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SOLUTIONS

Cooling Towers

Cooling towers represent the largest use of water in industrial and commercial applications. Cooling towers remove heat from air conditioning systems, as well as, a wide variety of industrial processes. While all cooling towers continually cycle water, they can consume 20 to 30 percent, or more, of a facility's total water use. Optimizing operation and maintenance of cooling tower systems offer facility managers significant savings in water consumption through enhancing cooling efficiency.

Below are several considerations to reduce cooling tower water use and save facilities water and money:

- Reducing the heat load to the tower decreases water use to be as energy efficient as possible.
- Install an automatic meter reading system.
- Consider hybrid towers and tower combinations that have options for wet and/or dry cooling.
- Consider geothermal cooling.

Tower water can lose up to 2 gallons of water per minute of operation per 100 tons of cooling through evaporation (Molday 2001). As cooling tower water evaporates, it leaves behind a concentration of dissolved solids, including mineral deposits and other added process chemicals. These deposits dramatically reduce the system's ability to cool efficiently. When these solids reach certain thresholds, the water must be bled from the system before it diminishes the cooling process, causes corrosion and other problems including health risks. The number of times the process water is run through the cooling system before being bled to the drainage system is known as cycles of concentration. The volume of water that is evaporated and bled from the system must be made up by the addition of water to reduce system wear and maintain efficiency. [The volume of makeup water is equal to evaporation losses plus bleed off](#)

Hybrid cooling systems are an attractive alternative to traditional cooling towers. These systems take advantage of the cool air that exists and only use adiabatic wetted cooling for heat rejection when warranted. Hybrid Adiabatic systems SAVE WATER, ENERGY and eliminate the risks associated with breeding *Legionella pneumophila* within typical cooling towers. For more information on this advanced adiabatic process cooling technology go to <http://www.rimbus.cool>.

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