

Enhancing Cooling Water Efficiency at BlueCross/BlueShield Corporate Campus in Tennessee

INTRODUCTION

In 2018, A.S. Filtration was commissioned to provide a solution for solving cooling water issues at the BlueCross/BlueShield Corporate Campus in Chattanooga, Tennessee. The 950,000-square foot location, a LEED Gold certified facility, encompassed a 20,000 square foot Tier II data center, office spaces, and various amenities and food service facilities. The complex operated eight 450-ton cooling towers and four 900-ton chillers, all sharing the same cooling water system. Despite maintaining a chemical treatment program, the company faced ongoing challenges in maintaining water quality in their cooling system, leading to operational inefficiencies, increased maintenance costs, and potential risks to their critical infrastructure. When representatives of A.S. Filtration first inspected the site, the cooling towers had recently been cleaned. Signs of biological activity were already visible in the cooling tower basins within two weeks of the basin cleaning.

CHALLENGES

Water Quality Analysis: Samples were taken and analyzed by an independent laboratory for Total Suspended Solids (TSS) and Total Aerobic Bacteria for the month preceding the side stream filter installation. TSS values reached 37 mg/L, and total aerobic bacteria counts were as high as 18,600 spc/mL, averaging 21.5 mg/L and 11,025 spc/mL, respectively.

Contaminated Cooling Water: The company's cooling system continuously struggled with the accumulation of contaminants and microorganisms, resulting in reduced heat exchange efficiency and corrosion within the system.

Maintenance Costs: To mitigate the effects of contamination, the company incurred significant expenses related to frequent maintenance and cleaning of the cooling system, posing a financial burden.

Energy Efficiency: The compromised cooling system's efficiency led to increased energy consumption, impacting both operational costs and the company's commitment to environmental sustainability.

AT A GLANCE

Challenges

- Water quality
- Energy efficiency
- Increased maintenance cost
- Risk to infrastructure

Solution

Installation of A.S. Filtration side stream filtration system, with vessels containing Pathex® antimicrobial filter media.

Results

- Improved filter lifespan
- Reduced water consumption
- Improved energy usage
- Improved cooling tower basin conditions
- Reduced maintenance & extended equipment lifespan
- Chemical treatment reduction

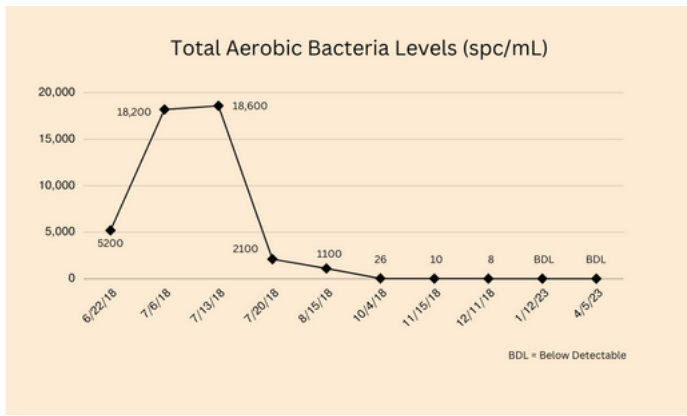


The savings are tremendous. The system paid for itself years ago.

Chuck McAlpin
Facilities Manager

We were replacing at least one or two heaters a month at a cost of thousands of dollars. We haven't had to replace a single one since the system was added.

Tim Hood
Building Infrastructure Monitor &
Control Consultant



As seen in the above graph, TSS values were reduced to an undetectable level less than a month after startup. After five years of continuous operation, the bacteria count remains at almost undetectable levels.

SOLUTION

The heart of the solution was the installation of a side stream filtration system, comprising three 36-inch filter vessels equipped with PathEx® antimicrobial filter media. PathEx antimicrobial filter media is registered with the U.S. Environmental Protection Agency (EPA) for the reduction and control of coliform bacteria in industrial water treatment applications.

PathEx physically kills the organisms as they move over the surface of the filter media granules. Efficacy is achieved at high filtration loading rates up to 20 gallons per minute per square foot (gpm/ft²). PathEx filter media is not consumed, requires no power source, has no moving parts, is non-corrosive, and is unaffected by seasonal temperature changes.



Triple 36" side stream filter system containing PathEx antimicrobial filter media

To ensure the solution's effectiveness, A.S. Filtration collaborated with an independent laboratory to conduct water sample analyses.

These analyses were carried out over several months, both before and after the installation of the side stream filtration system.

This water treatment system is designed to continuously operate at a maximum flow rate of 400 gallons per minute. The 24 cubic feet PathEx filter media inside the system is regenerated during normal backwash cycles to maintain its biocide effectiveness. This added to the maintenance savings of not cleaning the cooling towers as often as before installation along with not replacing the heating equipment in the basins.



Six of the eight 450-ton cooling towers

CONCLUSION

In conclusion, this project revealed a pressing need for a comprehensive solution to address the cooling water issues that were plaguing the facility. Despite the company's best efforts, they faced ongoing challenges related to water quality in their cooling system, leading to operational inefficiencies, increased maintenance costs, and potential risks to their critical infrastructure.

The implementation of a side stream filtration system, featuring PathEx antimicrobial filter media, emerged as the central solution to the problem. This technology, registered with the U.S. Environmental Protection Agency (EPA), demonstrated its ability to effectively reduce and control coliform bacteria in industrial water treatment applications. Furthermore, it offered numerous advantages, including its non-consumable nature, absence of power requirements, resistance to corrosion, and adaptability as a drop-in replacement for existing systems.

To substantiate the solution's efficacy, A.S. Filtration conducted rigorous water sample analyses in collaboration with an independent laboratory. These analyses, spanning several months both before and after the installation of the side stream filtration system, provided clear evidence of the system's success in mitigating contamination, reducing maintenance costs, and enhancing energy efficiency within the cooling system.

In summary, the installation of the side stream filtration system with PathEx antimicrobial filter media at the BlueCross/BlueShield Corporate Campus not only resolved the facility's cooling water issues but also yielded substantial financial and operational benefits. This case study underscores the importance of innovative filtration technologies in achieving and maintaining optimal performance in industrial cooling systems.

For more detailed information about the operation and effectiveness of PathEx inside this side stream filter, please contact us at info@asfiltermedia.com



Blue Cross/BlueShield Corporate Campus



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