

Boat maker retools logistics to save money

Brunswick Boat Group, a Knoxville-based division of Brunswick Corp., is the largest maker of pleasure boats in the world. In 2005, the company joined the University of Tennessee Supply Chain Forum, an extension of the College of Business Administration's internationally ranked logistics program, becoming one of the forum's 35 sponsors.

In mid-2006, Brunswick asked forum faculty to help it with a key issue — how to optimize its boat distribution network and reduce costs. An issue facing many firms today — rapidly escalating transportation costs driven by fuel-cost increases, driver shortages and other factors

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Paul Minor,
director of logistics operations

— *drove the company's request.*

The company: Brunswick Boat Group has grown rapidly over the past five years, more than doubling the number of its brands through acquisitions. The Boat Group has 25 manufacturing facilities in North America, including one in Canada and one in Mexico, that produce more than 100,000 boats ranging from 10 to 100 feet in length. Product demand is highly seasonal.

Brunswick owns more than 600 trailers to transport boats to its roughly 6,800 dealer locations in North America. Many trailers are highly specialized to handle the larger boats. The company uses six dedicated company carriers, six private fleets and several one-way carriers in its delivery system.

The project team: The University of Tennessee team consisted of three logistics faculty members. Leading the team was Jim Foggin, a UT faculty member for more than 30



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Finished boats are loaded onto a truck at Sea Ray's Tellico plant in Vonore, Tenn. Founded in 1959, Sea Ray in 1986 became part of Brunswick Corp.

years. Foggin has expertise in network optimization tools and is especially skilled in the technology available from LogicTools, one of the world's leading providers of network optimization software.

Assisting Foggin were Mary Holcomb, associate professor, and Paul Dittmann, the forum's managing director. Also supporting the UT team was Brady Holcomb, formerly with Oak Ridge National Laboratory, who has significant experience in computerized simulation of distribution networks.

The Brunswick project team included Paul Minor, director of logistics operations; Wendy Thrasher, logistics manager compliance/ocean/inbound; and Greg Johnston, domestic logistics analyst. Both Thrasher and Johnston are graduates of UT's logistics program.

The issue: Saving transportation costs while improving delivery service to customers was the core issue faced by Brunswick. Because of Brunswick's explosive growth, the company's boat distribution network was not optimal. Boat transportation involved numerous long hauls, many with empty backhaul miles. In addition, it was challenging to use transportation equipment in a consistent manner because of month-end shipment spikes.

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BRUNSWICK BOAT GROUP

Location: First Tennessee Plaza Building

Suite 1700, 800 S. Gay St., Knoxville, Tenn., 37929

Contact: Paul Minor, director of logistics operations

Phone: 865-582-2200

Website: www.brunswick.com

service.”

The approach: The technology chosen for this project was optimization software from LogicTools. The software provided Brunswick with a state-of-the-art capability to model and to optimize its boat distribution network — ultimately maximizing its transportation efficiencies and reducing costs.

Once Brunswick approved the project, the first step was to gather and verify the massive amount of data needed by the optimization model to make sure that it accurately reflected Brunswick's current distribution network. Seven months of data were collected including: each boat's product specifications and requirements for safe transport; each manufacturing facility's production history and product-line specifications; each trailer's capacity for boat transport; customer information, including geographic location; carrier information, including which carrier is used to transport which product over which routes and the cost.

It took an intensive three months to build the required files and confirm accuracy. The optimization model was confirmed at a 97 percent accuracy rate, which was considered exceptional by the UT team.

Once the scenario of Brunswick's current distribution model was built, the UT and Brunswick project teams identified seven ‘what-if scenarios’ anticipated to provide significant savings for Brunswick. For instance, among the possible scenarios the team looked at were:

What would be the savings if shipping patterns were smoothed out to reduce seasonality?

What would be the potential savings if inventory were consolidated at several locations?

How could Brunswick best manage lower demand levels with certain customers?

Each scenario was put through the optimization software to identify its cost savings opportunities.

Results: With changes being phased in, the project thus far has identified more than \$5 million in cost-savings opportunities for Brunswick. Implementation is already under way, even as additional phases of the analysis are being completed and more cost-savings opportunities are identified.

The opportunities included:

- increasing the average number of boats hauled per trailer, which resulted in reducing the total number of shipments through the system and the number of trucks required to haul the trailers;

- reducing the number of trailer miles returning to the manufacturing facilities with empty loads;

- leveling off costs associated with shipping spikes and seasonality;

- maximizing the efficiency of the loading process at all manufacturing facilities by standardizing the loading process across locations;

- more efficiently assigning customers to factory locations.

With the additional analysis being completed, the UT/Brunswick project team believes there will be additional savings opportunities at least as great as what has already been seen.

“This is a first step,” Minor explained. “The opportunity to leverage and optimize from raw material sourcing to final delivery anywhere in the world — potentially for all Brunswick business units — will improve landed cost and improve service to our customers worldwide.”

To date, the analysis has dealt solely with increasing efficiencies involving outbound boat shipments. The second phase of this project will be to optimize the inbound shipments of material to the Brunswick boat factories and its in-