

Improved System Design & Management Brings Significant Savings to Major University & Hospital Campus

Background

A major University/Medical complex needed to replace more than a dozen of its aging cooling towers and add ten new buildings all while transitioning to a centrally located chiller plant. This required a rethinking of its cooling water program. As part of this new system the customer also asked for makeup water to come from five sources, each with varying water quality properties:

- City water
- Available creek water
- Collected rainwater
- Retrieved condensate
- Reused blowdown water (RO filtered)



Additionally there was a need to create savings and improve the sustainability of the program, extend the life of RO membranes and pre-filter cartridges, improve monitoring of the system, and optimize the system more effectively to prevent scale and corrosion

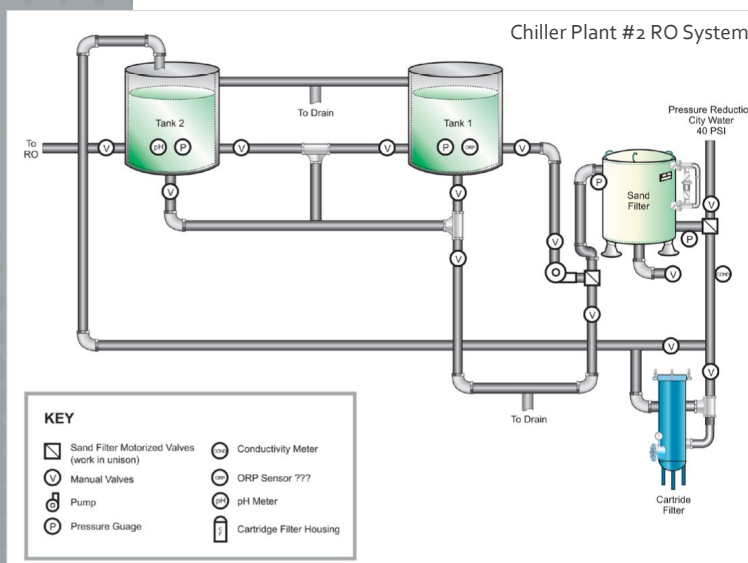
Problem

In moving from its individually operated building-based cooling system, current processes were not capable of handling a new 32,000-ton centralized, multiple water source plant. This resulted in the University contracting with ChemTreat as its long-term partner to make recommendations and provide expertise on a day-to-day basis. This would require onsite support and in-depth expertise in

handling the water process needs of a complex chiller plant operation and the re-engineering of the process, chemistry, delivery and monitoring of the new system.

Several cost issues were also targeted for improvement:

- Cartridge maintenance with off-line cleaning was currently 4 times a week at 5 hours each session.
- Pre-filtration cartridge life was only 2-3 days.
- Alternative water sources were needed to support a Green initiative. Focus efforts to become a better environmental steward, reducing its impact on city resources using rain, river, and reclaimed water.



One Year Results



Mild Steel
0.1 MPY



Copper
< 0.1 MPY



Solution/Results

ChemTreat team met with University personnel to gain a scope of the project and determined that an overhaul of water process was required. This included:

A re-engineering of the process sequencing. Based on ChemTreat's recommendation, a sand filter was repositioned in relation to RO filtration, and 1-micron filters were added to the 5-micron filters, removing suspended solids as a limiting factor for RO membranes and greatly extending filtration run duration between cleanings.

Our CTVista® monitoring system was installed providing a 24/7 review and monitoring capability. This resolved several timing, reporting, and communication issues in the previous system. Now all team members with data access can add reports, and other observations to the data so all participants can review and determine any required course of actions for any time period.

RO cleanings were reduced to only three hours every three weeks. This significantly reduced downtime, system disruption, and costs.

Pretreatment cartridge life was extended to over a month versus the previous three-day period.

Optimization of the biocide program with a new set-up for bromide/chlorine reduced the bacteria counts from 10^3 cfu/mL to 10^2 cfu/mL.

Established a consistent corrosion rate <0.1 MPY.

Established a consistent 1,800 Conductivity Control Level throughout multiple water sources.

Improved the University's sustainability program by saving water, totalling > \$500,000 per year

Condensate reclaimed > 12 million gallons per year

Creek water > 20 million gallons per year

Recovered blowdown > 25 million gallons per year