Sanimax

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Company Background

Sanimax South St. Paul is a rendering facility that is part of a larger global company headquartered in Montreal, Canada, with 18 locations in Canada, the U.S., and Mexico. Sanimax collects and reclaims by-products from the agri-food industry such as meat, used cooking oil and grease, hides and organics, and transforms them into high quality products. The main products that are produced on site are blood meal, feather meal, poultry by-product meal, meat by-product meal, poultry fat, meat fat and yellow grease.

Sanimax
Reclaim · Renew · Return

"My MnTAP internship at Sanimax has given me the opportunity to make a difference. Not only was I working toward reducing the environmental impact of the plant through water and energy use, but I also was able to work toward saving the company money on operating costs." ~JC

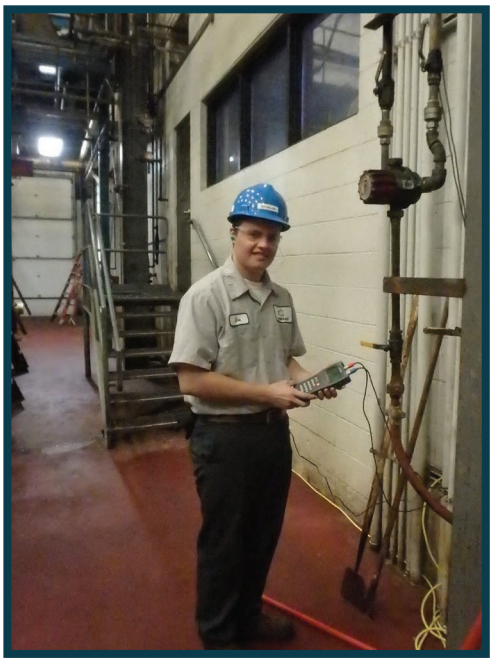
Project Background

The objective of this project was to assess opportunities to reduce water use, wastewater loading, and energy use at the South St. Paul facility. The four main areas that were focused on included noncontact cooling water use, wash water use, process leaks, and process condensate.

Incentives To Change

Sanimax has experienced high operating costs due to freshwater intake and wastewater discharge (volume and strength charges). The freshwater use, sewer discharge, and strength charges are all anticipated to increase significantly next year. By reducing these operating costs, the company will increase profits as well as reduce their environmental impact.

The plant uses about 12,764,000 gallons of noncontact cooling water per year, which represents about one-fourth of the total purchased water annually. In the current operation, cooling water is passed through a jacket to cool the pump seals. This reduces the wear on these seals from excessive heat, increasing the equipment lifetime of this seal and reducing the risk of failure. The first three recommendations reduce non-contact water use in 5 of the 10 applications, while the final two address other waste streams.



Solutions

Install Airfin Coolers on Condensate Pumps

By using a closed loop convective cooling system, a continuous, cooling water flow is no longer needed. The Airfin cooler has been used successfully to cool the pump seal on the poultry cooker condensate pump since 2012.

The installation cost for the Airfin coolers is higher in the red meat plant, due to the added costs of installing additional motor starters. Installing Airfin coolers for the four condensate pumps has been initiated and should reduce water usage by 2,600,000 gallons and $12,500 per year

Install Radiators on Centrifuge Bearing Cooler

In the current operation, softened water is passed through shell and tube heat exchangers to cool the bearing oil for each of the centrifuges. The water flow rate for both centrifuges is controlled by a ball valve, which is usually set to a flow rate in excess of 5 gpm (sometimes up to 10 gpm). The centrifuge literature suggests that the centrifuge bearing cooler requires a cooling water flow rate of 2 to 4 gpm under normal operating conditions. Installing a forced convection oil cooler for the centrifuges to cool the poultry and red meat centrifuge bearing oil instead of the noncontact cooling water has been initiated and will result in water savings of 3,242,000 gallons and $13,200 annually.

Optimize Poultry Cooker Cooling Water

Flow rate on the feed end bearing of the poultry cooker was reduced from 1 gpm to 0.2 gpm. At 0.2 gpm, the bearing oil remains in a safe range below the recommended 150 °F maximum temperature. This change has been implemented and has reduced water use by 250,000 gallons and $1,100 per year.

Install Water Shut-off Valves and Nozzles:

The plant uses steam and water mixing valves throughout the plant to produce high pressure hot water for cleaning floors and equipment at approximately 34 hose locations and over 3,000,000 gallons per year. I recommend that end of the hose shut-off valves and low-flow, high-pressure nozzles are installed on steam hoses at a total cost of less than $14,000. Avoiding excess use of water and steam will result in reduced freshwater purchase costs, sewer discharge costs, and boiler steam usage equivalent to 1,080,000 gallons of water ($5,600) and 11,00 therms ($6,500) per year.

Repair Process Leaks and Compressed Air Leaks

Process leak sources may include leaking seals, pumps, fittings, or other equipment where material or water is lost and may not be recovered. Reducing product leaks can potentially have a large cost savings because revenues are increased, unnecessary sewer and strength charges are avoided that would have been a result of the product entering the wastewater stream, and less water is needed for washing. Compressed air leaks result in a loss of line pressure, requiring air compressors to run more frequently than a system with no compressed air leaks. Fixing identified compressed air leaks will result in savings of 275,000 kWh and $22,500 annually. Fixing identified process leaks will result in savings of over 570,000 gallons of water, 1,330,,000 lbs. of product and $50,000 annually.

Recommendation	Annual Reduction	Annual Savings	Status
Install Airfin Coolers on Condensate Pumps	2,600,000 gallons	$12,500	In progress
Install Radiators on Centrifuge Bearing Coolers	3,242,000 gallons	$13,200	In progress
Optimize Poultry Cooker Cooling Water	250,000 gallons	$1,100	Implemented
Install Water Shut-off Valves and Nozzles	1,080,000 gallons 11,000 therms	$12,100	Recommended
Repair Process Leaks	>570,000 gallons water >1,330,000 lb product	>$50,000	Ongoing
Repair Compressed Air Leaks	>275,000 kWh	>$22,500	Some repairs completed