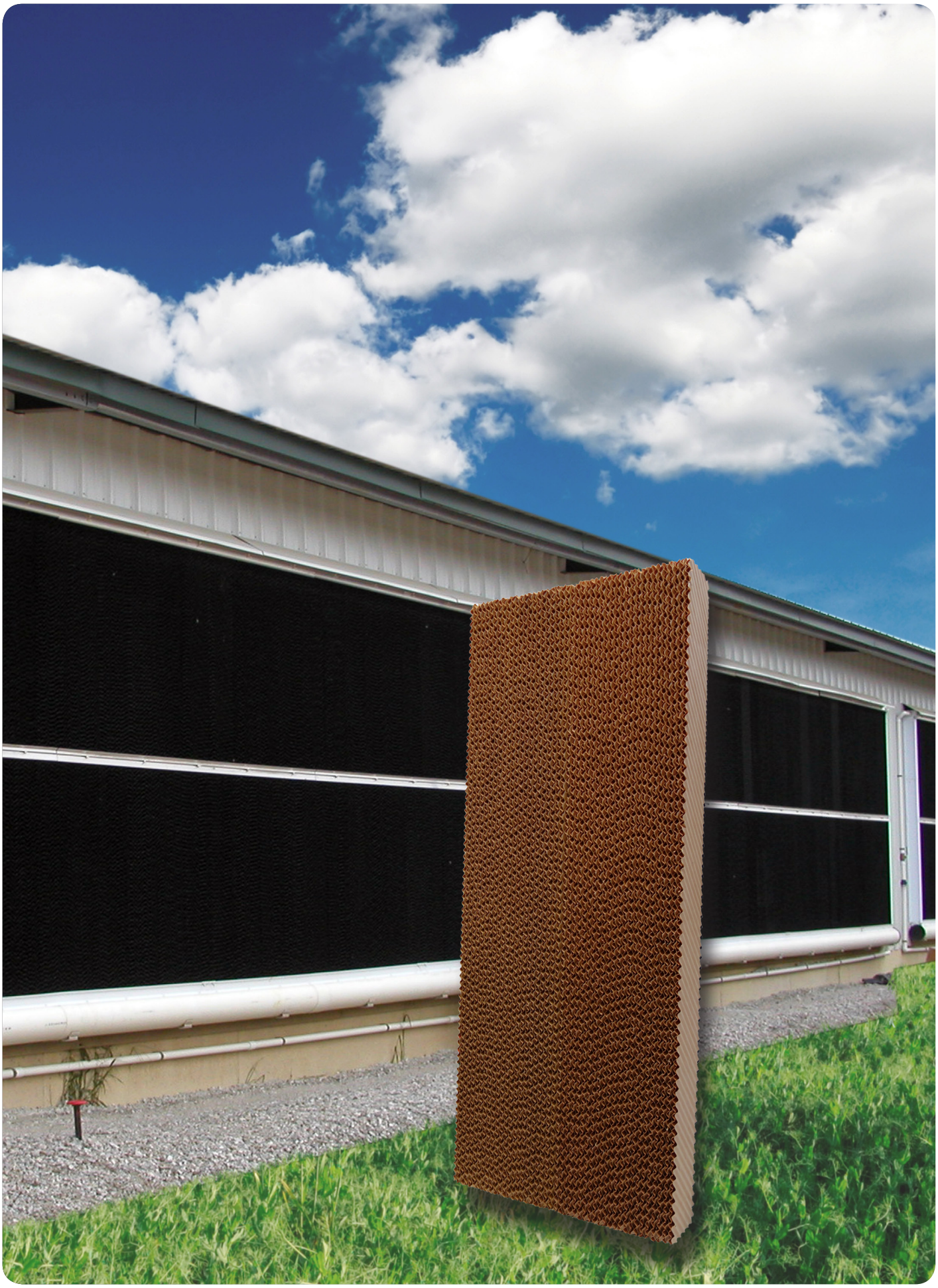


Maintenance and Preparation for Summer

Evaporative Cooling Pads

Munters

Now that the weather is getting warm, you should make certain your evaporative cooling system is ready for the challenge of summer.

