

# 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 Kүүл® 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 equipment. 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.



Unit 2 – 26 Lancaster Rd Wangara

PO Box 1994 Wangara WA 6065.

[www.portacoolaustralia.com.au](http://www.portacoolaustralia.com.au)

[P] 08 9408 0801 [F] 08 9408 0802