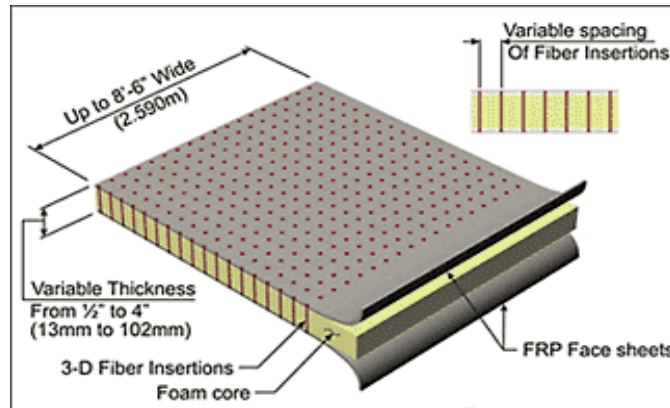


## New Machine Creates Superior Composite Structure

*Ebert Composites Produces Lightweight Fiberglass Panels Compete with Heavier Materials*



Ebert Composites' TRANSONITE<sup>1</sup> fiberglass-reinforced plastic panel with 3-D fiber insertions.

**The Challenge**—Until the late 1990s, specific U.S. fiber-reinforced composite products, when compared to metal bar stock and construction panels, lacked strength and were costly to manufacture. Poor performance was due mainly to an inadequate fiber-reinforcement structure and an inefficient manufacturing process.

In 1998, Ebert Composites Corporation proposed to design, build, and demonstrate a prototype machine that could precisely and rapidly insert reinforcing, vertically oriented glass fibers into and through layers of horizontally constructed composite material, allowing for the efficient, low-cost production of composite material that was almost equally strong in three dimensions. It applied for and won an ATP award.

**The Outcome**—As a result of the award, Ebert created an automated, multiple-fiber-insertion machine to produce large (48 inches wide by 4 inches thick), fiber-reinforced composite sandwich panels. Using a more efficient manufacturing process, Ebert developed TRANSONITE, a lightweight, high-strength composite sandwich panel with exceptionally strong and stable 3-D reinforcement fibers. Based on the project's technical accomplishments, Ebert obtained three U.S. patents.

In 2003, Ebert licensed Martin Marietta Composites to manufacture and sell TRANSONITE panels for use in rail car and trailer truck walls and panels. TRANSONITE is also designed for uses such as bar stock, air cargo containers, lumber replacement, recreational equipment, ballistic panels, marine construction, bridge decks, and industrial mats.

In 2005, Ebert and Martin Marietta Composites won awards from the American Composites Manufacturers Association for TRANSONITE. The Infinite Possibility Award was given to TRANSONITE for its "potential to significantly increase the use of composites in existing or developing markets, or generate the biggest impact to open markets." TRANSONITE won the Technical Innovation for Corrosion Application Award, presented to the product that "best incorporates corrosion-resistant features in the final product."

By late 2007, Ebert Composites expects to manufacture air cargo containers through its subsidiary, TRANSONITE Air Cargo Containers Corporation. These containers will be 25 to 30 percent lighter than existing aluminum air cargo containers, reducing fuel expenditures and consequently carbon dioxide emissions and greenhouse gas in the atmosphere.

<b>Partnering Organization:</b>	Ebert Composites, Inc., Chula Vista, CA
<b>Project Duration:</b>	11/1/1998 – 10/31/2001
<b>Project Cost:</b>	\$1.9M ATP cost-share; \$0.7M industry cost-share
<b>Project Brief:</b>	<a href="http://jazz.nist.gov/atpcf/prjbriefs/prjbrief.cfm?ProjectNumber=98-01-0097">http://jazz.nist.gov/atpcf/prjbriefs/prjbrief.cfm?ProjectNumber=98-01-0097</a>
<b>Project Status Report:</b>	<a href="http://statusreports.atp.nist.gov/reports/98-01-0097.htm">http://statusreports.atp.nist.gov/reports/98-01-0097.htm</a> Research conducted June 2006

<sup>1</sup>TRANSONITE is a registered trademark of Ebert Composites Corporation.