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Dreamliner's journey from crisis to flight

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Strolling down 18th Avenue in Seattle's Capitol Hill district, Randy Tinseth suddenly stops and squints against the evening sun.

"That'll be the 787," Boeing Commercial Airplane's marketing chief grins, pointing up at the belly of an aircraft flying overhead. "It's great to see it in the air."

The 787 Dreamliner is Boeing's most sophisticated plane yet, not least because it is the first aircraft that has a fuselage made out of composite material rather than aluminium sheets riveted together.

It will be light and fast - and its Rolls-Royce and General Electric engines will emit 20% less carbon dioxide than similarly-sized planes do today, Boeing insists.

Following its first flight in December 2009, half a dozen Dreamliners have been criss-crossing the skies over Seattle, conducting continual flight tests from Paine Field in Everett, where they are being built.

This weekend, the aircraft is set to land at Farnborough in the UK for its first appearance at an international air show. It is expected to be the main attraction.

SUPPLIERS AND TECHNOLOGY

In Boeing's vast factory in Everett, just outside Seattle, workers are busy sorting out last-minute niggles in a series of three aircraft.

These are the first Dreamliners that will be delivered to airlines. Launch customer All Nippon Airways will get its first plane by the end of this year - if all goes according to plan.

Milling about like ants, the workers are eager to prove that they are up to the challenge.

Producing any aircraft has always been an incredibly manual process that requires great skills - much more so than car production, for instance, where robots are used extensively.

But in the case of the Dreamliner, the challenges have been greater than normal.

The workers here have had to familiarise themselves with a host of new technologies, ranging from complicated electrics to new materials.

They have also had to struggle both with poor logistics management and with parts shortages, resulting from Boeing's bungled attempt to outsource much of the work to external suppliers.

The problems - ranging from less than 100% complete pre-stuffed sub-assemblies, fastener shortages and poor modelling - have resulted in the project being about two-and-a-half years behind schedule.

PERSISTENT PROBLEMS

To Mr Tinseth, it is personal.

The executive has been with the company for 28 years, so it clearly pains him to acknowledge that Boeing may have been overly ambitious in its attempts to introduce both new materials and new manufacturing processes at the same time.

"Probably the biggest issue we've had is in terms of our supply base and our supply network, getting everyone on the same page, ensuring that all the work is done by our suppliers at the right time," he tells BBC News in an interview.

And although Boeing has been wrestling with these issues for months now, the problems are not going away.

Last month, Boeing discovered that tail parts on some Dreamliners had not been properly fitted, an error that could take eight days per plane to fix.

"With so much of the 787 being outsourced, the worry now is that there could well be other components embedded deep within the airplane that may need to be checked too," says aerospace analyst Saj Ahmed.

"Boeing simply cannot continue to have issues like this crop up every few months - the cost of production slow-downs and even pauses cuts into program profitability."

LONG-TERM SUCCESS

Others, both rivals and industry observers, have been more forgiving.

"We've heard a lot of criticism about Boeing not making it on time, but none of those comments have come from [arch-rival] Airbus," according to Damien Lasou, aerospace analyst with Accenture, a consultancy.

"Airbus and Boeing both know how difficult it is to get a groundbreaking aircraft to market."

Aviation consultancy Ascend agrees and says the "programme delays should not impact long-term success" for the aircraft.

While an aerospace expert with a major North American institutional investor, who recently met Boeing's management, says "their body language and tone of voice was the most confident that I've seen in a couple of years".

Strong sales

Seen from the pilot's seat of a Dreamliner simulator, there are reasons why they should be optimistic. Boeing has worked hard to make sure that although the 787 is very different from its other aircraft, it is very easy for pilots to make the transition.

Only five days of training are required for pilots who are used to flying other Boeing planes, such as the 737, the 767 or the 777.

Unusually, Boeing has also been getting involved in kitting out the Dreamliner.

Customers can chose from a small selection of seats, entertainment systems or galley equipment from a small number of suppliers, with whom Boeing has already agreed prices.

The suppliers get access to a closed market. In return, they share the risk of the project. This helps cut the prices that customers pay and saves everybody time and effort, Boeing insists.

But what airline customers like the most is the feel of the Dreamliner's cabin, with its extra-large windows, greater humidity and increased cabin pressure.

"We selected the Dreamliner specifically as we believe this aircraft will offer our passengers the best in-flight experience," says Chris Browne, managing director of Thomson Airways, the 787's launch customer in the UK.

MORE ORDERS?

Boeing currently has 860 Dreamliner orders on its books from customers in 56 countries, worth almost $150bn (£100bn), which Ascend describes as "Boeing's most successful wide-body programme sales launch in its history".

"Despite all the bad news, sales are still strong," Ascend observes. "The 787 looks likely to set the benchmark for all future wide-body programmes."

Australian airline Qantas has ordered 50 Dreamliners, which it hopes will help its budget subsidiary Jetstar move into Southern Europe and Asia.

"It will be ideal for point-to-point flying on medium density routes, both short and long-haul," says Qantas' chief executive, Alan Joyce.

So although the aircraft maker insists that it never stores up orders to announce them at major industry events, it seems likely that the tally will rise sharply during next week's Farnborough air show.

"We think this airplane is placed in the right market at the right time," Mr Tinseth grins.
