

CSM Bakery Products



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Company Background

CSM Bakery Products is a products distributor with three main areas of business: ingredients, sweet goods and bakery distribution. The ingredients supplied include fillings, toppings, and frozen dough, while the sweet goods include cookies, brownies, and cupcakes. The company is a wholly-owned subsidiary of Amsterdam-based CSM, the global leader in the bakery products and natural food preservation/green chemicals arenas. CSM operates in 60 locations, with over 9,500 employees worldwide. The Eagan facility employs approximately 300 employees.



“This project gave me my first experience in an industrial setting, which will be invaluable in my future career. It gave me confidence by assigning me my own personal project and seeing it to its conclusion. It also gave me confidence in approaching co-workers, superiors, and vendors with questions and concerns. Finally, it showed me that the knowledge I gained while in school is applicable and relevant to the real world.”

Incentives to Change

This project is a result of CSM’s desire to reduce its energy and water consumption. The Eagan plant currently uses about 8 million gallons of water, 140,000 therms of natural gas and 7 million kWh of electricity annually. The majority of the water and a large portion of the energy used by the plant result from sanitation processes. For this reason, the sanitation processes are the main focus of this project.

Project Background

A significant amount of water is currently used to clean several production areas in CSM’s Eagan plant. They have recently questioned the need for using so much water, as well as the overall effectiveness of cleaning procedures. This project focused on exploring alternate cleaning procedures or optimizing procedures already in place. Over the past three years, CSM’s Eagan plant has used an average of just over 8 million gallons of water per year. The water strength charges over this time period have averaged over \$52,000 per year. CSM is pursuing this project with the hope that the results will show a reduction in water use and a reduction, or elimination, of water strength charges.





Solutions

Implement Water Conservation Training Program

This program will encourage the use of dry cleaning equipment, such as brooms and squeegees, while discouraging wasteful practices, like pushing food scraps with a hose across the floor to the drain. The program will reduce the amount of water used while cleaning, automatically reducing the amount of energy used to heat the water. The program will also reduce the amount of food scraps sent to the drain, which will reduce fees from wastewater with a high content of suspended solids. This will also allow more food scraps to be reused as animal feed. I recommend that this solution be implemented as soon as possible.

Replace Hand Washing Faucet Aerators With Low-Flow Model

This is a simple solution that will save approximately 92,000 gallons of water per year at only a \$25 cost to the company. It has been recommended that this solution be implemented as soon as possible.

Replace Hose Nozzles With Low-Flow Model

Replacing hose nozzles with low-flow nozzles would

use approximately 25% less water, which would save the company about 950,000 gallons of water annually. This would also save the company 3,400 therms of natural gas energy used to heat the water. Unfortunately, testing revealed that these new nozzles were heavy and cumbersome, and employees did not like them. It has been recommended that this solution be implemented only if a new, lightweight model is introduced or if a new vendor is found.

Adjust 'Kettle Room' Sanitation Standard Operating Procedure (SSOP)

The cleaning process for this room is the single most water-consuming process in the plant. Implementing a new, optimized procedure would save the company about 760,000 gallons of water every year, as well as 9,400 therms of natural gas energy used to heat the water. It has been recommended that the proposed procedure continue to be tested and, if proven viable, implemented immediately.

There are other ideas beyond the scope of this project that could be investigated in the future. The first is to replace the cleaning chemicals in the plant with electrolyzed water. The second is to change some of the cleaning procedures to dry cleaning methods, such as dry ice blasting.



Recommendation	Reduction	Annual Savings	Status
Implement water conservation program	Needs analysis	--	--
Replace hand washing faucet with low flow model	92,000 gallons water 650 therms	\$400 water \$460 energy	Under review
Replace hose nozzles with low flow model	950,000 gallons water 6,200 therms	\$4,100 water \$4,400 energy	Delayed
Change kettle room SSOP	760,000 gallons water 9,100 therms	\$3,300 water \$6,400 energy	Testing