Project Overview

P3 Intern: Matt Koenig

Major: Chemical Engineering

School: University of Nebraska-Lincoln

Company Background

In 1957, McCain Foods, a company focusing on the production of appetizers was established. Currently, McCain Foods has a global presence, with sales in over 160 countries. At the McCain Grand Island site, more than 500 employees work diligently to produce a daily output of over 400,000 pounds of appetizers, predominantly onion rings. This facility caters to different clients, ranging from Hy-Vee to White Castle, by manufacturing a diverse range of onion ring varieties.

Project Description

In the summer of 2023, McCain Foods took on Matt Koenig from the University of Nebraska-Lincoln's P3 Program as an intern to assist them in increasing profitability and reducing waste. The primary focus was to minimize product waste while the secondary focus was to reduce utilities use.

Pollution Prevention Benefits

The goal for the summer project to reduce utility use and the amount of organic waste. All of the recommendations require capital costs; however, all of the recommendations except the freezer replacements have a payback period of less than 1 year. Additionally, the new freezers also provide improved performance which allows both increased profit and reduced waste.

Results

The pollution prevention benefits are summarized in Table 1.

Table 1: Pollution Prevention Benefits and Results of the Project

P2 Category	Annual Savings	Implementation Cost	Payback Period	P2 Benefits (per year reduction)
Water Use Reduction	$30,000	$5,200	< 1 year	30 $MTCO_2e$ & 5,000,000 gallons of water
Compressed Air Leak Fixes	$10,200	$480	< 1 year	125 $MTCO_2e$ & 130,000 kWh
Freezer Replacements	$933,000*	$12,100,000	2.9 years	48 $MTCO_2e$ & 160,000 lbs organic waste
Zone 3 Waste Reduction	$160,000	$2,700	< 1 year	43 $MTCO_2e$ & 147,000 lbs organic waste
Total	**$1,133,200**	**$12,108,380**		**246 $MTCO_2e$, 5,000,000 gallons water, 130,000 kWh, & 307,000 lbs organic waste**

*The annual savings for the freezer replacements do not include a 3.25-million-dollar profit increase that would be associated with the upgrade which allows the implementation cost to be 2.9 years.