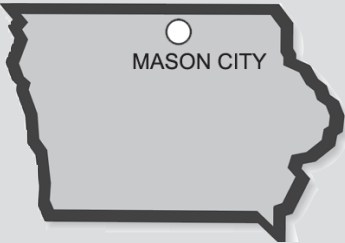


Kraft Foods Global Inc.



Kraft Foods (NYSE:KFT) with net revenues of more than \$34 billion in 2005, is the world’s second largest food and beverage company, with familiar brands such as Oscar Mayer, Oreo, Maxwell House, Post cereals and DiGiorno pizzas. The Mason City facility produces the Jell-O line of refrigerated gelatins and pudding cups. They employ more than 250 people and have an annual economic impact of more than \$30 million in the state of Iowa.

Ryan Hulleman, Industrial Engineering, Iowa State University

Project Background

Kraft Foods Mason City has had a continuous improvement focus on waste reduction including water, waste water, energy and solid waste for several years. Kraft wanted to utilize the intern program this year to speed up opportunities to reduce water use and wastewater generation, save energy and help drive potential renewable energy projects including electricity from wind and steam generation from waste wood.

Incentives to Change

Kraft’s goals of reducing costs, reducing the use of scarce resources, and protecting the environment are mutually inclusive of having a program of energy, waste and water reduction. Kraft Mason City has identified several potential projects including a unique opportunity to move towards the use of renewable energy to reduce rising energy costs and minimize the emission of greenhouse gases. There are also great opportunities for reducing water use/wastewater generation in several areas, lowering actual energy use from compressed air loss reduction, and reducing energy used for heating water. Finally, Kraft will have an opportunity to examine new chemical compounds designed to aid in wastewater treatment which can limit both chemical and land application costs.

Results

Compressed Air Loss Reduction
Compressed air is often ignored as a utility but is used throughout the batching, processing, and packaging phases. Compressed air accounts for 28.6 percent of the total annual electric bill for Kraft.

An ultrasonic leak detector was used to help identify a total of 84 air leaks during a two day inspection. Additionally, an ongoing leak detection and equipment purchase program has been recommended to management, potentially reducing the cost of compressed air by as much as 15 percent annually.

Mud Drum Boiler Blowdown

A boiler mud drum blowdown is a process that removes solids from the mud drum after solid accumulation reaches a high level. Originally, a blowdown was done every 12-hour shift for 15-20 seconds. Recent upgrades in the water treatment have greatly reduced the amount of conductivity in the condensate and makeup water, thus increasing the number of cycles that can be run before a blowdown is required. The new cycle timer is one to two seconds every shift turn (4 days).

Continuous Chain Wash (CCW)

CCW is a process used by operators to keep the production equipment clean. CCW uses a hi-flow, hot water stream to clean the chain latches on the filling machines during production. An opportunity was identified to significantly reduce this water use through control automation. Currently, the CCW water accounts for 14 percent of all in-bound water and has to be heated to be effective. A study was completed and programming changes to the line controls were made to reduce the volume of water by up to 16 million gallons per year and save a significant amount of energy.

Seal Head Water

Cooling water is used at the seal head block where lids are applied to filled cups of gelatin and pudding. Tap water runs through a coil within the seal head block to provide cooling. The water then exits the block and is discharged to the drain. Placing a flow restricting device in this pipe could reduce water consumption by half. This is being tested and if successful can be immediately implemented.

Renewable Energy

Kraft is working on a project to produce electricity from wind and steam from a waste wood boiler. Progress was made on researching the availability of waste wood, determining boiler emissions, obtaining zoning requirements and preparing a presentation for investors and Kraft management.

Air Pollutants Diverted in Tons

	Total for all sectors
SO2	9.9
CO	1.5
NOX	5.3
VOC	0.8
LEAD	0.0
PM	0.2

Green House Gases Diverted in Tons (CO2 Equivalent)

	Total for all sectors
CO2	2,744.0
CH4	239.0
N2O	92.8
CFCS	23.2

Project	Potential Annual Cost Savings	Environmental Results	Status
COMPRESSED AIR AUDIT	\$40,921	780,000 kWh	Implemented
ONGOING LEAK DETECTION PROGRAM	\$120,000	2,200,000 kWh	Recommended
MUD DRUM BOILER BLOWDOWN	\$1,585	50,000 gallons of water 149 MMBTU	Implemented
CONTINUOUS CHAIN WASH	\$184,000	16 million gallons of water 11,994 MMBTU	Implemented
SEAL HEAD WATER	\$6,750	1.5 million gallons of water	Recommended
CIP CHANGES	\$2,970	262,000 gallons of water 196 MMBTU	Implemented
CIP CHANGES	\$11,880	1,048,000 gallons of water 784 MMBTU	Recommended

