

BROSE

Flexible Seat Track Assembly

Student Team:

Ji Hyun Kim – Master of Science in Engineering in Industrial and Operations Engineering
Ben Roos – Master of Business Administration

Project Sponsors:

Derek Caldwell – Director of Product Unit, Front Seat Structures
Joseph LaRussa – Director of Industrial Engineering, Seats Division
Victor Perez – Manager, Industrial Engineering, Seats Division

Faculty Advisors:

David Chesney - College of Engineering
James Price - Ross School of Business

BROSE is a family-owned global manufacturer of mechatronic automotive systems for seats, doors, and drives with 2019 sales revenues of €6.1 billion. Among the company's Seats, Doors, and Drives divisions, the Seats division continues to win more sales contracts from customers and needs to find solutions to better utilize the manufacturing capacity installed in its facilities.

Front row seat track products are divided among many variants, which can not be manufactured on a single assembly line with Brose's current equipment and result in substantial levels of underutilization. The project goals are to develop track assembly solutions that enable flexible production of the multiple categories of products, and enable capacity scalability to better match customer demand and improve the efficiency of capital expenditures.

To address this problem, the Tauber team first performed a capacity analysis to identify several consolidation opportunities in two of Brose's North American facilities. Second, the team developed a cost model to represent the cost of maintaining excess capacity, in order to communicate the financial implications of underutilized equipment. Third, the team drove suppliers to develop technical solutions that enable Brose's desired volume and variant flexibility, and analyzed the financial and strategic consequences of the new track assembly equipment.

The team produced a total of three recommendations. First, the team identified a 29% cost avoidance opportunity over the next six years in Facility 1, which does not require a novel solution. Second, the team developed and simulated a flexibility solution that would combine two programs in Facility 2 and avoid the purchase of a new manufacturing line, reducing capital expenditure by 35%, avoiding 26% of lifetime costs, and increasing average total utilization by 39%. Third, the team presented strategic recommendations for planned future projects using two new track line technologies that allow Brose to either scale track line capacity or flexibly produce all existing products on a single assembly line.