

The Benefit of Chemically Treating an Open Cooling System Part 4

A discussion on treating open cooling systems would not be complete without addressing total dissolved solids (TSS) and the problems that can arise when they are not kept in check.

Cooling towers act as fairly efficient air scrubbers. As the draft is either forced or pulled through the cascading water, any type of solid in the air from the surrounding environment will be scrubbed out of the air and into the water. I've seen carbon in the basin of a tower located near a blast furnace and muck in a power plant tower that had a dirt road. I've also heard of a cooling tower being contaminated by the greasy air coming from a kitchen vent located directly below the tower, and concrete dust from a nearby concrete plant entering a system. You probably could cite even more examples.

These solids can wreak havoc in cooling systems. In the basin, they can harbor bacteria; in heat exchangers, they can impede heat transfer; in recirculation pumps, they can erode impellers. All of these effects should be addressed in an optimized system. Chemically treating a system is beneficial, but in tandem with good filtration, the results are even better.

I remember taking over the treatment of a cooling tower at a steel mill. The tower was right next to the 68" hot strip mill, and the environment had a great deal of dust and particulate in the air. The engineers who designed the tower had the forethought to add filtration to the system. With the tower, they had installed twin DynaSand filters. At first, I did not think much of the filters. Later, when I was able to clearly see a dime sitting on the floor of the basin, I realized the value of the filtration. This was one of the easiest systems to treat at the facility. (The blast furnace cooling tower mentioned above was in the same facility.) The results were great, while chemical and biocide demand were reasonably low.

For any troubled system, consider the part TSS contributes to the stress and how the proper chemical treatment and filtration can make all the difference. For any new system, filtration can also help prevent future problems. Filtration comes in many technologies and sizes, and there are several excellent manufacturer resources available for finding the best filtration for a particular system. A key to finding the right filtration is knowing the environment they will be operating in.

That about wraps it up! I hope our discussion on cooling tower systems and how to handle their inherent problems has been beneficial.