

The Benefit of Chemically Treating an Open Cooling System—Part 1

In my years as a water treater, I have learned that water treatment is more than 90% mechanical and less than 10% chemical. There are many examples that support this theory, and controlling cycles of concentration (COC) in open cooling systems is a prime example. Open cooling systems are systems that have cooling towers associated with them. If the water in these towers is not monitored and properly treated, the results could be quite costly.

In an open cooling water system, the purpose of the water tower is to reduce the temperature of the water that is used in air conditioning equipment and other industrial processes. When heated water is fed into the tower, it is exposed to a counter-current air flow, causing small amounts of water to evaporate, which in turn creates a cooling effect to the remaining water. As this pure water evaporates, careful attention must be paid to the chemistry of the cooling water as its ~~cycles of concentration~~ COC increase.

Every water has its limit (just ask my friends at French Creek Software), and that limit is maintained by controlling the bleed of water from the system while fresh water is replacing the more-concentrated, wasted water. Without control of the bleeding process, systems would crash quickly from the under-wasting of water and deposits of hardness scale on the equipment—especially the heat exchangers. On the other hand, over-wasting of water can lead to corrosion problems in the system, as well as excessive water and chemical costs. For this reason, I consider conductivity controllers, which control the bleed from these systems, to be the most important equipment to have and to maintain on an open cooling water system.

In our next discussion we will take a look at the topic of bacterial control, another major concern when treating cooling water.