INDUSTRIAL WATER INNOVATIONS

Designed, Machined, and Assembled in the USA

Cooling Tower Conditioning System

Frequently Asked Questions

- Is the installation of the conditioning system difficult?
  The Cooling Tower Conditioning system is designed to be easily installed, it does not require any modifications to the existing piping for chilled water supply or return. However, new piping and electrical service is required, and in some cases a small concrete or structural pad for the unit. Industrial Water Innovations does offer installation assistance should you need it.

- How large of a cooling tower is one system sized for?
  A single system is designed for optimal performance to treat around 10% of the main chilled water flow on a 400 - 650 GPM cooling tower. If the main flow is unknown or not metered, a rule of thumb on the water basin capacity of 5000 gallons or approximately 500-600 Tons can be used for a single system.

- Can the single system handle a bigger capacity cooling tower?
  Multiple units can be installed in tandem for bigger cooling towers, or we can create a custom solution for your specific needs.

- Do the benefits extend to other pieces of equipment that consume the chilled water?
  Yes. You will see reduced readings in differential pressures in plate & shell and tube heat exchangers which result in extended time between maintenance and better efficiency on heat transfer as well as less maintenance on valves and pumps due to a reduction of calcium in the system.

- Would the use of cooling tower chemicals affect the conditioning system?
  No, chemicals will not affect the conditioning system and if continued to be used, you would see an increase in their effectiveness. However, the conditioning system was specifically designed to help you eliminate the need for Biocide chemical and anti-scalant which you can stop using. Corrosion inhibitor may still be required (depending on your specific situation) to protect pipes in your installation.

- What does the conditioning system treat?
  The main cooling tower basin and tower fill. It is designed to have an effect over time on the entire chilled water system and maintain the tower basin clean of silt and bacteria as well as maintain low conductivity to prevent (or drastically reduce) blow down and save water. The system will also have noticeable effect on the systems dependent on the chilled water stream.

sales@industrialwaterinnovations.com

- Do I need to adjust the blowdown conductivity setpoint?
  No. Most cooling towers in operation have their blowdown setpoint somewhere between 1200uS and 1500uS. There is no need to adjust or disable the conductivity meter. The conditioning system will maintain the conductivity in the basin low enough to see a reduction or complete elimination of the main blowdown.

- Would I be able to eliminate (or disable) the main blow down monitoring system?
  It is recommended that the current blow down monitoring and control circuit stays online. The conditioning system will keep the basin water conductivity stable so frequent blowdown will not occur. In the event something needs maintenance your cooling tower will still be protected by the main blowdown.

- How much water does the conditioning system save?
  The system has a self-cleaning filter to trap and reject calcium and other debris from the cooling tower. This system flushes a small amount of water, typically around 10 gallons when the system controller reads differential pressure setpoint and flow restriction. In commercial installations, this typically happens about 1-3 times per hour. Depending on your specific conditions, you will see 70% – 90% reduction in water usage. With it the added benefit of not flushing costly chemicals that you might still be required to use down the drain. The Energy Saving module will also reduce evaporation.

- How many cycles of concentration will the conditioning system operate at?
  Installations we've monitored are seeing 8-10 CoC in a span of 6 – 7 days. (with only 1 blowdown per week or none at all). All 100% Chemical free.

- How much energy does the conditioning system use?
  The equipment requires a 240VAC/15A or 480VAC/8A circuit for line voltage depending on the model selected.

- My cooling tower does not run all the time, would the conditioning system continue to run?
  The system includes an interlock to stop it from running if the main pump (or any other permissive) for the tower is offline. This is an optional connection that has been factory configured as "always run" but it is easily changed by removing the interlock jumper in the control panel or connecting it to the main tower permissive circuitry.

- Do I need to monitor micro counts or water quality after installation of the conditioning system?
  The conditioning system was designed from the beginning as a "plug and play" addition to the cooling tower. No monitoring or water sampling is needed in comparison to other cooling tower treatment systems. However, depending on your situation and specific requirements, any corrosion monitoring via a coupon loop or corrosion inhibitor chemical may still be required.

- Does the system eliminate existing Bio-Film?
  No; Existing bio film in heat exchangers, pipes and cooling towers is very resilient, forming a matrix of extracellular polymeric substance (EPS), often referred to as slime, covering them completely.
  This matrix is a collection of DNA, proteins and polysaccharides that form a protective housing around bacteria, creating a safe space and preventing biocide treatment from reaching the bacteria. In fact, bacteria in a biofilm are 10 to 1,000 times more resistant to treatment than in their planktonic, free-floating form.
  Any existing bio-film problem needs to be addressed with some of the various chemicals specifically designed for bio film problems (like BioeXile, a patented liquid-based treatment that breaks down the biofilm, exposing the bacteria within)
  Once Bio-Film is eliminated, the conditioning system will then prevent new bio-film from forming, and maintain heat exchangers and pipes free of it.

- Does the system keep dirt and debris from accumulating in the basin?
  Yes, very effectively when the return jets are installed properly. This keeps the water in the basin in motion and allow the conditioning system to capture debris and filter it out.

- I already have another system for reduction of calcium or rust. Can this be used in conjunction or replace it?
  Although this system was designed to be installed by itself, it can also work with other treatment systems and improve their efficiency. If used in conjunction with other systems it will also extend their life.

- The cooling tower is only used for lowering pressures in a chiller. Would I see a benefit?
  The added benefit from the conditioning system is that heat exchangers will be maintained free of biocide and scale, their efficiency will increase and maintenance intervals will be longer. Shell and tube heat exchangers will not see flow restriction due to deposits in the tubes and plate heat exchangers, which are difficult to maintain, will stay within their differential pressure parameters for longer periods of time.

- The cooling tower in our facility is installed on the roof where there's a restriction on space or weight. How big is the conditioning system?
  The conditioning system was designed to be small, modular and easily reconfigurable from a 4'x4' floor space (standard configuration) requirement, to a 2' by 8' linear configuration for reduced floor space on narrow spaces. It can also be wall mounted on the cooling tower itself if there's limited amount of rated supports. It weights less than 300 Lbs and can be transported in two modules.

- I use the chilled water for occasional contact with product and added heat is not desirable. Does the system add any heat or electrical charge to the water being treated?
  No, the system relies on NSF rated components that do not use electrical charge on any element that might add heat to the water stream. Nothing is added to the water stream other than the application of Ultra Violet light to control microorganism growth.