

Application Bulletin

Hospital Uses LAKOS Basin Cleaning Techniques To Reduce Risk of Legionella **Continuous Cleaning of Cooling Tower Cold Water Basins**

Application: Cooling Tower - Saint John's Hospital in Anderson, Indiana
System Identification: Cooling System - Single Loop With Two Chillers and LAKOS TCI 1400
Solids/Liquid: Silt, rust, and biological growth in cooling tower basins
Problem/Challenge: Keeping Basin Clean At Low Cost And Low Risk To Maintenance Staff

Background:

Saint John's Hospital is a 235 bed facility in Anderson, IN. The original campus was built in 1895. Since that time there have been many changes and additions. The 29 person maintenance staff responsible for maintaining this facility is divided into 4 teams to more efficiently address the mechanical (boilers, chillers, and cooling towers), electrical/HVAC, plumbing and general maintenance. The award winning staff at Saint John's prides itself on its preventative maintenance program.

The cooling system is divided into two systems. One system has a 500 ton water cooled chiller, and an air cooled screw compressor for cold weather operation. The system discussed in this application bulletin is a single loop, primary system of two new 750 ton chillers and a 25 year old 500 ton centrifugal water cooled chiller. There are two cooling towers installed on the roof. The new approach to cooling tower basin cleaning uses a LAKOS TCI 1400 installed on the 2 cell tower.



Problem:

The maintenance program faces many challenges including reduced manpower and an aging facility. Another major concern of the staff is the risk of Legionnaires Disease (LD), and the risk of slip/fall injuries associated with cleaning the cold water basin of the cooling tower. The maintenance staff at Saint John's knows that one of the ways to dramatically reduce the risk of a LD outbreak is to use an effective biocide, and to keep the cooling tower cold water basins free from dirt and debris. This removes the habitat for the bacteria that cause LD, and allows the biocide to come in direct contact with the bacteria for more effective biological control. They realize to do an effective job they should be cleaning the CW basins on a daily basis. Daily cleaning is impractical using traditional means of shutting down the tower and sweeping the dirt with brooms and hoses.

Solution:

The maintenance staff took these challenges and concerns to local engineering firm for consideration as part of a 3 year capital project to build a new chiller plant. The firm researched several different options and selected a LAKOS TCI 1400 basin sweeping system for installation with the new cooling towers. This LAKOS system is a skid mounted centrifugal action solids separator, pump, and solids collection chamber. The LAKOS unit is located in the chiller plant one floor below the cooling towers. The basin sweeping



LAKOS TCI System With Solids Recovery Vessel

system runs continuously cleaning the cooling tower cold water basin by pulling water from the cold water basin and pumping that water through the LAKOS centrifugal action separator to remove the settleable solids. The clean water is reintroduced to the cold water basin under pressure through a piping manifold/nozzle arrangement engineered to “sweep” the basin pushing the dirt away from the cooling tower supply leaving the cooling tower and towards the LAKOS suction point.

Added Benefits: In addition to keeping the basins clean, uniform distribution of the biocide is also critically important. Mechanical team leader Marty Dollar saw an opportunity to improve the distribution of the biocide using the LAKOS basin sweep system. Saint John’s uses a very effective

biocide regime consisting of alternating an oxidizing biocide and a non-oxidizing biocides. As a part of the normal operation, the LAKOS basin sweeping system is now used to inject the biocide into the cooling water via the engineered basin sweeping system resulting more effective biocide distribution and biological control. This has resulted in biological control that is more effective, but significantly less biocide is used as compared with our systems that don’t have LAKOS basin sweeping.

Results:

“With the LAKOS basin sweeping system it is much easier to meet the intent of ASHRAE Guideline 12 for cooling tower cold water basin cleanliness” says Mr. Dollar. “In addition, both the basin sweeping system, and the innovative approach to biocide introduction qualify as proactive steps towards reducing the risk of organizational acquired illnesses as required by JCAHO and addressed in ASHE 0518.”

Summary of Ongoing Benefits:

In reviewing the results Saint John’s reports that the cooling tower is in excellent condition. The dirt is in the LAKOS dirt recovery system instead of in the tower. There is no under-deposit corrosion in the cooling tower basins or Legionella bacteria in the cooling water. Mr. Dollar summed it up best saying, “LAKOS basin sweeping is working extremely well. I can’t imagine not having it.”



LAKOS Basin Sweeping With Nozzles

LAKOS

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