Post Consumer Brands

Natalia Kaliszewski
Mechanical Engineering
University of Minnesota Twin Cities

Company Background

Post Consumer Brands' Malt-O-Meal facility in Northfield, MN is the largest ready-to-eat cereal manufacturing plant in the United States. Multiple production lines utilize steam as part of the manufacturing process of cereal and compressed air to operate multiple variations of production equipment.

"I learned a great deal about project management and manufacturing processes through my work with Post Consumer Brands this summer. I am thankful to MnTAP for providing the unique opportunity to make a difference in Post's energy use and I feel that my project will make a lasting positive impact for my company and the environment" ~ NK

Project Background

After an outside contractor completed an energy of assessment of the Northfield site, Post was still looking for more detail for a potential boiler system upgrade. Thus, the focus of this project was on improving the energy efficiency of the boilers and compressed air system, which included comparing different options for boiler system operation and replacement. In addition to energy and cost savings, there is an incentive to produce electricity on-site due to power reliability concerns.

Incentives To Change

A large amount of steam and compressed air is used in the cereal making process, which makes boiler and air compressor efficiency two top priorities for Post. Adding to this is the occurrence of power outages caused by storms, that add expense, wasted product, and additional work for employees. Post could benefit from generating their own on-site electricity to improve reliability and reduce operating costs.

"Our MnTAP intern Talia, came in and became part of the Post Consumer Brands family. She dove right in and collected numerous hours of research to assist us with improving our energy efficiency capabilities. With her dedicated focus on energy conservation it didn't take her long to identify several areas where we can start saving immediately. We will continue to learn from the information she provided and grow into the future supporting the efforts of energy efficiency and conservation."

- Jason Haugen, Engineer, Facilities,

Solutions

Install High-Efficiency Fire Tube Boilers

The current water tube boilers at Post Consumer Brands are reaching the end of their life. By replacing these boilers with high-efficiency fire tube boilers, Post would save 190,000 therms and $132,000 per year, and gain a faster reaction time to steam load changes in the facility.

Install High-Efficiency Water Tube Boilers

In the case that Post wants to keep all of their boiler types the same, high-efficiency water tube boilers could also provide savings to the facility. Water tube boilers would tie into the current boiler system well and have a faster startup time as compared to fire tube boilers. This option would save 44,000 therms and $82,000 per year in gas and maintenance savings.

Install a 1 MW Topping Cycle Combined Heat and Power (CHP) System

Due to the facility's grid reliability concerns, installing a cogeneration system could provide several benefits. By implementing a gas turbine as well as high-efficiency boilers, Post could save $967,000 annually from reduced gas use, maintenance, and continuous operation without power outage interruptions.

Identify and Repair Leaks in Bag House Compressed Air Lines

The air filtration systems in the plant are difficult to visually or audibly check for leaks because the leaks often occur inside the bag house and the ambient noise of the plant covers the sound of the leaks. By installing a flow monitor at the inlet to each bag house's compressed air line, the leaks could be identified and fixed. This would save the company $967,000 per year, assuming 7 leaks are found and repaired.

Recommendation	Annual Reduction	Annual Savings	Status
Replace boilers 1 and 2 with fire tube boilers	190,000 Therms	$132,000	Recommended
Replace boilers 1 and 2 with high-efficiency water tube models	44,000 Therms	$82,000	Recommended
1nstall a topping cycle combined heat and power system	900,000 kWh 190,000 Therms	$892,000	Recommended
Identify and repair leaks in bag house compressed air lines	12,000,000 kWh	$967,000	Recommended

MnTAP Advisor: Brent Vizanko, Associate Engineer