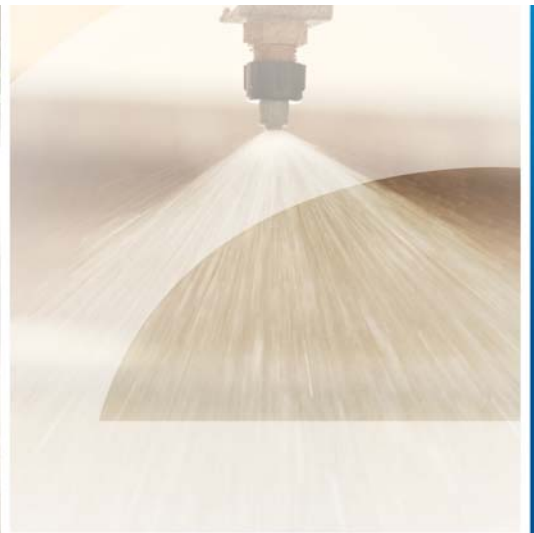


Edstrom

Cooling Systems For Dairy Cattle



The Edstrom Complete Solution To Beat The Heat

It doesn't have to be 110°F for heat stress to occur in dairy cows.

Studies have found that dairy cows will begin to reduce feed intake and lose body weight at temperatures as low as 79°F. Milk production, reproductive performance and health are all affected. Heat stress affects performance even in seemingly cooler months, as cows struggle to rebound from complications such as rumen acidosis. High yielding cows are most susceptible to heat stress. All of this quickly impacts your profits!

The degree of heat stress suffered by the cow will depend on the combination of environmental conditions – air temperature, relative humidity, air movement, and radiation from the sun. Dairy farmers use shades, fans, and ample fresh drinking water to help herds beat the heat, but often shade and ventilation are just not enough.

Coarse Droplet Soaker Nozzle

Mist and fogging nozzles are often used to cool dairy cows by cooling the air around the cows. Unfortunately, the mist can be easily blown away under windy conditions or when used with fans. If a mist or fog builds up on the cow's hair, it can trap a layer of air between the skin and the water holding in body heat. In addition, mist and fogging nozzles are often operated at high pressures and require regular maintenance.

In comparison, high-capacity Edstrom soaker nozzles produce a coarse droplet spray which penetrates the hair and wets the cow to the hide. Edstrom soaker nozzles operate at reduced water pressure of 10 to 20 psi. The water is then allowed to evaporate, pulling heat from the animal, just like sweating. Air movement across the wet hide, provided by fans, makes this system most efficient. Proper control is critical to ensure that the cow gets soaked to the hide along the topline while not getting wet to the point of having water running off the sides.



Proper degree of wetting cattle
(Photo courtesy of Jeffrey Brose, DVM)



C-440S Controller with Smart Mode™ for automated, multiple staging cooling

“The Smart Mode™ allows producers to increase soaking frequency as temperatures increase and reduces the volume of water used. The Edstrom C-440S with Smart Mode takes the guesswork out of programming the Controller. Once the LO and HI Range settings are determined, Smart Mode does the fine-tuning so the dairyman doesn't have to.”

Dr. John F. Smith,
Kansas State University Extension Dairy Specialist

Intermittent Shower Cooling Systems C110S Controller



The C-110S Controller is designed for use in holding pens or smaller feed line soaker systems. The controller monitors the temperature and regulates the shower cycles in livestock production facilities. The controller is the heart of the system and makes the best use of your

resources to keep livestock comfortable, healthy, and productive.

The C-110S Controller is generally mounted in an area that is easy to access and monitor. It is also recommended that the controller be installed in a location that is protected from rain and direct sunlight. It may be centrally located or the controller could be

located in a remote office area and connected by low voltage wires to the electric valve in the livestock area. The C-110S Controller can remain plugged in during the winter months to serve as a temperature gauge. The controller plugs into a standard 120 VAC outlet through a transformer (included) that reduces the line voltage down to 24 VAC. An optional 230 VAC/24 VAC model, Part No. 7400-8910-215, can be special ordered. Accessories to complete the cooling system (shower nozzles and electric solenoid valve) are also available from Edstrom Industries.

The C-110S Controller is easy to program by using the three push buttons on the front panel. The star button toggles through the various settings, and the up or down arrow buttons increase or decrease the settings. You can also toggle between Two Stage Mode and Smart Mode.

Intermittent Shower Cooling Systems C440S Controller



The Edstrom C-440S Controller controls up to four electric solenoid valves activated in sequence. This helps reduce the amount of water required at one time by splitting a barn into multiple zones. It's Smart Mode™ setting automatically adjusts the length of time between

shower cycles as the temperature changes. Smart Mode stays ahead of increasing heat stress conditions when temperatures rise, while conserving water as temperatures fall.

The shower and interval times can be set anywhere within the range of 0 to 99 minutes. The actuation temperature can be set within 40°F to 99°F in either the LO or HI Range settings. You can also select the number of electric solenoid valves to be operated, as well as the number of temperature sensors that will be monitored. Easily set the Controller to operate in either standard Two-Stage mode or in Smart Mode. Once the settings are entered, they are saved automatically, and will not be lost if the electrical power is interrupted.

Common locations for installing a shower cooling system are in the Holding Pen, where cows are crowded together, and in the Feed Line.



To soak the hide, shower the animals for a short period of time from 0.5 to 3 minutes. After the shower shuts off, the water is evaporated from the cattle by fans blowing across their backs for 5 to 15 minutes, before repeating the shower cycle.

