

2009 Case Study

Frito-Lay

Intern: Andrea Granger
Major: Agricultural Economics
School: Kansas State University

Topeka, Kansas



Company background

Frito-Lay is a division of PepsiCo International, one of the largest snack food companies in the world. The Topeka plant is a mega-site for Frito-Lay with 11 production lines, the fourth-largest plant in the nation.

Project background

Frito-Lay places great emphasis on responsible environmental stewardship. As a plant that produces more than 145 million tons of finished product every year, a lot of waste is produced. The new zero-landfill initiative now in place changes the culture of the site to recycle everything. Granger's internship was made up of five projects: a lighting project, a heat-recovery scope, sale of wastewater belt cake, a TerraCycle campaign, and a water kaizen.

Incentives to change

PepsiCo and Frito-Lay recognize the importance of protecting the environment and have made substantial strides in ensuring that all of their operations are using resource-conservation techniques.

Frito-Lay Topeka has made many strides towards its green goals recently by using recycled water cycles for chip production, implementing a zero landfill initiative, and by constantly investigating projects to increase energy efficiency for the site.

This is Frito-Lay Topeka's third year hosting a pollution prevention intern, proving its dedication to environmental innovation and advancement.

Projects reviewed for E2/P2 potential

1. Lighting project

Prior to 2009, Frito-Lay was mainly lit with high-bay T8 lighting that had been exposed to high heat and constant use. Several areas in processing as well as aisles of the two warehouses had been without light, as many bulbs had burned out and had not been replaced. Because of the high heat and oil required in

the production processes, the previous fixtures were yellowed and warped, creating a dingy light, not appropriate for the processes they were accommodating.

Now that the new lighting has been installed, Frito-Lay has replaced 1,238 outdated fixtures with 1,346 more efficient T8 bulbs and new electronic ballasts. These new fixtures save more than 1,978,672 kWh, which in terms of savings equates to \$123,667 with a 4.7-year payback.

2. Heat-recovery scope

Frito-Lay releases 3 million BTUs of steam heat from two boilers. This steam presents no real harm to the atmosphere but is potentially wasted BTUs for the plant. When investigating uses for this waste heat, many options were explored to try and determine where this excess energy could be beneficial. Many other Frito-Lay sites have used this steam to preheat water in holding tanks for sanitation water, or heating and cooling of the facility. With the investigation in Topeka, the opportunity to use heat from the boiler stacks to fuel the starch-recovery system is appealing.

The starch-recovery process requires 900,000 BTUs of energy while the boiler stacks release more than 3 million BTUs to the atmosphere. With a simple redirecting of air through insulated ducting, the starch-recovery system can rely completely on the excess steam heat from the boiler stacks. Heat loss is estimated, but because of the high BTU potential of the boiler stack, there should be more than sufficient energy to fuel the starch dryer.

3. Wastewater belt cake sale

Continuing with the zero landfill initiative on site, everything that is thrown away at the plant must find a home. Any by-product of the chips produced on site, cannot be sent to the landfill. Instead, by-products are sent to a feedlot to be used as cattle feed for large

farming operations.

Prior to the summer, the waste belt cake that accumulated, depending on the volume of finished goods production that day, was being given away. The previous farmer was simply responsible for transportation costs.

With the new Tostitos Scoops line coming to the facility, Frito-Lay anticipates an increased volume of this belt cake and had to seek out an interested farmer who could handle the increase. The intern helped secure a deal with a feedlot out of Allen, Kansas, selling the belt-cake at \$2/ton, which, assuming a 20 ton/day load, six days a week, provides annual revenue of \$12,480. Alternately, if the intern had been unable to find an interested buyer, it would have cost \$40/ton to send it to the landfill, or approximately \$249,600.

4. TerraCycle campaign
Frito-Lay North America has recently teamed up with

TerraCycle recycling, a company that promotes reuse of common household food items and keeping them from landfills across the country. This collaboration was formed to promote the recycling of used chip bags to be made into school folders, tote bags, and pencil holders.

On July 1, 2009, the intern kicked off the TerraCycle campaign by putting on a contest between first-, second-, and third-shift employees to see which shift could collect the most used chip bags from their family, friends, and churches. Articles were published in the site's weekly newsletter promoting the contest, and recycle bins for each shift were placed in the break room. The contest saw huge results, collecting more than 3,500 bags in less than four weeks. Although providing no monetary reward for the site, this contest helped the employees of Frito-Lay Topeka feel like they themselves are environmental stewards, and evoked excitement for recycling so that they can be aware of what they are putting into the landfill.

Summary of 2009 E2/P2 intern recommendations for Frito-Lay

Project description	Annual estimated environmental impact	Annual estimated cost savings	Status
Lighting project	1,978,672 kW	\$123,667	Implemented
Heat recovery	Not calculated	Not calculated	Further research needed
Waste belt cake	6,240 tons of waste	\$262,080	Implemented
Total savings *	1,978,672 kW and 6,240 tons of waste	\$385,747	
GHG reductions *	1,405.5 metric tons CO2e		

* Does not include projects that are "not recommended" or "further research is needed."