



Kerry Ingredients



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Company Background

Kerry Functional Ingredients & Actives in Rochester, MN, specializes in fermented and cultured ingredients. The Rochester plant is one of multiple facilities that make up the Kerry Group, a global food company. What makes the Rochester facility unique, is the process of creating products through fermentation, which are then converted to solid form through the use of spray dryers. Kerry finds great value in the ability to deliver high-quality fermented products in dry form to its customers, such as a cultured celery product often used in meat curing.



“It is great to see a global company like Kerry with comprehensive sustainability goals. Through MnTAP, I was able to make recommendations that will advance Kerry’s progress toward their sustainability goals. The coordination between Kerry and MnTAP will have a positive impact on Minnesota’s environment.” ~ DB

Project Background

Along with on-going company-wide goals, there are additional incentives to come up with solutions and increase efficiency of operations at the Kerry Rochester plant. The plant is currently undergoing a major expansion project. The increase in production capacity will demand more water, electricity, natural gas, and raw materials for plant operations. New boilers and additional water services will be needed to accommodate the expansion. A large focus of the MnTAP intern project for Kerry was to find opportunities to minimize the need to increase steam and water capacity, and to help Kerry staff make decisions on the purchase and design of new equipment. The MnTAP intern project was intended to help make appropriate decisions on equipment and process changes with a focus on optimizing the use of water, energy, chemicals, and reducing wastewater burden to the city treatment plant.

and chemical optimization opportunities, Kerry Rochester will advance the global targets of the Kerry “Towards 2020” program.



Incentives To Change

Kerry Group has a company-wide program called “Towards 2020,” with set goals and targets to reduce environmental impacts of its global operations. Kerry is committed to reducing water use by 11% (compared to baseline year 2011 and a 13% reduction (compared to baseline year 2013) in greenhouse gas emissions by 2020. By focusing on energy efficiency, water conservation,

“MnTAP has been a tremendous asset in helping Kerry identify opportunities to meet our sustainability goals. The intern program has delivered actionable project ideas that will be implemented in our upcoming expansion.”

*~ Brian Morgan, Project Engineer,
Kerry Ingredients*

Solutions

Closed Loop Cooling

Kerry currently uses a single-pass well water loop for cooling purposes. To reduce water consumption, the loop can be closed with a heat exchanger. The closed loop would be cooled using chilled water from the existing chiller. It is recommended that a water storage tank be added, and makeup water for the closed loop would be supplied by city water or reverse osmosis (RO) water. This implementation would eliminate the need of having the well water pump in constant operation. This system would significantly reduce water use by reusing the well water for cooling, instead of discharging it after a single pass.

Equalization Tank

Kerry Ingredients currently utilizes a sewer pit to balance the pH of outgoing wastewater, before it is sent to the city water treatment plant. Though this system is somewhat effective, there is an opportunity to treat the outgoing wastewater much more effectively. The nature of the current sewer pit makes it difficult to control the pH when caustic and acid chemicals are added in an attempt to neutralize. The installation of an equalization tank would improve the pH neutralization process, largely due to improved agitation and more control over caustic and acid chemical additions within the installed tank. The increased control over chemical additions will increase the effectiveness of both caustic and acid chemicals. The results are a reduction in use of these chemicals and the corresponding cost savings.



Improve Steam Traps

Steam traps are valves used at the Kerry facility to filter out condensate and regulate the steam system. Many steam traps throughout the plant are clogged with debris from steam line corrosion. Different types of steam traps are available that vary in effectiveness, depending on different characteristics of the system. To improve steam trap operation, the orifice type steam traps on steam mains used in the plant should be replaced with bucket type steam traps. Bucket steam traps are a better design to handle debris. Maintaining steam traps that are clear of debris would improve the condensate returned to the deaerator tank, reducing natural gas and water use.

Reverse Osmosis

Implementing a reverse osmosis (RO) system would reduce the total dissolved solids (TDS) of the boiler makeup water. Removing TDS from the water would reduce the boiler blowdown from 10% to 2%. Though an RO system will require about 20% of the water to be rejected, reducing boiler blowdown will

help offset the water increase and will reduce natural gas usage. It would also result in cleaner heat transfer surfaces, increasing equipment longevity. Though it has yet to be quantified, the amount of water treatment chemical used for maintaining boiler conductivity levels would decrease, as well.

Recommendation	Annual Reduction	Annual Savings	Status
Closed loop cooling	200 million gallons	Further review needed	Recommended/Under review
Reverse osmosis	68,100 therms	\$30,800	Implementing
Steam trap replacement	118,300 gallons 1,910 therms	\$1,125	Further review needed
Equalization tank	16,600 lbs caustic 9,400 lbs sulfuric acid	\$8,400	Implementing

MnTAP Advisor: Matt Domski, Organic Waste Specialist