by the electronic board inside the machine.

Automatic water management, washing cycle and water discharge.

### Water inlet valve



Solenoid valve for loading water into the cooler sump, equipped with removable and cleanable filter.

### Magnetic level sensor



A magnetic level sensor is used to manage the water level in the sump, this allows to not have to carry out maintenance on this component and to have a high reliability over time.

### Recirculation pump



It manages the distribution of water on the cooling pads by recirculating it from the cooler sump. It is a high durability professional pump.

### Counterweight drain valve



Special gravity operation without the use of electronics, this guarantees a long life and that in no situation the water in the sump remains stagnant.

### Remote control included



The wall-mounted control panel manages the cooler's functions in automatic mode (ventilation, cooling and air extraction), fan speed, wash cycles and indoor temperature.

The functions can also be used in manual mode.

### BMS

On request it is possible to control the evaporative coolers with a networked system via software from PC, tablet and smartphone.



## TECHNICAL DATA

### Quick selection of an evaporative system

When choosing an evaporative system, the steps to follow are:

1. Calculate the air volume of the building below the air diffuser.
2. Multiply the calculated air volume by the air changes needed for the activity in the building.
3. Divide the resulting air changes volume by the air-flow rate of the chosen cooler model, thus obtaining the number of coolers to be installed in the building.

Example :

- Building dimensions = 50 x 20 x 8 m (l x d x h)
  - Air diffuser installation height = 4 m
  - Number of air changes per hour = 20
  - Cooler model = D500 (airflow 21,000 m<sup>3</sup>/h)
1. Calculate the building volume below the air diffuser  
 $50 \times 20 \times 4 \text{ m} = 4,000 \text{ m}^3$
  2. Calculate the total volume of replacement air by multiplying the volume obtained by the number of air changes per hour  
 $4,000 \text{ m}^3 \times 20 \text{ v/h} = 80,000 \text{ m}^3/\text{h}$
  3. Calculate the number of coolers required by dividing the total volume of replacement air by the air-flow rate of the cooler  
 $(80,000 \text{ m}^3/\text{h}) / (21,000 \text{ m}^3/\text{h}) = \text{number } 4 \text{ D500 coolers}$

### Performance of an evaporative cooler

The efficiency of an evaporative cooler depends on the quality of the cooling pads, the speed of the air passing through the cooling pads and the climatic conditions outside the building.

The Cool Breeze evaporative cooler uses the best quality of cooling pads on the market with a saturation efficiency above 90% and maintains an air speed through the cooling pad less than 2 m/s, this allows the Cool Breeze to obtain an excellent decrease of temperature.

### Temperature of the air blown indoor by the cooler according to the climatic conditions outside the building

Outdoor temperature	Outdoor relative humidity			
	30%	40%	50%	60%
30°C	19°C	21°C	23°C	24.5°C
32°C	20.5°C	22.5°C	24.5°C	26°C
34°C	22 °C	24°C	26°C	28°C
36°C	24°C	26°C	28°C	30°C
38°C	25°C	27.5°C	30°C	32°C
40°C	26°C	29°C	31.5°C	33.5°C



## TECHNICAL SPECIFICATIONS

Models		MU	D255	D500	S240
Motor	Tension	V		220-240	
	Consumption	W	1000	2000	1000
	Tension	A	6	12	6
	Speed	rpm		850-1370	
Airflow at 20 Pa		m <sup>3</sup> /h	11000	21000	10500
Ventilation (*)		m <sup>3</sup> /h	19500	36000	18500
Cooled volume		m <sup>3</sup>	612	1200	576
Product dimensions		mm	1,130 x 1,130 x 970	1,630 x 1,200 x 995	1,130 x 1,130 x 1320
Pad dimensions (no. x l x h)		mm	4 x 830 x 770	2 x 928 x 960 4 x 645 x 960	3 x 950 x 830
Pad surface		m <sup>2</sup>	2,6	4,3	2,4
Pad air speed		m/s	1,2	1,4	1,2
Water consumption (**)		l/h	34	58	32
Sound power (***)		dBA	65	83	66
Operational weight		Kg	80	148	103
No. of fans		No.	1	2	1
Air outlet			lower	lower	lateral

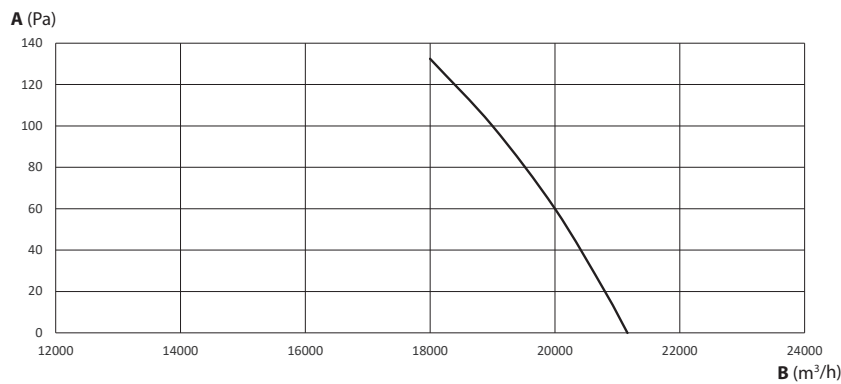
(\*) calculated according to non-EU standards

(\*\*) at an outside temperature of 32 °C and a relative humidity of 40 %

(\*\*\*) measured at 1 m distance

### Fan curves

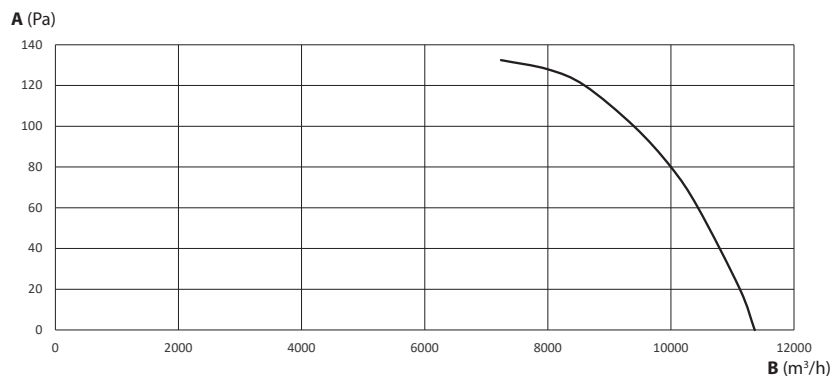
#### D500



A = Pressure drop

B = Air flow rate

#### D255



A = Pressure drop

B = Air flow rate

## REFERENCES

### Already relied on Cool Breeze:

*Coca-Cola*  
*Decathlon*  
*Amazon*  
*Bosch*  
*Vestel*  
*MercaMadrid*  
*Pikolin*  
*Peugeot*  
*Mercedes Benz*  
*Correos*  
*Mega Metals*  
*Hyundai*  
*Honda*  
*and many others...*





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