

# Gedney Foods Company



**Ryan Venteicher**  
Civil Engineering, UMTC

## Company Background

The Gedney Foods Company is a pickling plant based out of Chaska. Established in 1881, Gedney is one of Minnesota's oldest food companies and employs approximately 200 employees. The company produces an assortment of goods, including relishes, condiments, preservatives, fermented pickles, and fresh pack pickles. Cucumbers from all over the world are brought in from the receiving dock or tank yard, washed and desalted, packed into jars along with brine and various spices, and then pasteurized, completing their transformation into a pickle.



*"The internship was a great experience. It provided me with real-world engineering experience and allowed me to run my own project, do my own research, and test out new ideas to see if they work. Plus, it's hard to beat free pickles on Thursdays!"*

## Project Background

Water use at the plant has risen due to an almost doubling of the plant's production outputs. In addition, some salt used while making products unavoidably ends up in the wastewater stream, thereby



increasing the strain the company puts on its surrounding environment. I examined ways to reduce water and salt use within the plant in order to lessen Gedney's consumption of raw materials and also to reduce the company's environmental impact.

## Incentives to Change

The Gedney Company has long been concerned with reducing its impact on the environment. Gedney draws its water from two wells and has endeavored for years to reduce its overall water usage. The company's water usage, and the impact its wastewater stream has on the surrounding ecosystem, is of high concern. Gedney also has a limited wastewater treatment system. Permits stipulated by Minnesota regulatory agencies prevent the discharge of wastewater until environmental requirements are met. If Gedney cannot discharge its wastewater, production would be shutdown. As such, Gedney must conserve water so its waste disposal system does not reach capacity. Also, reducing the salt usage for the plant would lessen the consumption of a costly ingredient and would reduce the strain felt on the company's wastewater stream. I was hired by MnTAP to research and recommend water and salt saving suggestions.

## Solutions

### Reroute Pasteurizer Overflow

Pasteurizers are important components in the pickle producing process, as pasteurization is necessary to ensure food safety. Pasteurizers for two separate production lines run parallel to one another. One utilizes steam while pasteurizing, the other hot water. The steam pasteurizer has excess hot water discharging from it.

By reusing the hot overflow water from the steam pasteurizer as makeup water for the hot water pasteurizer, both energy and water can be saved. It is estimated that 22,000 therms of energy and 3,085,000 gallons of water can be saved per year through this change.

### Reuse Fermentation Tank Brine

Cucumber fermentation occurs in outdoor tanks before the cucumbers are sent to the production line. Through research and consulting with representatives from other companies, it was determined that reusing tank fermentation brine may be an option for Gedney to reduce salt and water demand. Reusing brine for additional fermentation processes will reduce salt and water usage by an amount of 213,400 lbs. of salt and 214,500 gallons of water per year.



### Reduce Salt Storage Level

The product in the tank farm is currently stored at a salt level of 12% in order to prevent the growth of product-harming enzymes and tank freezing during the winter months. Through research and contacting other pickle companies, the idea emerged that this salt level may



be lowered to directly reduce salt use and indirectly, lessen the water used by the plant. Additional testing and research is needed in different climate conditions; however, calculations indicate that if the salt storage level is reduced to 7%, the plant's salt and water use would drop by 364,500 lbs. of salt and 383,000 gallons of water.

### Reduce Fermentation and Salt Storage Level

Since reusing fermentation brine and reducing salt storage levels are both modifications to the same process, calculations were made to estimate the savings achieved if both recommendations are implemented. If both a brine reuse system is implemented and procedures are changed so that the salt storage levels were reduced, savings would equal 460,500 lbs. of salt and 543,200 gallons of water.

### Fix Water Leaks

Water leaks in the plant often go unnoticed and as a result, a large amount of water is being wasted. It is estimated that about 2.2 million gallons of water can be saved per year by fixing water leaks in the plant. Instituting a culture of water conservation with the employees at Gedney will also make a big impact on reducing water losses for the plant.

Recommendation	Reduction	Annual Savings	Status
Reroute pasteurizer overflow	22,000 therms 3,085,000 gallons water	\$10,600	Under review
Reuse fermentation tank brine	213,000 lbs salt 214,500 gallons water	\$21,300	Testing
Reduce salt storage level	364,500 lbs salt 383,000 gallons water	\$36,450	Under review
Reduce fermentation and salt storage level	460,500 lbs salt 543,200 gallons water	\$46,500	Under review
Fix water leaks	2,220,400 gallons water 790 therms	\$380	Under review