

# Study of Cooling System with Water Mist System

## Water Misting System- A REVIEW

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**Abstract-** A cooling system that sprays micro water droplets could prove useful in mitigating temperature increases in urban areas by using the heat of water evaporation, a process that consumes only small amounts of water and energy. The system may be pressurized during filling by a pressurized water supply source. In the absence of a pressurized water supply, the system may be pressurized manually. The system can also be used on boats, campsites, parks, playgrounds, construction sites, and other locations.

**Keywords-** Water, Mist System, Cooling, Evaporation, Humidity.

### I. INTRODUCTION

**Mist** is a phenomenon caused by small droplets of water suspended in air so that's how these named misting systems. Misting systems work by forcing water via a low/high pressure pump and tubing through a brass and stainless steel mist thereby producing a micro-fine mist. The water droplets that create the mist are so small that they instantly evaporate. Evaporation can reduce the surrounding air temperature by as much as 10-20°C in just seconds. Misting is used for applications such as flowerbeds, pets, livestock, kennels, insect control, odor control, zoos, veterinary clinics, cooling of produce, and greenhouses. Misting System is cost effective instrument for cooling environment.

### II. FIELD OF INVENTION

This invention relates in particular to the moistening of food products displayed in grocery stores and the like and more particularly it relates to a misting apparatus used to preserve product freshness. Area onto a small area called a solar receiver. The concentrated sunlight can be used to heat a fluid within the solar receiver. The fluid heated within the solar receiver can be used to drive a turbine to generate power. In the food industry it is important to maintain a constant temperature and when storing certain foods, it is just as important that the humidity level is kept above a certain level. A misting system provides this function too. On industrial sites where the generation of dust is a constant

problem due to both health concerns and vision problems it is necessary to have an effective dust suppression system in place. One of the more common uses is in greenhouses where misting systems are used to control the temperature as well as the humidity levels.

### III. DIAGRAM OF MISTING SYSTEM

Our systems come equipped with a pump, which is used for pressurizing the water from your hose. For decent outdoor cooling systems, 1000 psi is quite standard. On using the higher pressure, it is a must to pinch down the nozzle to a much smaller size and thus process a much finer mist.



Figure(A) Full Water Misting System

1. **Misting Filtration-** to enjoy clean and ultra-fine quality of mist, water filtration makes sense. Water filters help strain out debris and impurities found in hard water. When the water passes through filters, particles and other organic matter become trapped. This purifies the water from unwanted particles and helps you generate fine quality mist.



Figure 1 Water Misting Filtration

2. **Misting Controller** - Select this controller when all that is needed is timer control to turn misting on and off automatically. Engineered pressure relief mechanism ensures there are no drips. Instant on and instant off operation.

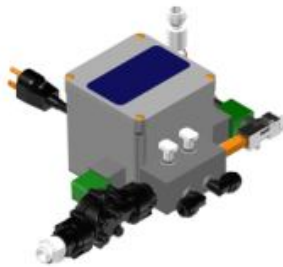


Figure 2 Water Misting System

#### IV. SUMMARY OF THE INVENTION

This invention relates generally to misting systems, and is more particularly concerned with an automatic misting system sufficiently versatile for use in a variety of food display counters.

The present invention provides a misting system including a surface mounted feed line, the feed line being adapted for the providing of tapped holes there along for receiving nozzle assemblies. Each nozzle assembly is completely adjustable and includes an individual valve with at least one misting nozzle. The misting nozzle includes a check valve for preventing dripping from the nozzle after the water supply has been terminated. The nozzle assembly is threaded into the feed line and includes a nozzle supply line. Each of the nozzles is carried on a branch that is rotatable about the supply line, and each of the branches is preferably angled, and is rotatable about an axis connected to the supply line. With these motions, any combination of motions can be utilized to direct the misting nozzles as desired.

The versatility of the present invention allows use of the misting system in an open produce counter, and including in an island counter. Furthermore, the misting system of the

present invention is usable within a closed counter, and it is contemplated that the system of the present invention will be utilized in conjunction with a fresh fish counter.

#### V. DETAILED DESCRIPTION

Food products such as vegetables and fruits when displayed in an open display case will dry out and become unappetizing. A solution to this problem is the provision of a mister. A water line is installed over the display counter and misting nozzles are connected into the line. A timing mechanism controls a valve that turns on the water source to the line in a desired sequence and a mist is forced through the nozzles and onto the food product. The on-off cycle is typically on for 10 seconds and off for 10 minutes.

Whereas misting nozzles have been widely accepted and are considered to provide significant benefits for such food displays, they have their drawbacks. They have to be positioned to spray a desired spray pattern over a display section and this requires placement of the nozzle assemblies typically where they can be easily viewed by the customers/shoppers. The spray has to be controlled to both spray all of the vegetables displayed but avoiding spraying water on the floor. During the 10 seconds of spraying, shoppers reaching under the spray zone or into the spray zone will get wet and because there is no indication when the spray will be turned on, the customer can be startled. The spray nozzle assemblies are also adapted to adjust the direction of spray from the spray heads and can be subjected to pranks and vandalism.

The system designed by us is also the best option for damp spaces. This is because when the temperature reaches its day time peak, relative humidity will normally reduce to its lowest point

Our systems can be used in a wide variety of situation., It's a perfect choice for the place where the use of conventional air conditioners would be too expensive: verandas, warehouse, theme parks, wine cellars, hotels, discotheques, showrooms, sports facilities, restaurants, beach centers, pedestrian's precincts, events, workshop, factories with hot environments, gymnasiums...

#### VI. EFFICIENCY OF A SYSTEM

Our system's efficiency varies according to the existing temperature. It completely depends upon the temperature level and existing humidity. The quality of the cooling procedure gets improved on accordance with lower humidity or higher temperatures. It works perfectly with temperature between 26 to 45-degree C and relative humidity

between 40 to 80%. If the humidity goes up to 80% or more than this, temperature reductions will be as high as 10 degrees. If the humidity levels are reported to be between 40% and 80%, temperature reductions will be as high as 20- 30 degrees. The systems can be installed either outdoors or in some cases indoors. Our technical office can work together with you to create any kind of project.

- Significantly lowers ambient temperature.
- Eliminates dust, pollens and flying insect.
- Easy to install.
- Low energy cost.
- High efficiency.

### **REFERENCE**

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