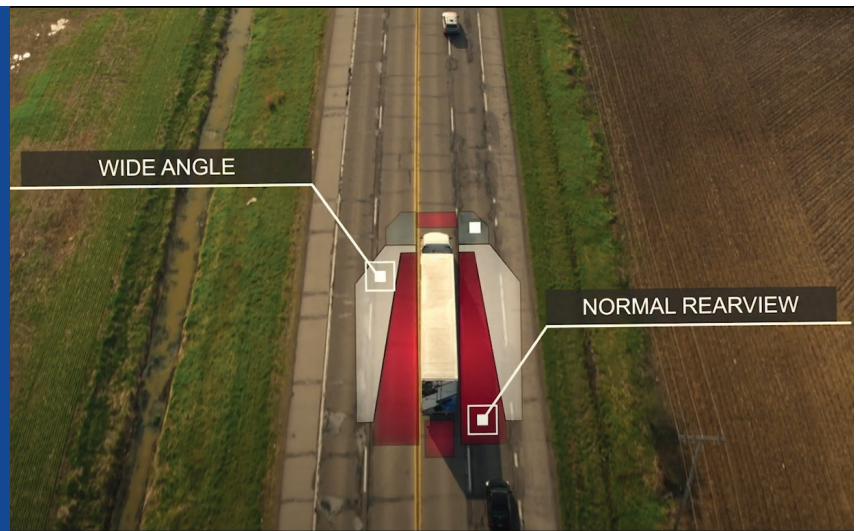




TAUBER INSTITUTE
FOR GLOBAL OPERATIONS
UNIVERSITY OF MICHIGAN

Value Stream Mapping and Waste Elimination in the Stoneridge MirrorEye® Supply Chain



Stoneridge, Inc. was founded in 1965 and is headquartered in Novi, Michigan. Stoneridge designs and manufactures precision electrical components, control devices, modules, and systems for the automotive, commercial vehicle, motorcycle, agricultural, and off-highway vehicle markets.

As a leading Tier 1 supplier in the worldwide automotive industry, Stoneridge solutions power vehicle intelligence systems, providing dramatic increases in fuel efficiency, reducing emissions, and improving safety and security for everyone on the road. Its technology and partnership-oriented approach to product development enables the company to develop next-generation products and excel in the transition from mechanical-based components and systems to electrical and electronic components, modules and systems.

Stoneridge has experienced rapid growth augmented by acquisitions, propelling its revenue to \$834.2 million in 2019. The company has three business segments; Electronics, PST Electronics, and Control Devices, together comprising 4,600 employees across 25 locations and 15 countries.

In recent years, Stoneridge's Electronics Division (SRE) has spearheaded the development of MirrorEye®, an innovative camera monitor system. This highly engineered product allows commercial truck operators and manufacturers to replace side view mirrors with cameras that relay video, including full color night-vision, to the driver through a set of in-cab monitors. Early tests of this system indicate a 2–3% fuel efficiency gain due to improved cab aerodynamics. In addition, increased driver visibility is projected to reduce trucking-related accidents by up to 30%.

As one of only two companies to obtain an exemption from the Federal Motor Carrier Safety Administration (FMCSA) to replace side view mirrors on commercial vehicles, Stoneridge is uniquely positioned to become a market leader in camera monitor systems.

To capitalize on this advantage, Stoneridge will launch a second iteration of this product, MirrorEye® 2, in January 2021. Demand is forecasted to grow rapidly in the next few years and Stoneridge management realized that its supply chain must adapt to meet the needs of its most complex product to date.

Above: A visual representation of the MirrorEye® system (stoneridge.com)

“The use of the simulation tool to test Stoneridge operations at varying levels of demand was probably the most innovative and unique feature of the project.”

Jordan Owens

In order to map the value stream in the MirrorEye® supply chain while evaluating opportunities to reduce waste and maximize efficiency, Stoneridge brought in a student team from the Tauber Institute for Global Operations at the University of Michigan, consisting of **Adrien Beauflis**, a member of the Engineering Global Leadership Honors (EGL) Program leading to BSE in Mechanical Engineering and MSE in Industrial and Operations Engineering degrees; **Nolan Feeny**, a member of the Engineering Global Leadership Honors (EGL) Program leading to BSE and MSE in Industrial and Operations Engineering degrees; and **Jordan Owens**, working on a Master of Business Administration degree.

To address this opportunity, the Tauber team first created value stream maps of the MirrorEye® supply chain. Next, the team analyzed the supply chain's production capabilities by building a



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simulation model and creating a capacity planning framework to plan out the investments required to meet demand.

“The use of the simulation tool to test Stoneridge operations at varying levels of demand was probably the most innovative and unique feature of the project,” said Owens.

“The final decisions as to the design and manufacture of the product had not yet been made, and we weren’t able to see the facilities in person,” he continued. “That made it difficult for the Tauber team to envision the current state of the program, and therefore it was difficult to suggest improvements for an ideal future state. That’s why we created the simulation model so that we could visualize the current state, and test out various options for the future state of operations.”

The Tauber team also recommended consolidating North American distribution flows at the company’s El Paso site and suggested improvements to quality checks along the supply chain. Finally, the team developed research-based recommendations for Stoneridge to improve its sales and operations planning process.

The implementation of these recommendations is expected to yield significant benefits, including an increase in inventory turns of 282% and a reduction in days of inventory of 68% over five years, while driving major efficiency and quality improvements throughout Stoneridge’s MirrorEye® supply chain.

Student Team:

Adrien Beaufiles – EGL (BSE in ME/MSE Industrial & Operations Engineering)

Nolan Feeny – EGL (BSE and MSE in Industrial & Operations Engineering)

Jordan Owens – Master of Business Administration

Project Sponsors:

Laurent Borne – President of Electronics Division and CTO

Archie Nimmer – Head of Operations, EU & India

Kyle Wolfe – AME Operations Consultant

Faculty Advisors:

Dr. Mariel Lavieri – College of Engineering

Dr. Brian Talbot – Ross School of Business

About Tauber Team Projects

The 2020 Tauber Team Projects resulted in \$433.8 million in savings according to sponsoring company calculations, an average of \$31 million per project over three 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! Team Project Showcase and Scholarship 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.

