



## Seasonal Cooling Tower Start-Up Steps

This is the time of year that seasonal HVAC cooling towers are put back into service. It is very important that you follow certain cooling tower start-up steps with best practices and that your water treatment service provider is made aware of start-up timing.

One of the primary goals for effective water treatment is to maintain clean heat transfer equipment, including your cooling tower and all water contact surfaces. While your cooling tower sits dormant for several months over the winter, it is exposed to many conditions or contaminants that can have negative impacts on four important areas:

- 1) **Deposition** of both organic and inorganic materials which effect heat transfer and potentially reduces flow.
- 2) **Corrosion** leading to improper heat rejection and system efficiency loss. Ultimately, corrosion is the main reason towers are replaced.
- 3) **Microbiological** concerns for prevention of biofilm formation particularly on condenser tubes impacting short-term heat transfer as well as long-term inhibition of microbial-induced corrosion.
- 4) **Legionella** bacteria control and eliminating risks of disease associated with tower operation.

It is therefore imperative that a preventive course of action be made in advance of initial start-up of cooling towers.

During cooling tower start-up, preliminary inspections of critical heat transfer surfaces and other susceptible areas should be completed. In some states, this inspection is a requirement. If significant issues are found prior to start-up, they can be addressed immediately as opposed to attempting to make repairs in mid-season. It is important to make sure the cooling tower internal sump is clean and that fill and drift eliminators are repaired or replaced to guarantee efficient cooling and minimize drift potential. Failure to clean before start-up can lead to high bacteria counts possibly leading to system fouling or even the presence of legionella and disease.



## Recommendations for Cooling Tower Start-Up Steps

It is suggested that the system be cleaned and sanitized mirroring ASHRAE Guideline 12-2000 which calls for:

-Cleaning all debris such as leaves, dirt, etc. from the cooling tower

-Filling the system with fresh water and operating the condenser pumps but not the fans and then follow one of two protocols:

- Maintain the maximum recommended biocide dosage using the biocide employed prior to shut-down for a sufficient time period (recommended by your service provider).
- Treat the system with sodium hypochlorite to a level of 4 to 5 ppm of "free" chlorine at a pH of 7.2 – 7.6. Hold this residual for a period of six hours. For this, many of our clients use [Bond's Tower Turbo Cleaning Kits](#). [You can learn more about the kits by clicking here.](#)

Once one of these two biocidal treatments have been successfully completed and prior to the fans being turned on, a sample can be taken and sent to a CDC ELITE lab for legionella bacteria testing and clean start-up verification. Bond's water testing partner, Environmental Safety Technologies is a registered CDC ELITE lab. In addition, on-site heterotrophic plate counts (HPC) or dip slides can be utilized as these can be useful in determining the presence of biological growth as it may impact performance. After testing and consultation with your water treatment vendor, the fan can be safely energized and the system can be returned to service. Because loads are typically lower with initial spring start-up, operation may be intermittent with routine automated feeds interrupted. It is therefore important to pay close attention to assure that proper amounts of inhibitor and biocides remain resident during this phase.



## **Cooling Tower Cleaning Options**

Bond offers turn-key cooling tower cleaning services. Since 1999, hundreds of our clients have trusted us to save them money by extending the life of their equipment through cleaning, education, and renovation. If you are short staffed or need to invest your time elsewhere, give us a call.

For those that want to tackle cooling tower cleaning in-house, we offer Tower Turbo Cleaning Kits. These are quick and convenient all-in-one kits designed to help make cooling tower cleaning easy! Bond Tower Turbo Kits provide all the needed components to help safely prepare your cooling tower for Spring start-up.

Starting with a clean tower is a very important measure in reducing energy consumption, corrosion potential, biological fouling and even reducing the risk of disease.

It just makes sense to Start Clean...Start Safe!

Please let us know if you have any questions about your cooling tower start-up or cooling tower cleaning services offered by Bond. Call us for a free consultation at 301-721-BOND!