NEW!
Cooling System

Cool Sense™ Motion Cooling System

- Control the amount of water used by adjusting the shower time – Minimize wasted water.
- Easy and economical to install and operate – Quick return on investment.
- Adapts to various lane widths and barn configurations.
- Unidirectional or bidirectional options.
- Two-year factory warranty on controller.

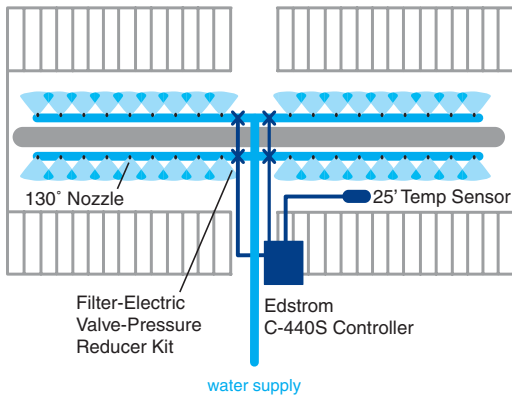
The Cool Sense™ motion cooling system is an effective and efficient way of keeping dairy cattle cool when the temperature rises. Cooling is achieved by automatically showering dairy cows with a coarse droplet shower. Showering cows immediately after milking helps reduce heat stress, which in turn increases their feed and water consumption and milk production.

The Cool Sense controller activates a shower when the temperature probe detects an air temperature above the customer-configured actuation temperature and the dual motion sensors detect motion. The cows are then showered as they walk under the manifold nozzles. After a cow moves through the showering area, the water begins evaporating from the skin and pulls heat away from the animal, thus cooling it.

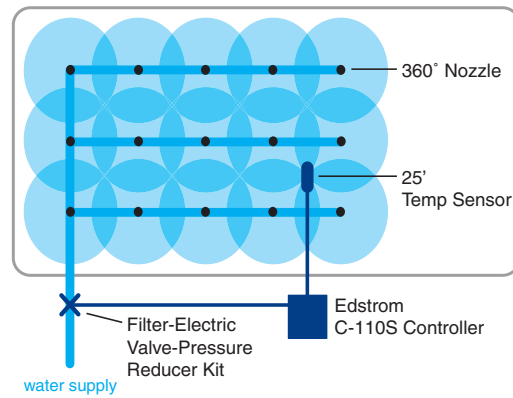
There are two types of showers on a Cool Sense system, unidirectional shower and bidirectional showering. Unidirectional showering consists of one manifold that disperses water in one direction, while bidirectional showering has two manifolds that disperse water in opposite directions.



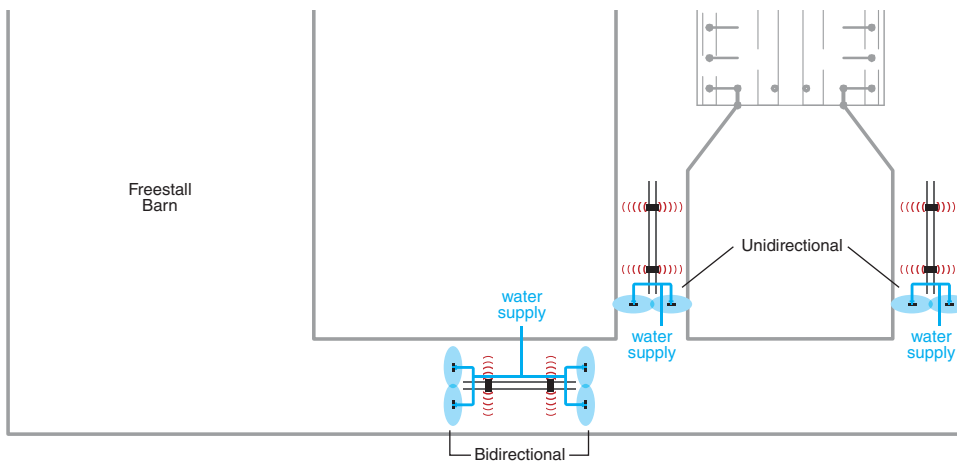
Feed Line



Holding Pen



Cool Sense™ – Motion Cooling System



Pipe (in. dia.)	Flow Rate (gpm)					
	10	20	30	40	50	100
0.50	[Bar]					
0.75	60	[Bar]				
1.00	180	40	[Bar]			
1.25	700	200	100	60	[Bar]	
1.50	1500	400	200	120	80	[Bar]
2.00	5000	1400	660	400	240	80
2.50	12000	3300	1600	900	600	160
3.00	43000	12000	5600	3300	2200	600

Table 1
Recommended maximum distance in feet from well/water meter connection for PVC with limiting pressure drop to 5 psi.

Total Length	Distance from solenoid valve to last sprinkler nozzle (ft.)*			
	0 – 100	100 – 200	200 – 300	300 – 400
100	¾ in.**	[Bar]		
200	1 ¼ in.	1 in.	[Bar]	
300	1 ½ in.	1 ¼ in.	1 in.	[Bar]
400	2 in.	1 ½ in.	1 ¼ in.	1 in.
500	2 in.	2 in.	1 ½ in.	1 ¼ in.

* Based on water application rate of 0.06 gpm per foot length (0.03 gallons per square foot, wetted distance 6 feet, 3 minute sprinkler on-cycle)
** Minimum recommended PVC pipe diameter for this section

Table 2
Recommended minimum PVC pipe diameter with limiting pressure drop to 5 psi.

Edstrom

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