What is Evaporative Cooling?

This booklet is provided by

port•a•cool®

portable evaporative cooling units

evaporative cooling ... what is it?

Remember swimming on a hot, dry day, then getting out of the water and feeling the chill of the wind hitting your wet skin? Or simply try dipping your finger in a glass of water, then blowing air across your finger and feeling the cool sensation as the water evaporates. That's evaporative cooling.

Try the same thing when there is no wind or no air moving. The surrounding air is quickly saturated with moisture, there is no evaporation and the cooling effect is gone.

Evaporative cooling units create this naturally occurring process and provide a constant flow of cool, refreshing air into a hot, uncomfortable environment.

how does it work?

The heart of an evaporative cooling system is the pad where the water evaporates and the air passing through the pads is cooled.

Evaporative cooling pads, like Küül® pads, are manufactured of fluted cellulose sheets that are glued together. This material is chemically impregnated with special compounds to prevent rot and ensure a long service life.

A special water distribution system spreads water over the surface of the pad, ensuring a uniform supply of water to keep the entire air contact surface thoroughly wetted.

Fans create a negative pressure, causing air to be drawn through the pads.

Evaporation results from contact between air and water. A control system operates the water pump and the fan distributes the cool air.

The relative humidity is lowest in the afternoon when the temperature is at its highest. And the lower the humidity, the better the evaporative cooling effect. In other words, the cooling effect is best when you need it the most.

evaporative cooling vs. traditional air conditioning

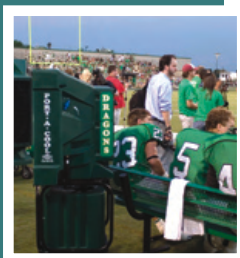
Evaporative coolers and central air conditioners both serve the same important purpose: keeping us cool. But these two systems operate very differently. Understanding the difference can help get the most out of any system and minimize wasted energy.

Evaporative coolers cool air by filtering it through water, thus lowering the air's temperature. These systems work best when a small amount of outside air circulates into the space where the evaporative cooler is employed. This also introduces fresh air into the environment and reduces the risk of poor indoor air quality.

Central air conditioners, on the other hand, work by taking humidity out of the air. These systems produce cold, dry air and work best in an airtight space.

The major advantage of an evaporative cooler is that its operating costs are typically one-third those of a central air conditioner. The initial equipment cost is also lower than air conditioners. Along with lower operating costs and simple installation, evaporative cooling can be a perfect, ozone-friendly alternative to traditional air conditioning.

is it good for the environment?



Refrigerated cooling makes the air dry and uses refrigerants which may harm the environment. Evaporative cooling, however, is based on a totally natural process of air cooled by water which means it won't dry out the air, irritate your skin, throat or eyes, or affect the environment.

Evaporative cooling is the healthiest way to cool because it replaces stale air with clean, fresh air many times an hour utilizing air from an outside source. The air is never re-circulated which means smells and airborne germs are expelled.

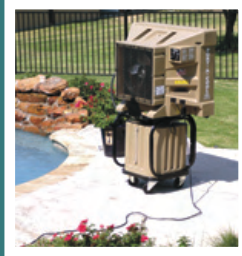
will it save me money?

Evaporative cooling is also up to 50 percent cheaper to install and considerably cheaper to run than refrigerated cooling.

Typically, the cost for water and electricity for a 36" unit for eight hours of operation is less than one dollar. Smaller units will operate for longer periods for the same amount of money.

That's approximately three times cheaper than traditional air conditioning.

evaporative cooling and heat stress



Heat stress can occur in people, animals and even equpiment. According to the Occupational Safety and Health Administration (OSHA) and other agencies, employees required to work in high temperature environments should be allowed frequent breaks in a cool place to avoid symptoms of heat stress including nausea, dizziness, cramps, confusion, unconsciousness, seizure and even death. High temperature environments are generally referred to as those over 87˚F for light work, over 82˚F for moderate work and over 78˚F for heavy work.

