The Importance of Preoperational Cleaning and Passivation of New Cooling Towers

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The following information discusses the importance of new cooling tower precleaning and passivation (pre-filming) processes.

To maximize the useful life of a new cooling tower system, it is strongly recommended to perform a system preoperational clean out and passivation pretreatment. The process should include the removal of dirt, oils, welding slag, excessive pipe thread sealers, flux, and other foreign debris from the system, followed by passivation/pre-filming to create a protective barrier against corrosion.

New System Preclean

Not only does precleaning a system remove foreign debris that can corrode or foul your new system, it allows for the needed clean surfaces for the system pretreatment / passivation filming to properly adhere to and provide the needed protection. Failing to follow the recommended procedures will result in excessive corrosion and subsequent increased energy costs and system repairs.

In order to optimize this process, system preclean is recommended to be performed just prior to the scheduled startup. Depending on the cooling tower manufacturer's recommendations, the precleaning process typically lasts from 10 to 24 hours. The system then will require a flush and a clean to remove the cleaning chemicals and foreign debris. Pretreatment / passivation should be implemented immediately after the system cleaning occurs and upon new system startup.

Certain environmental conditions will effect the system cleaning. Higher system water temperatures of 150+ during the cleaning process can enhance the effectiveness of the cleaning formulas, thus taking less time in some cases. **Always refer to your cooling tower manufacturer's recommendations for preoperational cleaning and system warranty information or call your Clear Water Technologies consultant.** Specially-formulated detergents, surfactants, and sometimes anti-foaming agents are used to perform preoperational system cleanings. Your water treatment specialist will recommend and utilize the most effective formulas for your specific system.

Startup Treatment / Passivation
Passivation (also referred to as prefilming) is a common practice performed in new cooling tower startups. The passivation process should immediately begin following the system precleaning and upon system start up. The key is to create a uniform and consistent protective barrier from system corrosion. Treatment products must be applied and maintained at the proper treatment rates to achieve this desired filming or barrier. Achieving this protective corrosion barrier will ensure your new system will operate efficiently and last the long life for which it was designed.

Another method of prefilming consists of maintaining increased inhibitor levels during the start- up period. This process is generally used when the ongoing inhibitor program will be phosphate based. Although this is a more cost effective process and easier to accomplish, it is a less effective method of providing system corrosion protection.

Implementation of a quality ongoing water treatment program for your system is a must immediately after the prefilming is completed. The precleaning and passivation processes provide you with the optimal clean and protected system with which to start and maintain your water treatment program.

Key Notes and Summary
Certain changes in the system environment can deplete or destroy the prefilming protective barrier such as extreme drop in system water pH; low and high pH chemical cleanings; pressure washing and/or scraping the inside system surfaces. It is highly recommended to perform the prefilming / passivation procedure again if any changes occur that would compromise the original passivation barrier.

To properly protect your new investment (cooling tower), perform the precleaning and prefilming/ passivation procedures. Implement and manage a quality water treatment program for ongoing system protection from scale, corrosion, and microbiological fouling. You will reap the benefits in lower energy costs, less maintenance and repairs cost, and a system that will last the long life that it was designed for.