

Cookie Topping Device for South Coast Baking

Department of Mechanical Engineering
 ME 155 – Senior Design II
 Students: Ridge Bertuccio, Jessica Gartrell, Christian Ramirez,
 Majerle Reeves, and Abbie Sandquist
 Advisor: Walter Mizuno

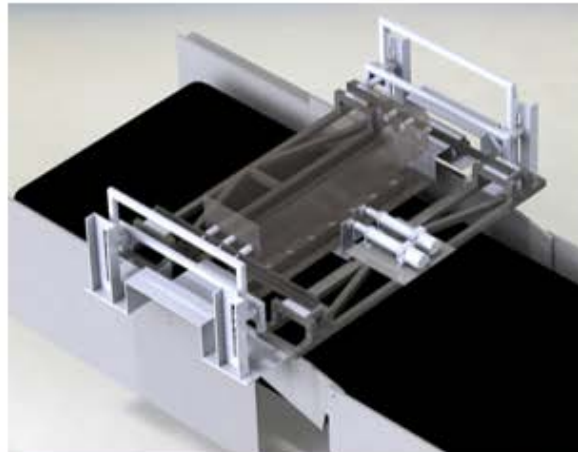


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Abstract

South Coast Baking, a cookie company in Irvine, CA, manufactures several types and sizes of cookies that include toppings such as sprinkles and chocolate candies. The current system used on South Coast Baking's manufacturing line wastes a significant amount of toppings each time the line runs. It also does not ensure a regular amount of toppings is delivered to each cookie. This project focuses on redesigning the topping system to sprinkle an assortment of toppings onto various sizes of cookies on the conveyor in a more reliable and precise manner. The design works to avoid excessive waste and improve consistency in topping amounts per cookie. It utilizes infrared sensors, linear actuators, and sliding gates to deliver a more consistent measured amount of toppings directly over each cookie.

Design

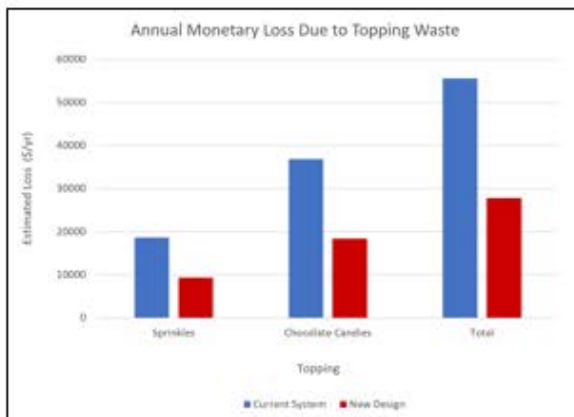


Functional Process



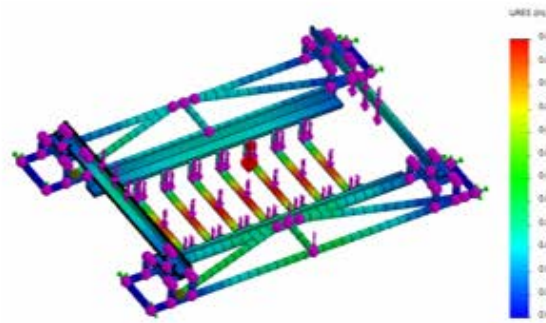
Cost Savings

Assuming the new system reduces waste by at least 50%, losses due to wasted topping can be reduced by \$27,782 per year. Since the budget for the new system is \$10,000, it will pay for itself in under a year.



Deflection Analysis

Reducing deflection in the system ensures smooth actuation which prevents components from binding up. Finite Element Analysis (FEA) was performed on the system in SolidWorks Simulation.



Improvements

This design improves upon the current system by:

- Reducing Waste
- Increasing Savings
- Increasing Company Market Placement
- Increasing Customer Orders
- Increasing Diversity of Product