



Lakeside Foods



Gannon Shilson
Mechanical Engineering
University of Minnesota Twin Cities

Organization Background

Lakeside Foods Inc. is a canned food and food product producer that was founded and remains headquartered in Wisconsin. At its Owatonna facility in Minnesota, it produces canned food products, such as dry beans, corn, peas, potatoes, mixed vegetables, and carrots. Currently, there are 123 full-time employees and an additional 180 seasonal employees.



"My summer internship with Lakeside Foods and MnTAP is an experience I will cherish for the rest of my career. The internship provided me with many benefits, as my engineering skills have been immensely refined. I was able to get an inside look into how engineers look at and solve problems in the field. Additionally, I gained significant experience in the field of environmental sustainability. I'm thankful to MnTAP and Lakeside Foods for this incredible opportunity and I am now more excited to enter the field of environmental engineering! ~ GS

Project Background

At Lakeside Foods, water is by far the most used resource. Whether by means of washing the product, transporting the product, or cooking the product, water is used in almost every process. On average, the main facility in Owatonna uses over 130 million gallons of water annually. This water use costs the company almost \$400,000 a year with an additional \$650 monthly sewer charge. Additionally, reducing bean waste in their wastewater would lower levels of biochemical oxygen demand (BOD); chemical oxygen demand (COD); and total suspended solids (TSS) that can adversely impact downstream communities, wastewater treatment operations, and aquatic ecosystems.

Incentives To Change

Lakeside Foods takes pride in providing quality products while maintaining environmental sustainability. Hence, their incentives to participate include improving their ability to meet permits for irrigation, reducing water costs, enhancing their ability to operate more sustainably, and lowering contaminant concentrations in their wastewater.

SOLUTIONS

Hydro Sieve Replacement

Lakeside Foods uses a hydro sieve to separate water from the reject bean waste in the dry bean blanching process. Since the current hydro sieve is undersized for the reject stream's flow rate, water flows out of the recirculation system and into the drain. Replacing the current hydro sieve with an adequately sized hydro sieve would keep 1,270,281 gallons of water in the recirculation system and save \$3,600 annually.

Bean Waste Diversion

Reject bean waste from the hydro sieve is sent directly into the drain, which eventually ends up in Lakeside Foods' wastewater treatment. Currently, Lakeside Foods uses water to move the beans through the drain and into the hauling truck. To divert the reject bean waste from the drain and wastewater treatment process, a cart can be placed at the end of the flume of the hydro sieve discharge. Lakeside Foods already owns these carts with perforated areas for drainage. Diversion of the bean waste would save 93,000 pounds of beans and \$200 in polymer annually. Additionally, using these carts could potentially

Solutions

lead to bean waste upcycling as opposed to the beans being used for hog feed. Bean waste upcycling can provide a potential revenue stream.

Reduce Water Usage in the Can Cooler

Lakeside Foods uses a can cooling system that submerges cans in water. Currently, the cans are overcooled and well below the optimal temperature range. Reducing the flow rate of water into the cooling system would still allow the exiting cans to be within the optimal temperature range. By turning down the flow rate in the can cooler, Lakeside Foods could save 960,000 gallons of water and \$2,700 annually.



Recirculate Blancher Discharge

Lakeside Foods uses two blanchers in sequence to blanch dry beans, and each blancher uses water to soak and cook the beans. Currently, the water is continuously discharged from each blancher and rich in starch. The dissolved air flotation (DAF) system treats the starch wastewater with a polymer as a coagulant. Instead of being discharged, each blancher's water could be fed back into the blancher cooker through a recirculation system. Reducing the amount of starchy water sent through the water treatment system would decrease the strain on the DAF, and this could save \$1,200 on polymer costs annually. Additionally, this solution would reduce 902,000 gallons of water annually, and therefore, save \$2,600 annually.

Install 3 Float Valves in the Corn Room Wash Tubs

The three wash tubs in the corn room are currently filled with water and stopped at the operator's discretion. Water tends to overflow out of the tubs and into the drain. Overflow can be prevented with the addition of float valves. The annual reduction and savings are yet to be determined and would need further analysis.

Company quote placeholder

Recommendation	Annual Reduction	Annual Savings	Status
Hydro Sieve Replacement	1,270,281 gal water	\$3,600	Recommended
Bean Waste Diversion	93,000 lbs. beans	\$200	Recommended
Reduce Water Usage in the Can Cooler	960,000 gal water	\$2,700	Recommended
Recirculate Blancher Discharge	902,000 gal water	\$3,800	Needs Further Analysis
Install Float Valves (3) in Corn Room Wash Tubs	To Be Determined	To Be Determined	Needs Further Analysis

MnTAP Advisor: Kevin Philpy, Senior Engineer