Boeing Completes First 7E7 Composite Fuselage Section

Boeing [NYSE: BA] recently completed the first full-scale composite one-piece fuselage section for its new 7E7 Dreamliner program, demonstrating concepts for 7E7 production that begins next year.

The structure, 22-feet (7-meters) long and nearly 19-feet (6-meters) wide, is the 7E7's first major development piece.

"This is a piece of aviation history," said Walt Gillette, Boeing vice president of Engineering, Manufacturing and Partner Alignment. "Nothing like this is already in production. Hundreds of aerospace experts from Boeing and our partners developed everything, including the design, tools that served as the mold, programming for the composite lay-down, and tools that moved the structure into the autoclave. "

He added that using composites "allowed us to create optimized structural designs and develop an efficient production process. We now see how all advanced airplanes will be built from this time forward."

The barrel section was built last month, after several months of development work. Building the piece, which includes stringers, started with computerized lay-down of composite tape on a huge mold. That mold was mounted on a tool that rotated the barrel as the tape was applied. The structure was then wrapped and placed in Boeing's autoclave for curing. The final step was unwrapping, inspection and tool removal.

The team subsequently cut out windows and doors, and tested a painting process. It also ran numerous tests to verify structural integrity.

Gillette added that "everyone will see benefits of this technology -- Boeing and our partners, our customers and the flying public. By integrating this into a single composite structure, we reduced the number of parts in this section significantly and reduced the weight by almost 20 percent. That will mean lower costs for the airlines while for passengers it enables us to have bigger windows, lower cabin altitude pressurization, and higher cabin humidity."

The team will build seven more development pieces, representing different sections of the airplane, throughout 2005.

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