

# evaporative cooling? yes!



delivering the benefits of  
cooling towers and evaporative condensers



# Protecting the environment with evaporative cooling

## Minimum water usage

Many processes, particularly in industrial applications, still use water for cooling purposes in a so-called “once-through system”. The resulting thermal pollution and waste of this costly resource can be avoided with a system that recirculates the cooling water. The principle of evaporative cooling used in cooling towers and evaporative condensers saves over 95% of the recirculated water whilst providing other important environmental benefits.

## Minimum energy consumption

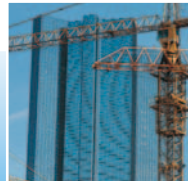
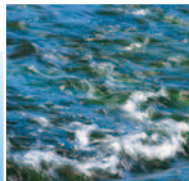
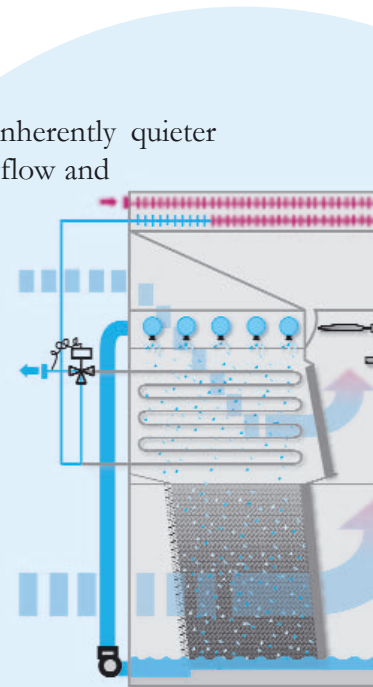
Air cooled equipment is often used to reject process heat, particularly in air conditioning applications. However air cooled or “dry” systems are less efficient than evaporative cooled or “wet” systems resulting in greater electrical energy consumption and they also have a higher first cost. The generation of electrical power is a major contributor to the greenhouse gas emissions which cause global warming. Evaporative cooling directly benefits the environment by minimising the use of electrical energy for cooling.

## Minimum space

Because of its greater efficiency evaporative cooling equipment is more compact than air cooled alternatives and occupies less space. Cooling towers or evaporative condensers can also be installed inside a building which is favoured by many architects. With space at a premium on most buildings and industrial sites evaporative cooling offers owners important space saving advantages.

## Minimum noise

Cooling towers and evaporative condensers are inherently quieter than air cooled alternatives as they require less airflow and hence fewer or smaller fans. In addition, because they achieve lower cooling temperatures, the associated refrigeration or process cooling plant can be smaller and thus quieter. As noise is increasingly of concern in our daily life the use of evaporative cooling equipment ensuring systems have the lowest overall sound level.





# Controlling risk with evaporative cooling

## Use closed loop cooling

Evaporative cooling equipment is available where the water to be cooled is in a sealed, closed loop and thus cannot become contaminated by exposure to the atmosphere. Closed loop cooling is favoured for critical applications where it is imperative the cooling water remains clean and contaminant-free. The evaporative effect is achieved by a secondary water recirculating system. However, because this water volume is low, the water treatment is easier and the low temperature of the secondary system discourages bacteriological growth.

## Use dry/wet cooling systems

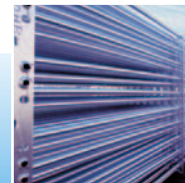
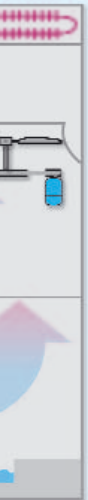
Systems incorporating dry/wet hybrid cooling equipment achieve the best of both air cooled and evaporative cooled technologies. Dry cooling in the winter or at low load conditions avoids the use of water and wet cooling in the summer or at peak load conditions achieves lower cooling temperatures whilst saving system energy. These types of systems operate without water for as much as 80% of the year. They do not need water treatment nor is there any risk of bacteriological contamination when operating dry.

## Use state-of-the art water treatment

Good water treatment is essential to avoid scaling or corrosion within a cooling system and is vital to maximise efficiency and equipment life. Very importantly good water treatment also prevents uncontrolled growth of bacteria, especially legionella, which can lead to cases of legionnaire's disease. It is imperative that a proper water treatment programme is initiated when the cooling equipment is first put into service and then continuously maintained thereafter. The water treatment must take into account the materials of construction of the system and the quality of the make-up water. An effective biocidal control programme is now often a regulatory requirement to avoid any risk to public health from cooling towers or evaporative condensers.

## Use a single supplier

All too often problems with evaporative cooling systems are as a result of divided responsibilities or lack of management control. Using a single supplier for the evaporative cooling equipment, water treatment and site services including maintenance ensures there is sole responsibility for the successful and safe operation of the evaporative cooling installation. This single supplier will also ensure the design and operation of the equipment and services maximise the operational efficiency of the system and that it is operated safely in accordance with national or regional health and safety requirements.





# Maximising performance and safety with evaporative cooling

## Ensuring system performance

Baltimore Aircoil is a world-wide leader in evaporative cooling equipment and offers the widest range of factory-assembled open and closed loop cooling towers, evaporative condensers and dry/wet hybrid fluid coolers. B.A.C. has also been a pioneer in supporting performance certification of evaporative cooling products in programmes administered by CTI in the U.S.A. and EUROVENT in Europe. Independent certification of thermal performance guarantees the operational efficiency and energy saving benefits of wet systems are truly achieved throughout their operating life.

## Ensuring operational safety

B.A.C. Balticare offers a complete programme for the assessment, treatment, maintenance and monitoring of B.A.C. evaporative cooling equipment installations. This includes regular inspection of the equipment and a preventive maintenance programme to avoid unscheduled and costly plant breakdowns. The recirculating water is regularly monitored to ensure bacteriological levels are well controlled. In several European countries there are increasingly stringent regulatory requirements to avoid the risk of legionellosis from cooling towers and evaporative condensers. B.A.C. Balticare is fully equipped to satisfy these requirements thus giving owners peace of mind.



Heat Transfer Products and Services from Baltimore Aircoil

Delivering the benefits of cooling towers and evaporative condensers.

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