

The Greening of Gatorade

Cutting Greenhouse Gas Emissions and Energy Costs



Inefficiencies in the Gatorade processing lines provided a great target for PepsiCo's sustainability efforts. A Tauber team dug into the data, modified the process, and coordinated with multiple units to help PepsiCo slash absolute GHG emissions and water usage intensity while achieving significant financial savings.

Pepsi Beverage Co.'s sustainability team had a significant challenge with one of the food and beverage giant's leading products: During production, 10–15% of sports drink Gatorade is not bottled and must be re-pasteurized. Pepsi called on a Tauber team—**Steven Oranges** (Master of Business Administration) and **Thomas Walkinshaw** (EGL (BSE Mechanical Engineering & MEng Energy Systems Engineering))—to develop system modifications that would cut greenhouse gas (GHG) emissions and energy costs associated with the Gatorade processing lines. Doing so would contribute to meeting the ambitious sustainability goals defined in PepsiCo's Performance with Purpose initiative launched in 2006. The organization has publicly committed to reduce absolute GHG emissions across its value chain by 20% by 2030 and water consumption intensities in their operations by 25% by 2025.

Based at the Gatorade plant in Atlanta for 14 weeks, Oranges and Walkinshaw met the challenge through a systematic and comprehensive approach:

Step 1: Quantify financial and environmental savings, as well as impacts on key thermal process parameters, by analyzing historical filler data.

Step 2: Develop a system that ensures full product recovery to maximize savings, after analyzing multiple factors, e.g., food safety, food quality, machine variation, etc.

Step 3: Begin early-stage implementation of the system modifications in multiple Gatorade plants; develop guidelines for implementing the changes network-wide.

To ensure buy-in from PepsiCo leadership for changes that would affect Gatorade production nationally, the team led a group of executives from Quality Assurance, Quality Control, Food Safety, R&D, and Engineering, as well as senior leadership and plant leadership.

The system modifications the Tauber team recommended are projected to yield both cost savings of \$660K annually and environmental benefits—a 4.6% reduction in absolute GHG emissions and a 0.8% reduction in water usage intensity.

Navigating Change

In a project that required challenging legacy process specifications that have existed for more than 40 years, being fully engaged with the individuals and departments that would be affected is a priority—it's not just about systems design. Walkinshaw and Oranges needed approval from multiple leaders to move forward at different stages in the project, and they regularly interacted with about a dozen in face-to-face meetings in Atlanta and Indianapolis and via email. The team also led multiple conference calls and virtual presentations to leaders around the country. The Tauber team understood that getting sign off from the Quality teams on adjustments to or experiments with the existing process, even with solid data and executive sign off, would be tough, given the risk-averse nature of that discipline. Walkinshaw and Oranges were also cognizant of the challenges plant managers faced



Steven Skerlos
College of Engineering



Brian Talbot
Ross School of Business

Above, L to R: Chris McKenna, Pepsi; Thomas Walkinshaw, EGL; Steven Oranges, MBA; and Rod Chaney, PepsiCo.



in experimenting with their processes during the summer, which is their busiest production season, and appreciated their incredible support. The team spent a significant amount of time on the factory floors at Gatorade plants in Atlanta, Indianapolis, and Wytheville, VA.

Team Benefits

While the benefits of the project for Pepsi can be quantified, what did the members of the Tauber team come away with? Oranges said, "It was a premier chance to gain experience in a 'boots on the ground' manufacturing role. Working with my Engineer colleague [Thomas Walkinshaw] was illuminating and challenging, as we developed an almost seamless professional and personal relationship while complementing each other's abilities and pushing each other to grow."

Walkinshaw noted, "It was valuable to understand the perspective of where corporate sustainability initiatives stand within an organization and to experience some of the challenges that exist when working on such initiatives. Applying the many different engineering principles was a plus in terms of what the project added to my education. I also learned a great deal about business and utilizing the team's strengths from working with Steven [Oranges]."

The duo also benefited from the creative guidance of faculty advisors Brian Talbot and Steven Skerlos, and Walkinshaw noted that "Project mentor [Senior Principal Engineer] Chris McKenna was tremendously helpful in connecting us to the necessary people within PepsiCo."

Pepsi Beverage Co. Project Team

Student Team

Steven Oranges—Master of Business Administration

Thomas Walkinshaw—EGL (BSE Mechanical Engineering & MEng Energy Systems Engineering)

Project Sponsors

Tim Carey—Senior Director, Supply Chain Engineering Sustainability

Chris McKenna—Senior Principal Engineer, Supply Chain Engineering Sustainability

Faculty Advisors

Steven Skerlos—College of Engineering

Brian Talbot—Ross School of Business

About Tauber Team Projects

Tauber 2018 Team Projects resulted in \$564.4 million in savings according to sponsoring company calculations, an average of \$28 million per project over 3 years. Each two to three person Tauber Team consists of graduate engineering and/or graduate business students. Along with receiving high-level corporate support from the sponsoring company, each team is advised by a College of Engineering and a Ross School of Business faculty member and overseen by a Tauber Institute Co-Director. The projects begin on-site in May and continue for 14 weeks. Students present the results of their projects and compete for over \$40,000 in scholarships at the U-M Tauber Institute's annual *Spotlight!* event, held each September in Ann Arbor, Michigan. *Spotlight!* provides outstanding opportunities for students and corporate partners to establish relationships while exploring innovations in operations and manufacturing.

To learn more about the Tauber Institute for Global Operations, visit tauber.umich.edu or contact us at 734-647-1333.