- The CELdek should be as clean as possible to allow free flow of air
- The gutter and sump should be clean to remove harsh contaminants and nutrients that can deposit on the CELdek and clog the water recirculation system
- The pump and distribution system must be clog free
- The make-up water line must be properly sized

This seems simple enough, so let's make a step by step plan.

1. Remove the CELdek.
Go ahead and remove as much of the distribution retainer as possible. You will need to get in and around the distributor pipe eventually anyway. Remove the CELdek and lean it against the side of the building so you can hose them off.
Inspect the CELdek for damage such as rat's nests , cow chewing, old age. If the media needs to be replaced, now is a good time to get it on order. Don't wait for them to fail at the height of summer. See Appendix A

2. With a garden hose and spray attachment, gently rinse the dirt and debris off both of the faces of the pad.

3. Clean the pad framing. Here you can use higher pressure. Knock the spider webs out of the dog house. Watch out for the black widows, resident rats, birds, kittens and snakes.

Debris In gutter

Clean the gutter thoroughly

4. Most gutters are not very accessible. You may need to remove the end cap and run water through the gutter to remove all of the sediment. Of course all of the sediment and trash will be accumulating in the sump unless you have a way to divert everything elsewhere.

5. Most sumps are below grade and have to be pumped out. At this point, it is not recommended to use your circulating pump to clean out the sump. It would be better to use a trash pump or a wet vacuum cleaner.

Debris must be removed from the sump

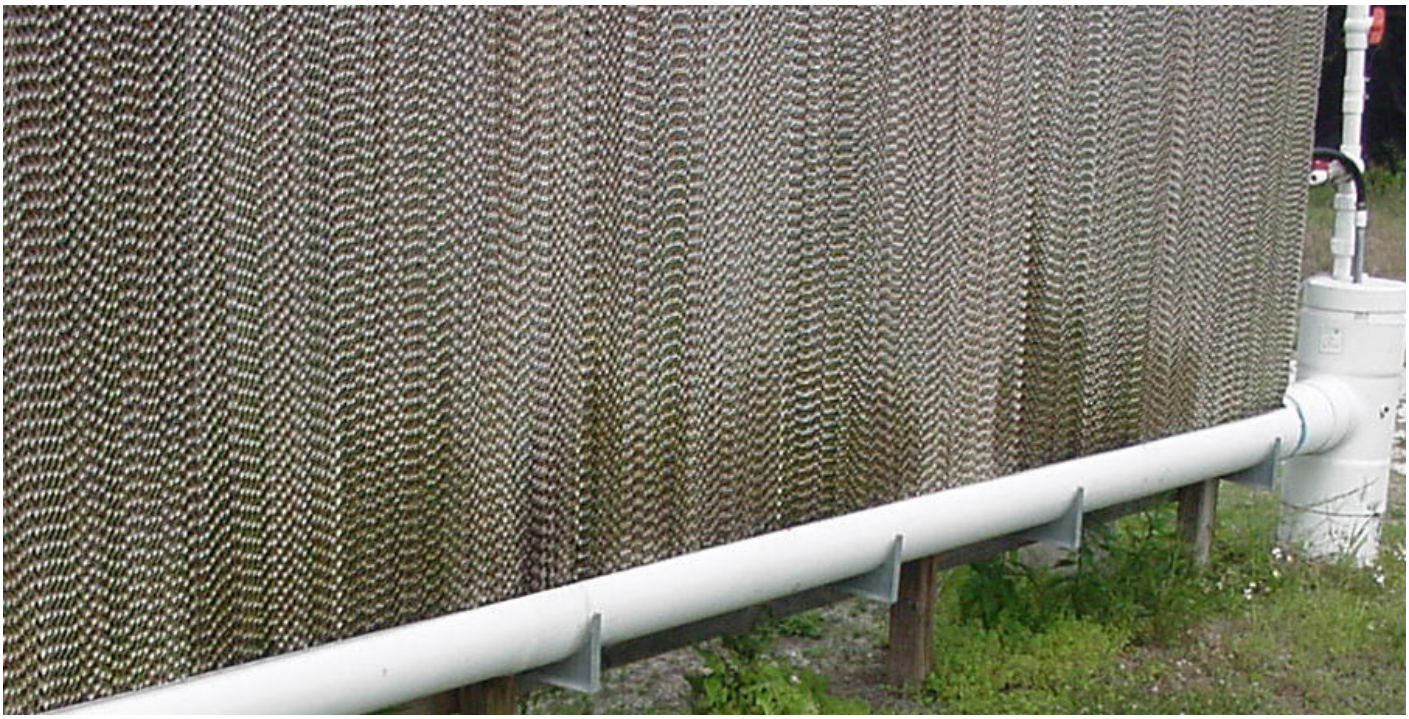
6. Now that the sump is clean, refill it with clean water. Clean all of the filters in the system, if there are any. Make certain the inlet to the pump is cleared.

