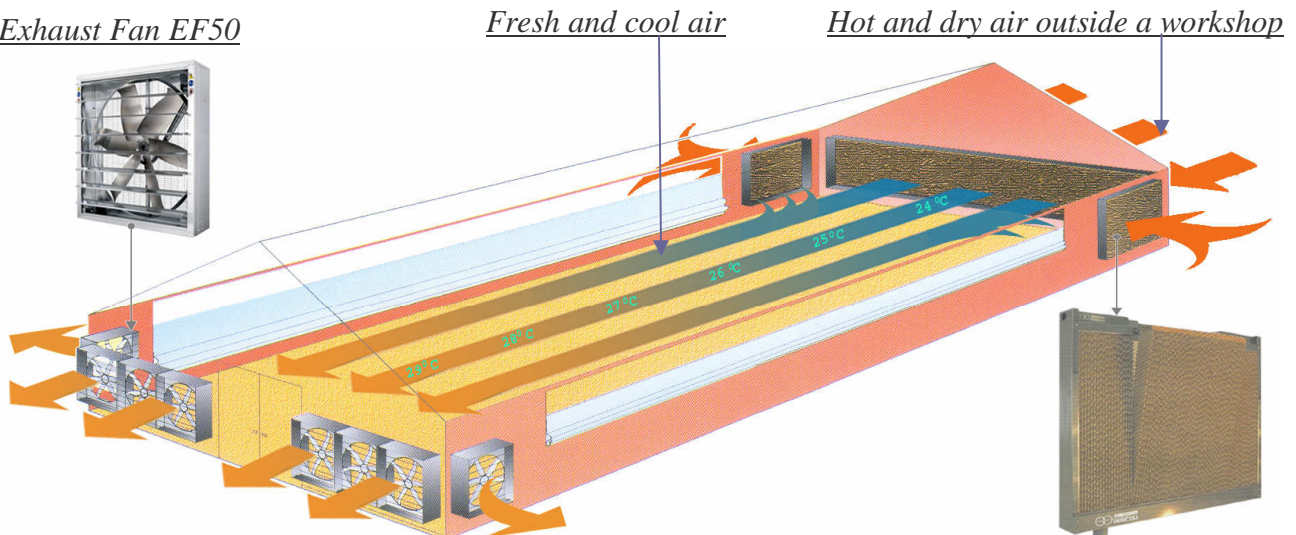


THE EVAPORATIVE COOLING SYSTEM

MODEL OF THE SYSTEM

Exhaust Fan EF50



A frame of evaporative cooling pads

EFFICIENCY OF THE SYSTEM

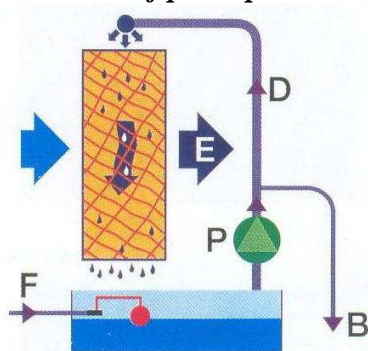
It depends on temperature and humidity of air outside a workshop and air velocity outside through evaporative cooling pads.

Example: Using an evaporative cooling pad with its dimension: (HxWxD) = (1800 x600x150)mm, air velocity outside through the pad is 1.0 m/s. Efficiency of the system is shown the following table:

The air outside a workshop			The air temperature after the pad (°C)	Temperature reduction (°C)
Temperature (°C)	Humidity (%)	Wet bulb temperature (°C)		
(1)	(2)	(3)	(4)	(5) = (1)-(4)
37	40	25.5	26.7	10.3
37	45	26.7	27.7	9.3
37	50	27.8	28.8	8.2
37	60	29.9	30.7	6.3

PRINCIPLED OPERATION OF THE SYSTEM

The chart of principle



The evaporative cooling system making negative pressure operates under principle to make negative pressure in a workshop by the following way:

At one gable of the workshop, exhaust fan having large airflow is installed to exhaust total hot and polluted air and industrial dust inside the workshop to eliminate outside.

At the opposite gable of the workshop, the system of frames of evaporative cooling pads (including evaporative cooling pads and water distribution pads with a standard size put together and surrounded by stainless steel gutters) is installed.

These pads are supplied water regularly by water pump by the way watering regularly on the surface of water distribution pads then wetting all the surface of evaporative cooling pads. After flowing through the evaporative cooling pads, water will fall into the gutters and through recovering PVC line to return a tank to join a new circulation. Because of the different pressure between inside and outside the workshop, air outside will be exhausted through the evaporative cooling pads exchanging temperature with water to become fresh and cool air and suitable humidity. As a result, air temperature inside the workshop is decreased.

MAIN EQUIPMENTS OF THE SYSTEM

1. Exhaust Fan



Specifications		Model: EF50
Capacity of motor	[KW]	1,1
Power supply	[V]	3 phases, 380V, 50Hz
Dimension of fan:	[mm]	1380x1380x400
Width x Height x Depth		
Weight of fully equipped fan	[kg]	86
Nominal propeller speed	[rpm]	450
Airflow at static pressure 0 Pa	[m ³ /h]	44.500
Noise	[dB]	65
Propeller diameter	[mm]	1270
Number of blades	[pcs]	6
Number of shutter	[pcs]	8
Max operating temperature	[°C]	50
IEC protective class of electric motor		IP55
Electric motor winding insulation grade		F

2. Evaporative Cooling Pad

Water distribution pad



Product Details:

Type
Place of Origin
Model Number
Angle of Cut-off
Dimension: HxWxD
Material
Colour of Product

Evaporative Cooling Pad

Thailand
7090
45°
1800x600x150 mm
Cellulose
Yellow Chrome

Product Details:

Type
Place of Origin
Dimension: HxWxD
Material
Colour of Product

Water Distribution Pad

Thailand
600x150x30 mm
Cellulose
Yellow Chrome

Evaporative Cooling Pad, called CeLdek or CeLPad, is made of special cellulose paper and highly endosmotic water, with physical flutes united each other to make a suitable angle of cut-off. They look like honeycomb structure. This special design yields larger square face in the same volume space, increases possible contact, rub and collision between air and crumpled face of the pad. Membranous water is taken shape and it covers face of the pad. When air goes through the membranous water, evaporative process into the air will happen, simultaneously change temperature and humidity of the air. So this process is called the temperature-humidity exchange process.

Description of the temperature-humidity exchange process: Because water temperature is lower than air temperature exhausted from outside to inside a workshop, evaporative water will absorb part of heat of air and make water hotter, oppositely air becomes cooler and humidity in air increases suitably.

APPLICATIONS

- In workshops producing garments, woolen, shoes, packing,...
- In workshops producing mechanics, garage,....
- In restaurants, supermarkets, amusement parks,...
- Arboretums, gardens growing flowers and ornamental plants,...
- Livestock farm,....