



Culligan Application Brief Food & Beverage

A sustainable approach from Culligan Matrix Solutions®

CHALLENGE

A major beverage plant was looking to reduce the impact of its operations on the environment while meeting the water treatment challenges at its facility. The sustainability goals of the facility included reducing water usage and energy costs associated with its operations.

Until recently, the facility was using city water in its utility process. The company was looking to use its own well water and reduce the use of more expensive city water. Well water was treated and used as process water and city water was utilized for plant utility water (i.e. boiler and cooling tower make-up). There were a variety of water consumers and users in the facility including process water, boiler make-up, cooling tower make-up and clean in place (CIP) make-up. A Culligan sales engineer surveyed the facility, obtained a series of water samples, reviewed water balance plans, and investigated associated energy and water costs.

Culligan's application engineering and field sales teams performed Reverse Osmosis (RO) projections, evaluated water balance scenarios, and calculated resulting energy and water savings to determine a viable approach for the plant.

BENEFITS

In the end, Culligan advocated reusing a portion of the process water RO reject as boiler make-up water. This was accomplished by treating the RO waste stream with a Culligan reject recovery RO system. As a result, the process water RO waste stream was cut by more than half, reducing city wastewater charges. Furthermore, the quality of the treated boiler make-up water was better when compared to that of the existing softened well water make-up. Boiler feed water cycles were increased from 10 cycles to 50 cycles reducing boiler blowdown from 10% to 2%. This reduction in blowdown reduced energy usage by approximately \$53,000 per year. Also, the plant reduced the need (approximately 22 gpm) for city water for boiler make-up and reduced chemical usage by approximately 50%.

The plant also utilized softeners for some plant processes. Culligan retrofitted the existing softeners with a brine reclaim system reducing salt usage by approximately 20%. The sum of all the cost savings resulted in a one year payback for the project.



END-TO-END SOLUTIONS.

We ask the right questions so you get the right solution.

Our consultative approach begins with a Culligan professional working with you to identify your specific water quality needs. We understand energy and power plant water treatment needs and have several technologies that can save you money and help you increase your return on investment (ROI). Let Culligan customize a water system solution that meets your power and energy requirements.

Solution:

Culligan's innovative solution resulted in a significant return on investment. Consulting with the customer and utilizing Culligan's discovery process, the final solution included a chemical feed system and brine reclaim RO, a storage tank, level controls and re-pressurization pump skid. Also a plant softener brine reclaim retrofit kit was provided to realize the softener salt savings.

The chemical feed system was required to adjust the RO brine waste chemistry. The chemical feed system helps reduce scaling and fouling, and thus promotes efficient performance of the newly added brine reclaim RO.

The second component of the solution is the Culligan G3 reverse osmosis model. The G3 RO was designed specifically for treating RO brine waste water. The compact, skid mounted G3 unit offered a high level of flexibility during installation in terms of location and space requirements.

The third component was the Brine reclaim RO product water storage tank with level controls and re-pressurization pumps to feed the boiler.

Lastly the plant softener brine reclaim retrofit kit provides the needed valves and controls to recycle a portion of the regeneration waste back to the brine tank. Minor adjustments were needed to the softener sequence controller to automate the proper valve sequencing and timing.



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