Pad & fan Cooling

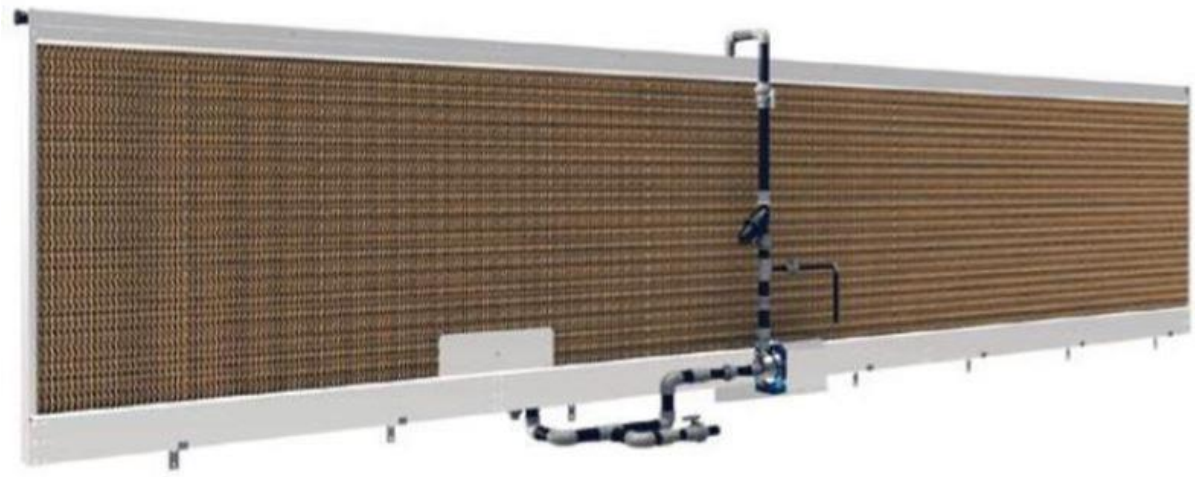
Cooling a greenhouse with pad & fan

The pad & fan cooling system is a widely applied system. Large fans with light traps blow air outside the greenhouse. On the opposite site a pad wall is installed which is being kept wet. Water from the pads evaporate into the hot air, lowering the temperature. A pad and fan system with light traps is a custom made system and is done by installers.

The cooling system is based on evaporative cooling technology where water is circulated through a pump station and supplied to the top of a cooling pad via a distribution manifold. A distribution pad on the top of the cooling pad ensures an even water distribution. The water flows down the corrugated surface of the evaporative cooling pad. Part of the water is evaporated by the warm and dry air that passes through the pad. The rest of the water assists in washing the pad, and is drained back to the pump station through a gutter system. The heat that is needed for the evaporation is taken from the air itself. The air that leaves the pad is therefore cooled and humidified simultaneously without any external energy supply for the evaporation process. The air is forced entering the greenhouse only through the cooling pad whenever cooling is needed.

Gutter frame system

Complete stainless steel gutter frame system with integrated pump system including all necessary support and fixing materials for top covering above cooling pads. Under the pads a gutter for collection and recirculation of cooling water as per following dimensions:

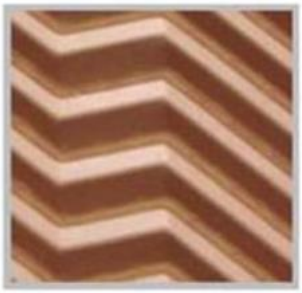


- Pad wall gutter frames will be installed on head gable on the corridor side from inside of the greenhouse.
- Gutter frames suitable for 2,00m high and 15cm thick pads.
- The gutter frame is made of galvanized steel coated with special materials to endure water and salts (Pluvimag).

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- The system includes all fittings and accessories to build in the pads such as supports, connection pieces, drain outlets, top cap, etc.
- Gutter frame supports are included and calculated on basis of 1 support for each meter.
- Each gutter system has an extra deep gutter for water buffering. Due to this large water volume, external water tanks can be saved and the supply pump can be placed near the under gutter.

