

Cloud Tech's Evaporative Cooling Systems

Be comfortable.

Cloud Tech high-pressure mist systems drop temperatures by as much as 30 degrees. By employing evaporative cooling principles in our outdoor/ indoor cooling systems, Cloud Tech creates a pleasant and comfortable environment year-round for you and your family. Dramatically increase the usable living space in your home, working areas, halls by adding misting to indoor areas, covered patios, courtyards, pool decking, play areas and more.

Be inviting.

Take advantage of the same technology that world-class resorts, industries use to enhance living and working comfort by adding a Cloud Tech Evaporative Cooling System to your place. Friends, family & guests will enjoy the amenity - neighbours will be envious.

Drop temperatures by up to 30 degrees and creates a pleasant and comfortable environment year-round for you with Cloud Tech.

Be confident.

For nearly eight years Cloud Tech has pioneered evaporative cooling and pure-water fog effects. Our evaporative cooling systems are installed in many residences, industries, resorts. Transform your area into a pleasant cooled atmosphere and experience Cloud Tech.

Complete your outdoor/ indoor living experience with Cloud Tech high pressure misting system.



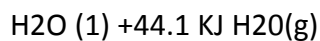
Technology

Misting systems provide cooling through evaporation. Evaporative cooling is a very simple process. Water requires energy to evaporate (600 calories of heat per gram of water, to be exact). As the mist evaporates the energy exchange results in temperature reductions.

BASIC FUNDAMENTALS

A) VAPORIZATION

The conversion of a liquid to its vapor is called vaporization. Heat must be absorbed by the liquid for this process to occur. For instance, in order for 1 mol (18 g) of liquid water to be completely vaporized at 20 C, 44.10 KJ (41.80 BTU) of heat energy must be absorbed. The amount of heat required to convert one mole of liquid into one mole of vapor at a given temperature and constant pressure is called the latent heat of vaporization.



It always requires heat to vaporize a liquid because of the greater magnitude of the force of attraction between the molecules in the liquid state as compared to the gaseous state. Energy must be supplied to overcome the force of attraction between molecules in the liquid, to pull them apart and increase the distance between the molecules. The energy supplied increases the potential energy of the molecules.

B) FLASH EVAPORATION

The cooling effect created by the Cloud Tech system is due to the flash evaporation of liquid H₂O. This is the change that occurs when a liquid under pressure passes through a nozzle to a pressure low enough that some of the liquid vaporizes or “flashes”, producing a two phase stream of vapor and liquid in equilibrium. Water is first filtered, and then pumped to as much as 1000 psi. The water is then sent to unique atomizing nozzles. When the water passes through these nozzles, flash evaporation occurs. The energy required for this vaporization to occur is provided from the surrounding air in the form of heat, thus cooling the surrounding air.

C) IMPACT

The impact of Cloud Tech high pressure spray is given by the following formula: Impact = Mass per Unit Time x Spray Velocity. The variables affecting the impact of a spray are flow rate, spray angle, concentration of the spray, operating pressure, and air friction. These variables will either affect the mass per unit time or the velocity and this affects impact. The

flow rate is, of course, essentially the mass per unit time. The drop sizes affect the velocity in that smaller drops lose velocity due to air friction more rapidly than the larger ones. Total impact of the nozzles should be distinguished from the impact per unit area. The total impact of two nozzles may be the same, but the impact per unit area can be entirely different. The spray angle and the concentration of the spray do not directly affect the total impact but does affect the impact per unit area. The smaller the spray angle and the more concentrated the spray pattern, the higher the impact per unit area is.

Performance

The efficiency of the system depends upon the ambient temperature level and existing humidity. The effectiveness of the cooling process improves with higher temperatures or lower humidity. The ideal conditions are with temperature between 26 to 45 degree C and relative humidity between 40 to 80%. For humidity above 80%, temperature reductions will be as high as 10 degrees. For humidity levels between 40% and 80%, temperature reductions will be as high as 20- 30 degrees.

Our systems can also be used in very damp spaces, because when the temperature reaches its day time peak, relative humidity is normally at its lowest point.

How it works

- A pump should be used to pressurize the water from your hose. 1000 psi is pretty standard for decent outdoor cooling systems.
- When using the higher pressure, nozzles can be pinched down to a much smaller size, and therefore produce a much finer mist. This is where the cooling magic happens! The droplets are so tiny that they actually evaporate into the air almost instantly.
- The process of evaporation actually requires (or uses) heat from the air. Each evaporating droplet takes a little bit of heat with it. When you turn on misting systems , millions of droplets are evaporating every second! The result is a dramatically cooler outdoor area...instantly.
- The best part is that all of the water is completely evaporated into the air...instead of dripping onto the ground or your party below. No bad hair. No wet food. No slippery area.

Where to use it

We can use a system in a wide variety of situation, and in particular where the use of conventional air conditioners would not give adequate results or would be too expensive: verandas, theme parks, warehouse, wine cellars, hotels, restaurants, discotheques, beach centres, sports facilities, pedestrian's precincts, events, workshop, showrooms, factories with hot environments, gymnasiums.....

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.

