

PEPSICO, INC.

Filler Recirculation to Reduce Carbon Emissions and Water Losses

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PepsiCo is a global powerhouse in the food and beverage business, reaching more than 200 countries with 22 billion-dollar brands including Pepsi, Gatorade, and Quaker Oats. With such far-reaching impact, PepsiCo strives to lead responsibly. To meet that goal, the company has developed efforts directed at creating a healthier relationship between people and food. This includes goals to limit their environmental impact. The organization has publicly committed to reduce absolute greenhouse gas (GHG) emissions across its value chain by 20% by 2030 and water consumption intensities in their operations by 25% by 2025.

The Tauber team focused on a resource conservation project that will reduce energy and water use during the production of Gatorade. During pasteurization, Gatorade is heated and then cooled, which requires fuel, water, and electricity. Due to the current system design, 10-15% of Gatorade production is not bottled during filling and as a result, it is re-pasteurized, resulting in increased GHG emissions and water losses. The team's objective, therefore, was to design and standardize process modifications that would result in substantial environmental and financial savings, and to gain alignment for the process change from leaders across PepsiCo.

The team's first step was to analyze historical filler data to quantify both the financial and environmental savings, and impacts on key thermal process parameters. Next, the team considered factors relating to food safety, food quality, ROI, technical feasibility, machine variation, robustness, and operational simplicity to develop a system design to maximize savings by ensuring full recovery of product that is re-pasteurized. At the same time, the team led a cross-functional group of executives from PepsiCo's Quality Control, Quality Assurance, Food Safety, R&D, and Engineering teams gaining their approval for a process change that would positively impact Gatorade production nationally. Finally, the team began early-stage implementation of the system modifications in multiple Gatorade plants, and developed a guidebook and roadmap for the PepsiCo Engineering and Sustainability team to systematically implement the process changes across the entire Gatorade network.

Successful implementation of the system modifications is projected to result in annual cost savings of \$660K. More importantly, it will result in a 4.6% reduction in absolute GHG emissions and a 0.8% reduction in water usage intensity. These represent 23% and 3.2% of PepsiCo's GHG and water reduction targets for the Gatorade business, respectively. Furthermore, if implementation across the Gatorade business proves successful, PepsiCo may investigate extending the project outcomes to other business units, which would multiply the benefit.