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ANDERSON ERICKSON DAIRY - SHRINK REDUCTION

COMPANY PROFILE:

Anderson Erickson (AE) Dairy, headquartered in Des Moines, Iowa, is the state's largest independently owned dairy company and has been providing premium dairy products since 1930. Known for its commitment to quality and freshness, AE Dairy sources its milk locally from Iowa farms, ensuring the highest standards for its products. Operating 24/7 with approximately 450 employees, AE Dairy produces a variety of milk products, sour creams, yogurts, ice cream mixes, cottage cheeses, and various seasonal products like eggnog, orange juice, and lemonade.

PROJECT BACKGROUND

AE Dairy receives an average of 870,000 pounds of milk daily, which is then processed, packaged, and stored in a cooler before delivery to customers. The difference between the raw milk received and the finished milk product stored in the cooler is tracked as milk loss, and referred to as 'shrink'. AE Dairy partnered with a 2024 P2 intern to evaluate and identify sources of shrink throughout the production process, and develop effective solutions to reduce product loss.

INCENTIVES TO CHANGE

AE Dairy is dedicated to reducing milk loss in its production process. By minimizing waste, the company not only demonstrates their commitment to sustainability and environmental responsibility, but also improves their overall operational efficiency. Through the implementation of advanced technologies and continuous process improvements, AE Dairy aims to maximize every drop of milk for production, reducing costs and fostering a more sustainable dairy industry. This proactive approach benefits the company's financial performance and aligns with its mission to provide top-quality dairy products while minimizing its environmental impact.

RESULTS

Air Blow System on VAT Line & PT8 to PT9 Line
Between each product run on these two production lines, remaining milk product must be emptied from the lines. Currently this process is accomplished by using water to flush the milk out, which results in product loss. If an air blow system was used instead, residual milk product in the lines could be pushed using compressed air instead of water. This would allow for the milk to be pushed back to the supply tanks and effectively recovered, reducing waste and improving operational efficiency. The air blow system is compatible with the facility's Clean-In-Place (CIP) procedures, which will minimize maintenance requirements. To ensure proper functioning, new Standard Operating Procedures (SOPs) for filter replacement and regular system inspections have been established. The air blow systems for these lines have been successfully implemented and are currently in use.

Air Blow System on Mix Proof Cluster
Between each production changeover, remaining milk product must be emptied from the lines and the filler machines. Operators perform a "canning off" process, where large stainless-steel milk cans are used to manually capture and recover milk discharged through the manifold valves. The process is labor-intensive and time consuming. Air blows could instead be installed on the mix proof cluster, with a sophisticated valve arrangement that would keep individual milk product lines segregated. The product remaining in the lines can be blown directly into the filler bowls, thus eliminating the need for canning off. To implement, SOPs and employee training will be needed to establish the new process.

SOP for Return to Cooler (RTC)
When excess product is brought back to the cooler warehouse

by delivery drivers it must be returned into cooler inventory (referred to as Return to Cooler, or RTC inventory). Processing returned products requires considerable time and labor for sorting and restocking, and if it doesn't happen right away it can lead to lost product and incorrect inventories. To improve this system, the development of an SOP will improve the handling and timely processing of RTC inventory. The SOP will improve inventory accuracy by adhering to first-in-first-out practices, which will reduce lost product and enhance operational efficiency. The new SOP process is currently under review by plant management.

Loss Log on End of Shift Cooler Report
A baseline assessment completed by the P2 intern generated detailed metrics of product loss from the facility's cooler. However, there is no additional data currently collected on an ongoing basis to track details of product spills and losses from the cooler. Adding a Loss Log section to the End of Shift (EOS) report would allow employees to collect and track detailed metrics on product loss occurring during each production shift. An EOS is generated at the end of each shift to communicate information about that shift to management and to the next shift of employees, and loss log data included as part of this report will enable detailed tracking and reporting of incidents, identify root causes of shrinkage, and improve overall efficiency. This recommendation has been successfully implemented, and management review of future data will identify trends and guide future improvements.

Cooler Bays Preventative Maintenance
Finished products in the cooler are stored in bays and are transported back and forth through a system involving conveyers, rollers, pallets, and a braking system. As mechanical failures occur – faulty brakes, loose rollers, etc. – they can cause product

spills, and maintenance staff may not always be aware of the issues. Implementation of a preventative maintenance program with regular maintenance inspections and repairs will ensure timely identification and resolution of equipment issues, and reduce product loss and down time.

Updated Procedures for Unloading Raw Material Tanks
AE Dairy uses three different types of sugar in its production process. Each type is delivered by tanker trucks and pumped into the corresponding product tanks. If one of these raw materials was inadvertently pumped into the wrong tank it would generate a significant amount of wasted raw material in addition to significant production downtime. Implementing a double verification system that would involve at least two plant representatives would eliminate the potential risk. The proposed multi-step process would incorporate cross-referencing the Bill of Lading, visual product inspections, and multiple employee signoffs. The updated process SOP has been submitted to management for review.

ENVIRONMENTAL AND ECONOMIC SAVINGS TABLE

PROJECT	ANNUAL COST SAVINGS	ANNUAL ENVIRONMENTAL RESULTS	STATUS
AIR BLOW SYSTEM ON VAT LINE & PT8 TO PT9 LINE	$116,592	489,267 lbs. Milk	IMPLEMENTED
AIR BLOW SYSTEM ON MIX PROOF CLUSTER	$46,654	196,023 lbs. Milk	RECOMMENDED
SOP FOR RETURN TO COOLER	$5,344	21,934 lbs. Milk	IN PROGRESS
LOSS LOG ON EOS COOLER REPORT	$5,344	21,934 lbs. Milk	IMPLEMENTED
COOLER BAYS PREVENTATIVE MAINTENANCE	$16,033	65,803 lbs. Milk	RECOMMENDED
UPDATED PROCEDURES FOR UNLOADING RAW MATERIAL TANKS	$25,000	10,000 gallons Raw Materials	RECOMMENDED