CASE STUDY

Data Center Enhances Cooling Efficiency and Saves $1.2M with ChemTreat Cooling Treatment and Cleaning Program

Background

A facility in Virginia's Data Center Alley was experiencing problems with their cooling systems, which negatively impacted efficiency and created extra work for the maintenance staff. Data center personnel began working with ChemTreat to manage their cooling water treatment.

The ChemTreat team, which actively supports many other data centers in the area, performed a technical energy and water savings evaluation to identify areas of improvement.

They found that the bleach-only biofouling treatment program was causing several system issues:

- High levels of bleach feed were rendering the scale inhibitor program ineffective. This resulted in calcium carbonate scale formation, which reduced heat exchanger efficiency, increased the need for off-line cleanings, and required cycles of concentration to be decreased, leading to rising water, sewer, and chemical costs.
- The bleach also increased low carbon steel corrosion potential and chloride concentration in the system, as well as compromising copper corrosion inhibitor efficacy, leading to higher than desired overall corrosion rates.
- Biological growth persisted, increasing the amount of electricity needed to run the system, as well as creating the potential for microbially-induced corrosion (MIC).

Solution

Data center and ChemTreat staff began implementing a new treatment program to address these issues.

- The team developed an on-line cleaning program using ChemTreat's CL5660 and CL3000 technologies to remove mineral scale and disinfect the systems.
- ChemTreat's CL6645 treatment, which combines our FlexCorr™, QuadDetect®, and halogen-stable triazole, was applied as a corrosion and scale inhibitor. This product is designed to resist degradation in the presence of oxidizing biocides.
- The bleach program was replaced with stabilized bromine to address microbiological challenges over a wider cooling water pH range and reduce the overall corrosivity of the cooling water.
- Treatment was supplied via ChemTreat's Neat Delivery service, with all drums transferred by a trained delivery specialist to free up time for on-site personnel.
- Our intelligent water management software CTVista®+ was installed to track inventory and gather and analyze data to ensure the program was meeting the data center's KPIs.

Results are examples only. They are not guaranteed. Actual results may vary.

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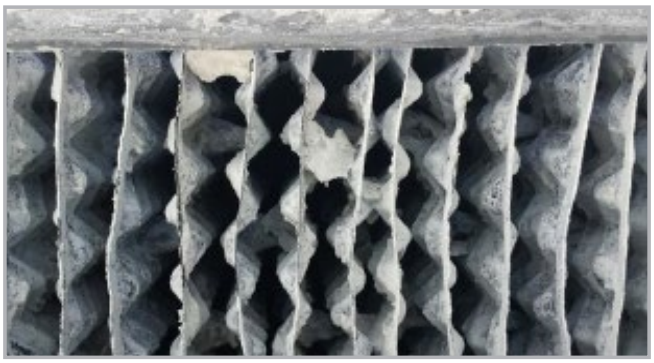
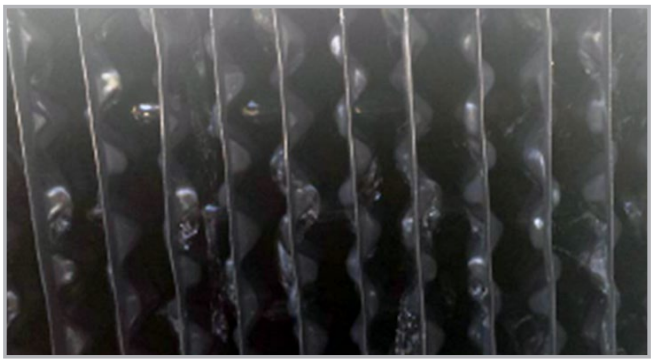
Results

These program enhancements improved the availability and reliability of the cooling systems, reducing potential impacts to facility uptime.

- The treatment upgrades allowed the facility to increase cycles of concentration, resulting in significant makeup and sewer water savings.
- Treating scale and microbiological growth improved system efficiency and reduced energy costs.
- Decreasing the need for regular cleanings enhanced system availability and reliability. It also cut costs associated with maintenance and third-party contractor cleanings.



Cooling tower fill with major scaling issues before CL5660 cleaner was applied.



Cooling tower fill free of scale after CL5660 cleaning.

By collaborating with ChemTreat's team, the facility realized significant annual savings.

The data center saved approximately:

- **47.2 million gallons of water**
- **$568,000 in water & sewer costs**
- **$648,000 in electrical costs**
- **$24,000 in labor costs**
- **$41,000 in third-party vendor savings**

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