

KRAFT FOODS



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MASON CITY



COMPANY BACKGROUND

Kraft Foods was founded in 1903 and is the largest food and beverage company headquartered in North America and the second largest worldwide. The company had revenue of \$54.4 billion in 2011. Kraft Foods produces many leading food and beverage brands, including Cadbury®, Philadelphia®, Nabisco®, Trident®, Jell-O®, Oscar Mayer® and many more. The company employs approximately 127,000 people worldwide. Kraft Foods’ Mason City, Iowa plant is a producer of Jell-O ready-to-eat puddings and gelatins in North America and employs approximately 275 people.

PROJECT BACKGROUND

Kraft Foods is committed to sustainable practices to reduce the environmental impact of its production facilities and to preserve our natural resources. Environmental priorities coupled with increasing costs associated with water and wastewater treatment prompted an examination into the feasibility of implementing a microfiltration system for treating the facility’s wastewater.

INCENTIVES TO CHANGE

As water and wastewater treatment costs continue to rise, curbing these expenses becomes more attractive and can result in measureable, sustainable benefits. Kraft Foods plans to continue to reduce its water use and look for ways to improve its wastewater processing systems and decrease its natural gas and electrical consumption.

RESULTS

Microfiltration Wastewater Treatment: Currently, the Mason City plant treats wastewater using a dissolved air flotation (DAF) process before it enters the city sewer system. The plant pays the city wastewater fees and also pays to land-apply a by-product of the process. If the plant used a microfiltration system with alternative treatment chemicals, it would be possible to clean water to within direct discharge limits and to dry sludge for use as animal feed. This could divert approximately 20,000 tons of sludge from land application and the sludge could be dewatered and used for animal feed or combustible fuel. This project could save as much as \$770,000 per year through a reduction of water sent to the water treatment plant, land application charges and chemical treatment costs. It would also be possible to reuse the cleaner wastewater for a variety of applications.

Cooling Tower Controls: Cooling towers use evaporative cooling to exhaust unwanted heat from process equipment in the plant. As water in the cooling towers evaporates, minerals within that water are left behind and can create scaling problems if some water is not removed from the tower and replaced with clean makeup water. Currently, valves for the facility’s cooling towers are manually controlled, resulting in excess water use. Automatic controls use conductivity to measure mineral content and trigger valves to keep mineral concentrations at acceptable levels. Use of conductivity controls could save up to 17.4 million gallons of water per year and cut associated costs by up to \$148,000 annually.

Low Flow Hose Nozzles: Throughout the plant, hoses are used for general cleaning purposes. Currently, these hoses utilize 7.5 gpm nozzles, which could easily be replaced by 4.5 gpm nozzles without compromising cleaning ability. This would save approximately 2.9 million gallons of water per year.

Additional Flow Metering: To identify opportunities to save water, it is important to know how water is being used. The plant currently tracks much of its water use. However, installing several additional meters in the plant would help to further pinpoint future opportunities to minimize water use.

CONVENTIONAL AIR POLLUTANTS AND GREENHOUSE GASES DIVERTED IN STANDARD TONS

Total for all sectors					
CO ₂	SO ₂	CH ₄	N ₂ O	CFC	PM ₁₀
7,700.50	1.50	4,585.60	2,329.00	7.60	0.90



Boiler Economizers: The plant has a total of three boilers, with two operating at any given time. When the plant was built, each of these boilers used feed water economizers that utilized waste heat from boiler exhaust gases to preheat boiler feed water. Today, the economizers are no longer operational. Replacing these units would save an estimated 170,000 therms of natural gas per year.

Odor Scrubber Use Reduction: The plant's environmental control facility is equipped with an odor control scrubber to keep sludge odors to an acceptable level. It was found that in

lower temperatures where microbial activity is minimal, an odor control scrubber is not needed and can easily be shut off, resulting in reduced water, wastewater and electrical consumption.

Vending Machine Misers: Vending machines typically use between eight and ten kilowatt hours of electricity each day. Vending misers operate with the use of motion detectors to cut off electricity to the machine while still maintaining appropriate temperatures. Installing vending misers on one vending machine could save 1,046 kWhs annually.

PROJECT	ANNUAL COST SAVINGS	ENVIRONMENTAL RESULTS	STATUS
MICROFILTRATION	\$770,000	119,789,780 GALLONS 1,198,856 LBS. BOD 20,000 TONS SLUDGE	FURTHER INVESTIGATION NEEDED
COOLING TOWER CONTROLS	\$148,000	17,400,000 GALLONS	RECOMMENDED
LOW-FLOW HOSE NOZZLES	\$36,000	2,913,840 GALLONS	IN PROGRESS
ADDITIONAL FLOW METERING	-	-	RECOMMENDED
BOILER ECONOMIZERS	\$88,000	170,000 THERMS	RECOMMENDED
ODOR SCRUBBER USE REDUCTION	\$12,000	869,760 GALLONS 6,824 KWH 4,730 THERMS	RECOMMENDED
VENDING MACHINE MISERS	\$70	1,036 KWH	RECOMMENDED

