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**THE WALL STREET JOURNAL**WSJ.com

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OCTOBER 8, 2009

## Dreamliner Production Gets Closer Monitoring

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EVERETT, Wash. -- To get the troubled 787 Dreamliner back on track after more than two years of delays, officials at Boeing Co. are counting on interpreters who can handle 28 languages, earthquake detectors and **high-resolution video cameras**.

The features are core to a major overhaul of production methods that Boeing hopes will tighten control, provide more information and speed work in its belated effort to get the Dreamliner off the ground. The U.S. aerospace giant is playing catch-up because it overreached six years ago, when it set out to make the world's most high-tech passenger jet but didn't prepare sufficiently for the project's complexity.

At the time, Boeing took the unprecedented step of outsourcing most of the Dreamliner's manufacturing. Boeing had previously designed and built its planes in-house, bearing the whole expense. But early this decade, when air traffic plunged after the Sept. 11 terrorist attacks, top Boeing executives balked at investing more than \$10 billion to develop a new plane.

Instead, suppliers would independently bankroll their parts of the project, sharing costs and risk. Investors liked the idea, lifting Boeing's stock price from a low around \$31 per share in August 2003 to a high above \$107 in July 2007.

But when factory workers here started assembling the first Dreamliner around the time the stock hit its high, the system's flaws became clear as quality suffered and major components weren't completed. Many suppliers were accustomed only to manufacturing from blueprints supplied by Boeing -- they weren't ready to manage sub-contractors or get designs approved by safety authorities. Others couldn't increase production fast enough. Boeing, which had earlier culled its own engineers to cut costs, was stretched too thin to monitor and fix blunders.

"The initial plan outran our ability to execute it," said Boeing Chief Executive Jim McNerney. "I think we got the balance wrong at the beginning of this program."

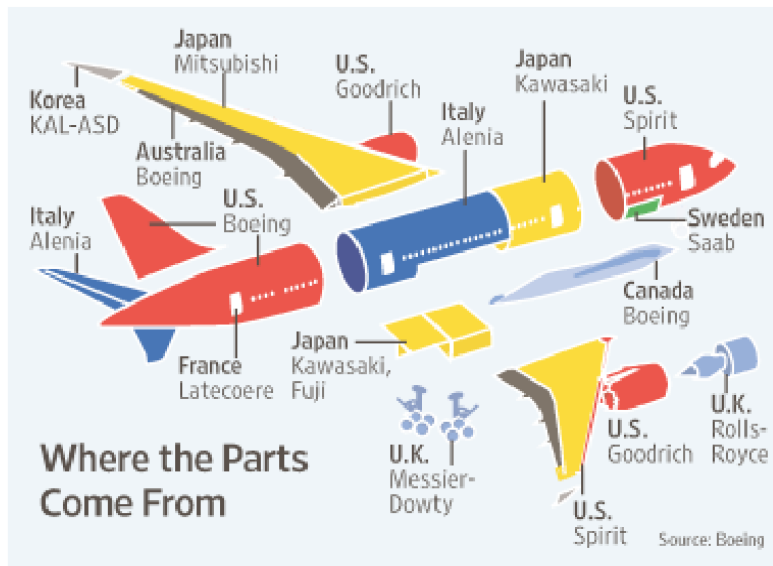
In recent months Boeing has been trying to draw a line under the Dreamliner's problems by improving communication, taking major production lines back in-house and adding engineers to oversee work.

Scott Carson, the chief of Boeing's jetliner division who launched many of the changes, stepped down from his post on Sept. 1 and said he would leave the company by the end of the year. Boeing said Mr. Carson and his successor, Jim Albaugh, weren't available to comment.

The Dreamliner's first test flight, which Boeing abruptly canceled in June because of a technical problem, is now scheduled for year-end. The first delivery, to Japan's All-Nippon Airways Co., is promised in the fourth quarter of next year.

People close to the program say the first flight appears on track, although the first delivery could slip. Suppliers and customers applaud Boeing's moves, but say their success will take months to judge.

Vital to Boeing's plan for keeping the 787 on track as it starts building the 850 planes on order is a space center-style control room -- officially called the Production Integration Center.



One of the hub's wide glass walls overlooks the Dreamliner final assembly line, where the plane's body and wings come together. On the opposite wall, 24 big screens display information including overseas shipments of parts, urgent technical questions and even earthquakes around the globe, which could misalign factory equipment and cause delays.

**Suppliers as far afield as Australia, Italy, Japan and Russia can call in through**

**translators and show Boeing engineers in the center close-up images of their components using high-definition handheld video cameras.**

**Robert Noble, Boeing's vice president of supplier management who runs the 24-hour center, says immediate, multimedia communications have eliminated the problem of often unclear email exchanges between distant engineers who work on opposite ends of the clock. "That takes days out of problem resolution," he says.**

Still, Boeing's problems with the Dreamliner have had widespread repercussions.

Suppliers are suffering financially because of the delays and many are hesitant to invest heavily again. This could cause problems for Boeing in the coming months as it attempts to negotiate with suppliers to increase production output.

Meantime, both Boeing and rival Airbus, which has faced similar development problems on its A380 superjumbo, are slowing jetliner development work significantly to avoid additional hasty mistakes. That means new models are likely to hit the market more slowly than the industry had predicted.

As Boeing grapples with its extended supply chain, it is also taking part of the program back in-house. In March 2008, Boeing bought Vought Aircraft Industries Inc.'s 50% stake in Global Aeronautica, a joint venture with Italy's Alenia Aeronautica SpA to assemble fuselage sections in

Charleston, S.C. Terms weren't disclosed. Then, this July, Boeing bought Vought's own Charleston factory, which makes the 787's rear fuselage sections.

Boeing says it recently added additional project engineers, who were brought from other divisions of the company and will be responsible for specific parts of the airplane, such as its structure, computers and electrical systems.

But these moves come late for cash-strapped suppliers, many of whom also invested in the superjumbo being produced by Airbus, a unit of European Aeronautic Defence & Space Co.

François Bertrand, chief executive of French aerospace supplier Groupe Latecoere SA, says his company invested €200 million (\$294.9 million) to develop components for both planes and secure long-term positions on the marquee projects. But with returns on the two investments lagging, Latecoere late last year had to renegotiate bank debts to gain financial breathing room.

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