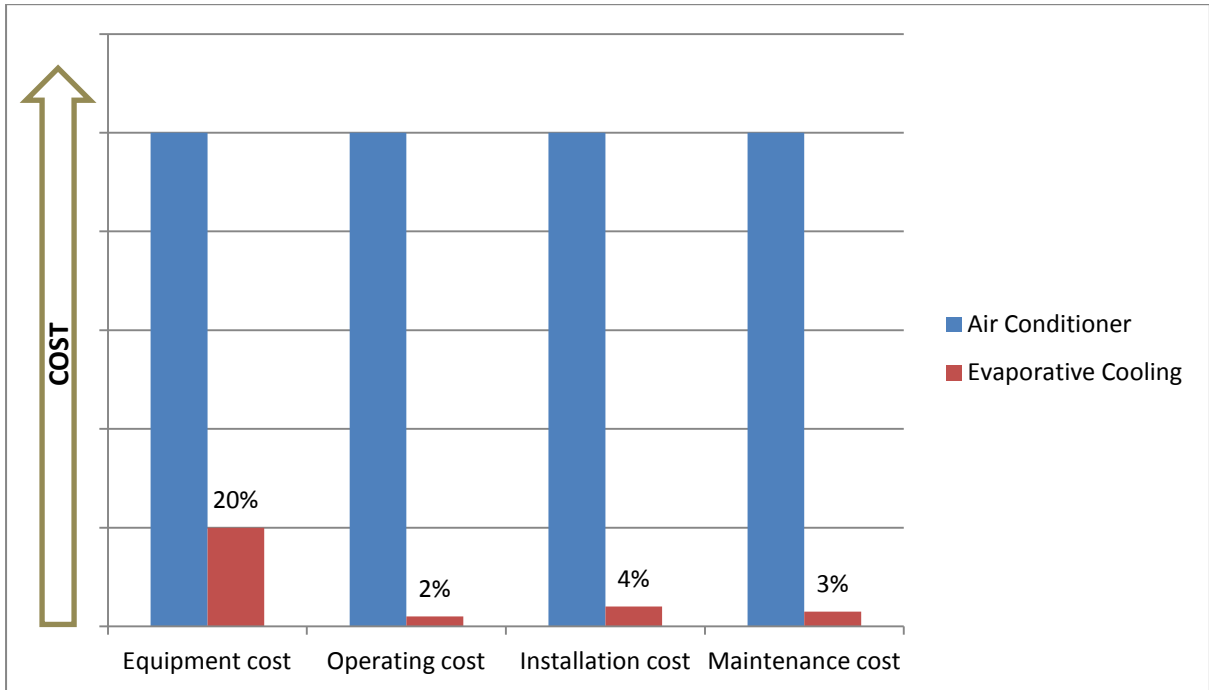
Advantages

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

Economic advantages

- Less expensive to install: When compared to air conditioners estimated cost for installation of a misting system is about one forth that of central refrigerated air conditioning.
- Less expensive to operate: Estimated cost of operation of a misting system is 50 times less than that of refrigerated air. Again, the power consumption in a Evaporative cooling misting system is limited to misting machine. As the water vapor is not recycled, there is no compressor, which otherwise consumes most of the power in closed-cycle refrigeration. Moreover, the refrigerant is water. No special refrigerants, such as ammonia, sulfur dioxide or CFCs, are used that could be toxic, expensive to replace, contribute to ozone depletion and/or be subject to stringent licensing and environmental regulations.

Evaporative Cooling System Vs Air Conditioner



Cost Comparison

Energy required to run Evaporative cooling system is “50 times” less than energy required to run Air Conditioner. No special refrigerants, such as ammonia, sulfur dioxide or CFCs, are used that could be toxic, expensive to replace. With Cloud Tech make a pleasant and healthy environment around your working place.

Cloud Tech evaporative cooling system can also be beneficial in mosquito and odor control by using essential oils which are non- toxic and biodegradable.

Cloud Tech Out door cooling 3/8" misting system content list:

1. 3/8" UV-Treated Flexible PVC Mist Line
2. Micronizers
3. Rotatable brass Connectors
4. Expandable female brass fitting
5. Expandable male brass fitting
6. Brass threaded end cap
7. Filters
8. Hose washer
9. Brass "T"
10. Interconnected 2 way misting line valve
11. Dozing pump
12. Misting machine CTMC60

Features of Cloud Tech CTMC60 misting machine:

- 1000 psi operating pressure for optimal misting effect using the narrowest orifice nozzles.
- Nickel-plated forged brass manifold resists rust and corrosion.
- Patented internal rinse cooling design to increase pump life.
- Dual bearing design to lower the heat and noise level down to 75 dB.
- Automatic pressure valve controls the consistency of the pump pressure.
- Circuit breaker for electrical safety if the voltage is outside of the safety parameter.
- 24-hour timer with 8 settings for minutes and seconds to set the misting intervals as well as pressure release.
- Inlet filter system increases the pump's life and reduces clogged nozzles.
- Inlet solenoid valve.
- Outlet solenoid valve.
- Air release valve.
- Pressure release valve.
- Available in 60HZ/220V and 50HZ/230V

Why to choose Cloud Tech?

Cloud Tech designs and manufacture its misting system using carefully selected components. Our technical office with more than 8 years acquired experience, can design personalized system to satisfy any special needs in the misting sector.

Is there any maintenance required?

The only maintenance required for properly designed misting system is a periodic cleaning of nozzles and semi-annual “check-up” for the pump. The check-up may include adding or changing of oil.

How should the system be installed?

For the outdoor or indoor cooling applications, system should be mounted around the perimeter of the area to be cooled .

How should the system be designed?

There are many different variables associated with the proper design and installation of misting system. The exact application, the needed benefits, and the conditions present at the system location will determine what design is required. Our technical support staffs are trained in all aspects and uses of misting systems and can assist in designing a system that fits the needs of any misting application.

So in a nutshell, if you are looking for an evaporative system for outdoor or indoor cooling, just keep in mind there is a giant difference in quality when comparing quality systems with cheap misters and don't give up hope if those cheap ones didn't work. Higher pressure evaporative cooling equipment does cost little more than low pressure misters, but when you feel that cool breeze wash over you, you'll find it is well worth the price.

“Original Equipment Is Always the Best”

“So why does it matter what brand of misting equipment you buy?” If you prefer the original, not an imitator, you’ll choose Cloud Tech.