7. Activate the pump. If the header pipe has a flush-out or a removable end cap, open it up. Let the water flush out the distribution pipe. Close the flush out and check to see if the water coming out of the distribution pipe is even from one end to the other. If you see any clogged holes, clean them out with a piece of stiff wire. Start at the end closest to the pump. Open the flush valve and blow out all of the debris that was knocked out of the holes.

Dirty Filters

Clogged header poor distribution

Clogged header Clean Out



Pads sitting in water with algae growth

8. Is the fill valve located in the sump working properly? If it does not supply enough water, you will need to trace the water lines all of the way back to the source to determine the root cause. It can be anything from a dirty strainer to a damaged pipe or an inadequate water supply.

9. Put the pads back in the system. Make sure they are installed correctly. See appendix B. Put the distribution retainer back in place.

10. Activate the pump. This time, observe how fast the CELdek wets out. With no fans running, the water should run down the CELdek, from one end of the pad wall to the other in about 2 minutes. Look for uneven wetting, dry streaks, etc. Make a note of where they are and correct them.

11. Check for leaks in the gutter, pads and piping. Correct them so the system can run at full capacity during the summer without wasting water.

12. Since all of the dirt still in the system has been stirred up, go ahead and blow it out by opening the bleed valve or the header flush, until the water clears up.

13. When the pump is turned off, all of the water returns the sump and gutter. Make sure the pad is not sitting in water. This will allow algae to grow on the pad and the bottom of the pad will deteriorate. Adjust the overflow below the level of the pad.

14. If there is still danger of freezing weather, pump out the sump and drain all of the pipes.

CELdek sitting in gutter & water

Appendix A - When Do Evaporative Cooling Pads Need to Be Replaced?

Deteriorated CELdek

Good CELdek

This is a common question and yet there is no simple answer. CELdek is like a wet filter because it filters dust and soluble gasses from the air.

The water running over the cross-corrugated channels makes the CELdek self-cleaning. It typically lasts much longer than air filters, but eventually, will need to be replaced. It is important to learn to predict and plan replacement in advance so that it can be scheduled at a convenient time.

SCALE When water evaporates, insoluble mineral residue is left behind on the surface of the pads. If this cannot be controlled with normal bleed off and/or flush cycles, a frosty deposit will form in areas of highest evaporation or lowest water flow.

Eventually, the pressure drop (resistance to airflow) across the pad will become prohibitive and it will be necessary to clean or replace the pads.

SOFTENING Pads that have been subjected to harsh chemicals (acids, caustics, ammonia, chlorine) or soft water, eventually will soften and settle in the supports.

If this begins to happen, the air can short circuit around the pads. Although adding more supports will extend the life of the pads, replacement should be scheduled as soon as possible.

CELdek is designed to last 5 to 7 years when installed and operated according to Munters recommendations and used during a typical cooling season of 5 to 6 months per year. Call Munters for more information regarding installation and maintenance of CELdek and GLASdek evaporative pads.

Replace pads that are bowing and falling out

Appendix B - CELdek Installation

In order to get the best performance from your Munters cooling pads, they must be installed properly. If you have purchased a pad with two equal angles, they can be installed in either direction.

Depending on the application, pads are manufactured with special angle combinations.

Those having combinations of 15° x 45° or 30° x 60° are made to direct more water toward the air entering side of the pads. If installed backwards, the pads may not work properly.

Munters pads must always be installed with the steeper flute angle sloping down toward the air entering side.

Water distribution measure

The reasoning is simple, the steeper angle puts more water on the entering side of the pad where the air is hot, dry, and dusty and extra water it is needed most.

The unequal angles also counteract the tendency of the air to push the water toward the air leaving side of the pad.