Cooling and water distribution pads



Cross-section cooling/darkening pad

Evaporative Cooling pads

- The cooling pad is made of cross-fluted cellulose materials, impregnated within soluble anti-rot salts, rigidifying saturates, and wetting agent to give a lasting quality.
- **352 pc[s]** of Evaporative **cooling and darkening pads** width 600mm x length 2000mm x thickness 150 mm to cover total gutter frame systems of **211.20 m**

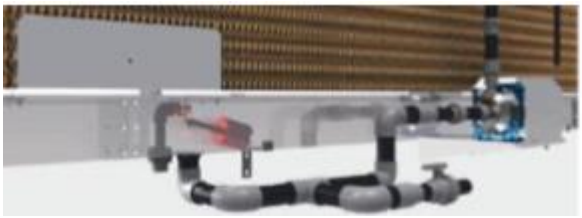
The cooling pads will be carried out with a special air flow pattern to prevent daylight coming through the open pads. In this way the greenhouse can be completely darkened while the pad & fan system can still function.

Water distribution pads

- Water distribution pads to be placed on top of the evaporative cooling pads to ensure proper distribution of water and thorough wetting of the evaporative pads.
- **352 pc[s]** size width **150 mm x length 600 mm x thickness 30mm** to cover total gutter frame systems of **211.20 m.**
- The water distribution pads are made of the same materials as the evaporative pads

Water distribution and re-circulation system

Complete water supply and recirculation plumbing sets for each pad-wall gutter frame including PVC supply lines, PVC distribution line. All of this integrated in gutter systems. A floater valve controls the water level inside the gutter.



Hydraulic system assembled to lower gutter

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Example pad wall in a medical cannabis greenhouse



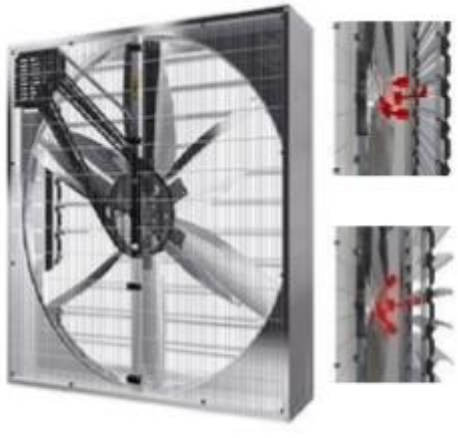
Exhaust fans

In total **66** exhaust fans included for the pad & fan system and to be installed on outside head gables, **3 pieces per 9.60 m**. Each fan with air flow capacity of approximately **33.000 m3/h.**

Example Exhaust fans with light traps in a cannabis greenhouse



Compartment	Quantity
Mothers	3 example
Vegging	9 example
Rooting/Hardening	6 example
Flowering	6 example
Flowering	
Flowering	
Flowering	
Flowering	
Flowering	
Flowering	
Flowering	
Flowering	
Flowering	
Total	**xx**



Exhaust fan type EWS 53/1.5

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Specifications exhaust fans:

- Type EWS 53/1.5
- Shutter working by centrifugal system
- Safety net from suction side
- Galvanized steel Wall housing.
- Impellor Ø 1346 mm made of galvanized steel with 6 blades
- 3 phase motor ON/OFF 1.1 kW 400V - 50Hz.
- Size Width 1380mm x Length 1380mm x Depth 550mm including safety mesh.
- Weight 80 kg.



Light traps stops the light by maintaining a good airflow. Exactly what a medical cannabis grow operation needs to have cooling & black out during flowering. We recommend to direct the shutter blades vertically in case the light traps is installed in dusty environments. Sediments will drop downwards and won't interfere with airflow.

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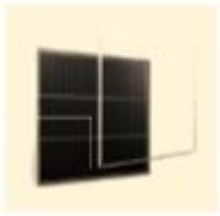
4 rods to avoid vanes movement during cleaning



The special double-wave vanes guarantee a high obscurating capacity by low pressure drops.



Practical hook blade for easy installation



4 fixing strips for optimal installation without performance drop

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