



Rochester Meat Co.



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Organization Background

Rochester Meat Company was founded in 1971 in Rochester, MN, and produces frozen beef patties and other beef products. For decades they maintained high levels of work ethic and innovation, as demonstrated by the creation of the Cloud burger. In 2007 they merged with Holten Meats to become Branding Iron Holdings, and since then they have continued to operate under the Branding Iron label.



"This internship was an amazing experience that really helped me grow my practical engineering skills. Every part of this program helped me grow as an engineer while also allowing me to make a real difference." ~ CS

Project Background

Rochester Meat Company applied to the MnTAP internship program to help address high readings in their recent wastewater samples. Due to the nature of the facility, the wastewater contained high levels of total suspended solids (TSS) and biochemical oxygen demand (BOD). The company wanted to decrease these wastewater levels as well as reduce their water and energy consumption.

Incentives To Change

The wastewater generated from the facility's production and sanitation processes has high levels of TSS and BOD. These parameters are costly for the downstream POTW to treat and are passed back to the facility in their wastewater fees. The high strength charges were unsustainable for Rochester Meats in the long term, and meant that any decreases in both water consumption and wastewater loading would have significant impact on their bottom line. The facility also continually strives to implement best practices that can improve their water and energy usage efficiency.

SOLUTIONS

Implement Dry Cleaning Process

The intern spent several days at the facility during the third shift to observe sanitation activities. From these visits, it became clear that procedures and utilization of wastewater controls were not fully established. Drains with strainers meant to catch product were often removed and product would be washed off of machines to the drains instead of being placed into disposal containers. These practices lead to high strength wastewater liable to surcharges. The intern initiated discussions with the sanitation manager and employees to reiterate sanitation procedures and clarify expectations. The intern also created signage around the facility to remind workers of the procedures as well as training materials in the form of a presentation for the company to incorporate into its employee orientation. Establishing a goal of diverting 50 lbs of meat from the sewer daily would result in 15,000 lbs of meat diverted from the sewer and an annual savings of \$13,500.

"Over the course of the summer, Claire was able to focus on several areas of the operation that typically do not receive much attention. By asking the right questions and doing the research, she was able to develop quite a few cost-saving ideas with substantial ROI. Overall, our experience with MnTAP was extremely positive!"

- Dave Lee, Plant Manager & Mike Week, Assistant Plant Manager

Solutions

Install Recirculating Water Chillers

Six different machines were found to be cooled using single pass cooling water, which ran through the machines continually. After researching several possible solutions, including reuse opportunities, the intern found an affordable recirculating cooler that could be installed on each of the machines. Installing this equipment would eliminate any further water use by recycling and chilling the outlet water. Implementing this change can save 2.9 million gallons of water and \$13,400 annually.



Replace Metal Halide Lights with LEDs

The company was aware that there was an opportunity to upgrade its lighting and tasked the intern with completing a lighting audit. Metal halide light fixtures were used in the freezer areas; replacement with LED lights had several

advantages. The metal halide lights took several minutes to reach their full lumen output and used a high amount of energy. Furthermore, these older style lights generated heat, which increased the refrigeration load needed to keep these areas cold. Switching to LEDs offered the benefits of lower energy costs, immediate full-lumen output when turned on, and minimal heat generation. The intern also provided the facility with recommended LED bulbs for the main production building. Total reduction in energy use is 246,000 kWh, with an annual savings of \$24,600.

Fix Compressed Air Leaks

Air leaks are a common occurrence in facilities that utilize compressed air. The intern carried out a compressed air leak using an ultrasonic leak detector to identify and prioritize leaks in the facility. The total savings were 18,000 kWh and \$1,800 annually.

Fix Production Area Door Gaps

From continuous time spent walking through the facility and brainstorming ideas, the intern noticed an insulation opportunity to achieve energy savings. Numerous doors separating the colder freezer and production areas from the rest of the facility were observed to have gaps that caused significant loss of cold air. This meant that the HVAC and refrigeration systems in the production areas were consuming more energy to generate additional makeup air. By utilizing a FLIR infrared camera and an anemometer to measure temperature differences and air speeds, the intern was able to estimate the amount of additional cooling that was required and how much could be saved. Fixing the gaps in the doors to maintain a seal in the cold areas could help save 101,000 kWh of energy and \$10,100 in annual savings based on a 50% reduction in cold air loss.

Recommendation	Annual Reduction	Annual Savings	Status
Implement Dry Cleaning Process	15,000 lbs meat	\$13,500	Planned
Install Recirculating Water Chillers	2,900,000 gallons	\$13,400	Recommended
Replace Metal Halide Lights with LEDS	246,000 kWh	\$24,600	Planned
Fix Compressed Air Leaks	18,000 kWh	\$1,800	Implemented
Fix Production Area Door Gaps	101,000 kWh	\$10,100	Recommended

MnTAP Advisor: Daniel Chang, Associate Engineer