

Boeing Provides Sonic Cruiser Technology Progress Report

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At the Farnborough Air Show today, Walt Gillette, vice president and program manager for the Boeing Sonic Cruiser, outlined the progress being made on five technology fronts as Boeing [NYSE:BA] continues to focus on this major product-development effort.

"We are making very good progress on the fundamentals required to create the Sonic Cruiser," Gillette said. "These fundamentals involve the technology needed for the airplane, the processes needed to create the airplane, and the basic configuration exploration activities necessary to reveal the very best shape for the airplane."

The Sonic Cruiser airplane concept was unveiled in March last year. The airplane would have a dramatic new configuration and would be designed to fly as fast as Mach 0.98, shortening travel times with fuel efficiency per passenger comparable to today's best performing widebody twinjets. As part of the normal product development process Boeing also has developed two other alternative applications of the technology being used on the Sonic Cruiser and is asking for airline input.

Gillette characterized the current phase of development as a "learning" phase and said that progress is measured by how fast the team is learning about the technologies, tools and processes that will allow it to create an all-new class of flying machines.

Configuration Technology Progress

Advancements in computational fluid dynamics (CFD), the computer coding used to evaluate and develop the aerodynamic flows of structure, have been instrumental in allowing rapid learning on the Sonic Cruiser program. Gillette noted that a second round of wind tunnel tests continues to verify that the CFD coding is predicting performance to within 1 percent.

"That means we can do a lot of learning before we ever get to the wind tunnel," he said. "We've looked at more than 25 wing planforms, 50 nacelle shapes and 60 fuselage designs in the past 16 months. We could never have done that on earlier programs."

Materials Technology Progress

The discussion concerning the primary materials for the Sonic Cruiser continues, according to Gillette. The current design assumes that the new airplane will be about 60 percent composite material.

Boeing has built a test fuselage section to examine both the build process and the material properties of one of the proposed composite materials. The 20-foot long section is being used to test installation techniques, durability and repairability.

"Competition is a wonderful thing," Gillette said. "As soon as we started talking about this being a mostly composite airplane we began to get very interesting proposals from the aluminum manufacturers regarding new alloys with better properties and economics. We are looking at those proposals and evaluating what will be best for the airplane. At this phase of development, we aren't ready to make a decision about materials and that lets us keep an open mind and evaluate all the possibilities to find the best answer."

Manufacturing Technology Progress

Manufacturing experts are already at work on the Sonic Cruiser program, helping engineers understand how their very early choices can improve the way the airplane is eventually built. Boeing has demonstrated considerable progress in applying new manufacturing techniques and concepts to dramatically improve the way its current models are built. Gillette said such progress will be a foundation for ensuring the efficiency of the Sonic Cruiser build process.

One example offered was the application of the Lean Manufacturing technique of a moving line.

"Boeing has been able to reduce production time by half on one of its production lines through the introduction of the moving line," Gillette said. "The improvements are continuing. Even if we assume a very conservative rate for the continuation of improvements, we can expect that by the time we start building our airplane we will have significantly improved the efficiency of our build process."

Systems Technology Progress

The focus of Sonic Cruiser systems work is primarily on better generation and use of energy for the airplane.

The Sonic Cruiser is likely to be a "more-electric" airplane, according to Gillette. He noted that some systems traditionally powered by engine bleed air could be powered by electricity on the Sonic Cruiser allowing the engines to be more efficient.

In addition, there is a strong emphasis on designing a flight deck that will increase the pilots' situational awareness through enhanced avionics and on-board computers. Passengers also will benefit from advanced systems with a better cabin environment and improved in-flight entertainment options.

Environmental Technology Progress

Fuel usage, noise levels and emissions are key environmental performance measures for any commercial airplane. The Sonic Cruiser, thanks to advanced technologies and its revolutionary configuration, will perform well in all three areas.

Though it has a 15 to 20 percent speed advantage over conventional airplanes, the Sonic Cruiser will use about the same amount of fuel per passenger as today's widebody twinjet airplanes.

The noise footprint of the new airplane will be about 30 percent smaller than the 767, which carries a similar payload. New noise regulations likely will be in place before the Sonic Cruiser would enter service in 2008. While these standards have yet to be set, Boeing analysis shows the Sonic Cruiser will be even quieter than the regulations require.

The Sonic Cruiser also would utilize the best available technology to give low emissions of oxides of nitrogen, hydrocarbons and carbon monoxide.

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