According to the *"Journal of Dairy Science,"* across all animal classes, the estimated national annual losses to heat stress are estimated at $2.4 billion. In cattle, heat stress reduces fertility and milk production in cows and can cause udder infections and even mortality during the hot summer months. Heat stress is also to blame for a high percentage of piglet and poultry mortality.

Evaporative cooling units, like Port-A-Cool® units, can lower the ambient temperature an average of 20˚F, turning a restrictive 90˚F area into a comfortable 70˚F area.

port•a•cool®

portable evaporative cooling units

For more information, please call 936-598-5651 • 1-800-695-2942
visit our website at: www.port-a-cool.com

port•a•cool®
portable evaporative cooling units

FEATURES

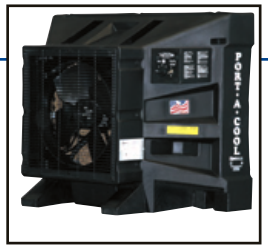
- Durable one-piece molded plastic polyethylene housing
- 3/4" garden hose connection supplies water
- Flexible capabilities for ducting
- Unit & water supply are both portable
- Performs at a fraction of the cost of standard air-conditioning
- Long-term dependability plus near maintenance-free operation
- Environmentally friendly through efficient and effective resource use
- Available in 4 fan sizes: 48", 36", 24", and 16" fan blade diameters
- Entire unit is U.L. listed (electric models), not just components

ADVANTAGES

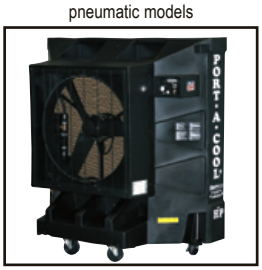
- Works where traditional air-conditioning is unavailable, impractical or cost prohibitive
- Lowers ambient temperatures an average of 20 degrees fahrenheit
- The most advanced, portable evaporative cooling system
- Operates for pennies a day on tap water and 115 volts or compressed air
- Distributes cooler air instead of just circulating the hot air
- Easy to operate, easy to clean and easy to maintain
- Port-A-Cool® units, combined with accessories, can affordably and effectively beat the heat
- Offers effective, high-quality cooling at extremely low operational costs

BENEFITS

- Increases worker productivity by making the environment more comfortable.
- Aids in the enjoyment of meetings or events where air-conditioning is unavailable or ineffective.
- A temporary, portable back-up when the standard cooling system is inoperable.
- Cools machinery or product that may be damaged or ruined if allowed to overheat.



16" Three Speed model
also available in heavy duty, filler cart, variable speed and pneumatic models



24" Variable Speed model
also available in pneumatic model

36" Variable Speed model
also available in single speed, three speed, pneumatic and hazardous location models

48" Two Speed model
also available in hazardous location model

Port-A-Cool® units ARE ...

- Environmentally Friendly – The units produce no flourocarbons like traditional air conditioning or vapor compression systems. Using Port-A-Cool® units instead of vapor-compression systems also helps reduce global CO^2, CFC, and other greenhouse gas emissions.
- Energy Efficient - Evaporative cooling systems used worldwide save some 60 million barrels of oil annually and 27 billion pounds of annual CO^2 emissions in lieu of vapor compression air-conditioning systems.
- Good for Indoor Air Quality - With superior fluting and manufacturing in Küül® pads media, impurities are filtered out, producing cooler, cleaner indoor air.
- Easily Integrated - Port-A-Cool® units can be configured to become an energy efficient addition to an existing system.
- Available in a Variety of Sizes - Choose from four sizes of Port-A-Cool® electric units, three sizes of pneumatic units or two hazardous location units.
- Inexpensive to Operate - Because energy consumption is so much less than traditional air conditioning, energy management is also more efficient.
- COOL! - Port-A-Cool® units can lower the surrounding air temperature an average of 20˚ F. and actually generate cooled air!

FOR MORE INFORMATION ABOUT EVAPORATIVE COOLING, PLEASE VISIT OUR WEBSITE:www.port-a-cool.com OR CALL 1-800-695-2942 • 936-598-5651 FOR A DISTRIBUTOR NEAR YOU