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Redesigning the A350: Airbus' tough choice

What do we make of the news last week that the heads of the top two aircraft lessors in the world think the Airbus A350 falls short and will be a distant second to the Boeing 787? Airbus Chief Operating Officer John Leahy thinks the A350 is just fine as is. Is this simply hubris or will Airbus make changes?

Steve Udvar-Hazy, the CEO of International Lease Finance Corp., and Henry Hubscham, the president of GE Capital Aviation Services, are in agreement that the A350 doesn't measure up to the 787. Hazy, who has ordered more Airbus planes than any other company in the world, seemed to be on a campaign to get Airbus to improve the A350. He's ordered 16 of them (and 20 787s). He and Leahy have a decades-long relationship.

Hubscham is newer to the aircraft leasing business, but as head of the giant GECAS, a unit of General Electric, also carries a lot of clout. Sister company GE Aircraft Engines supplies powerplants to Airbus airplanes. GECAS has ordered 10 A350s but so far no 787s.

Hazy is anything but shy and almost certainly has privately told Leahy of his views. But Hazy, known as one of the shrewdest, most capable and powerful people in commercial aviation, began going public with his views about the A350 last month. The tactic is clearly designed to increase the pressure on Airbus to further upgrade the airplane. Hazy called on Airbus to announce improvements by the Farnborough Air Show, or risk placing Airbus in a far-distant second position in the middle-size wide-body market for the next two decades.

Hazy's public campaign picked up steam during an interview with *The Everett (WA) Herald*, the hometown newspaper to Boeing's wide-body plant in Everett. Following the delivery ceremony of one of ILFC's 777's, the first 777 for ILFC customer Aeromexico, Hazy told *The Herald's* Bryan Corliss that the A350 was inferior to the 787. Corliss wrote up a brief of the item in his blog on his way out of town but didn't have a full story until the following Wednesday, March 29. (The link to this story is on our web site at www.leeham.net .)

A few days after Corliss's brief blog, the annual meeting of the International Society for Transport Aircraft Traders (ISTAT) began in Orlando (FL). Hazy, Hubscham and Steve Hannahs, CEO of the world's third top lessor, Aviation Capital Group, were slated to

appear on the second day of the conference. Airbus' Leahy was also scheduled to appear earlier the same day.

Airbus has had a tumultuous development of the A350. When Boeing first went public with its 787 concept, at the time known as the 7E7, with the plans for the composite fuselage, Leahy dismissed the plane—later known as the Dreamliner—was nothing more than another in a series of Boeing false-starts. Leahy's reaction was not altogether unfounded. Boeing had developed a reputation over the previous decade of relying on nothing more than derivatives and proposing fancy planes, only to pull back from proceeding.

But in this case, Boeing did proceed. Leahy's next reaction was to say all Airbus had to do was re-engine the very successful A330-200 (which effectively killed the 767 product line) to compete with the Dreamliner.

Airlines quickly voted with their order book by buying the 787 and rejecting the warmed over A330.

Airbus then decided to do a new wing for the A330 in addition to the new engines, but this still didn't turn on the marketplace. It took two more tries to come up with a "90%" new airplane, with the fuselage still the same cross section as the 40-year old A300 design from the late 1960s. Rather than go with a composite fuselage, Airbus chose aluminum lithium, saying this is more resistant to ramp damage that inevitably occurs to airplanes at the gate.

Observers, including this one, were quick to criticize the A350's reliance on the 40-year old fuselage.

Setting aside the debate over the composite vs. lithium, there is no getting around the fact that the fuselage is based on the original A300 cross section. Boeing was quick to point this out in comparing the 787 vs. the A350. Airbus responded by saying the differences in the interior were inconsequential—that the A350 is only 4 ½ inches narrower at armrest height.

The ironies involved on this debate are thick. For nearly 20 years, Airbus has bragged that its A320 is seven inches wider than the Boeing 737, making it more comfortable. Boeing responds by saying that at shoulder width, where it claims its surveys show that passengers rate space most important, the 737 has more room than the A320. (We find this argument ridiculous—our butt knows the difference between the narrower 737 seat and the wider A320 seat, and so does everyone else we talk to.)

Now, Boeing has adopted the Airbus argument and Airbus has adopted the Boeing argument. (It should also be noted than in nine-abreast seating in coach, the seat widths for the 787 and the A350 are the same at 17.2 inches, which is identical to the 737. At eight abreast, the 787 has a 19 inch seat and the A350 is 18.2 inches.)

Before the lessors panel at ISTAT, Leahy gave a spirited defense of the A350 in which he displayed (via Power Point) data showing the A350 interior design was slightly larger than the 787 in two of three measurements (but not at the arm-rest, where the A350 is 4 ½ inches narrower). He defied anyone to tell the difference.

That clearly didn't impress Hazy, who was in the audience for Leahy's talk.

In response to a question from this writer, citing the Byran Corliss blog, Hazy verified that Leahy was in the audience and then sailed into his public chastisement of the A350 and of Airbus.

(It isn't the first time Hazy has chosen a public forum to take an aircraft manufacturer to task. Hazy for years criticized Boeing in the media for its shortcomings and at ISTAT only a year earlier was pointedly effusive of Leahy and ignored the newly appointed chief Boeing salesman, Scott Carson, also appearing at ISTAT.)

How did Leahy take the criticism? We've known Leahy for nearly 20 years, and Leahy's public demeanor is nothing but confidence, often glib and always, always promoting the current Airbus design and thinking as if the products and strategy are perfect. His reaction was entirely in keeping with his long-standing approach.

In a short one-on-one interview after Hazy's comments, Leahy expressed confidence in the A350's design and said Hazy—and others—always want the "dream" plane. Using the Sonic Cruiser as an example, Leahy said, "we sell real planes, not dreams. Hazy votes with his orders," Leahy said, and Hazy at that time had ordered 16 A350s. Leahy did not add that Hazy had ordered 20 787s.

We could not help but be struck by the irony of Leahy's use of the characterization of a "dream" airplane when the 787 is called the Dreamliner. The Dreamliner has outsold the A350 by 2:1 (figuring orders and commitments), though it has to be noted that the A350 was only officially launched last October and the 787 received its first firm order in 2004. This is the first year in which the two airplanes will be head-to-head for a full year, and the outcome by December 31 will be a better comparison of the merits of the two airplanes in the view of the airlines and lessors.

Is Leahy's confidence in the A350 hubris or sincere belief? In all likelihood, a bit of both. Leahy was equally confident, at least publicly, in the initial three or four iterations of the A350, and each time Airbus had to scrap that design in favor of something more advanced. Leahy also told us more than a year ago that when Boeing comes up with a successor to the 737 that is wider and incorporates fly-by-wire controls, it will be the equivalent of the A320 so all Airbus will have to do is hang new engines on it to compete (shades of the initial A330/A350 iteration). Today, Airbus says the successor to the A320 will be composite.

Does that mean Airbus will concede and redesign the current A350 iteration? This remains to be seen. Billions of dollars in costs are at stake; by Hazy's estimate, between

$8 billion and $10 billion. But so is market dominance for the next 20-25 years. This is a pretty big incentive for Airbus to bite the bullet and redesign the A350.

But can it afford to do so? Or can it afford not to do so?

An Airbus spokesman had this to say, as reported in *The Financial Times of London:*

"Airbus and our customers are in constant communication on new aircraft development, at every level of both organizations," said an Airbus official. "This constant exchange is why the A350 is what it is today. We listen to our customers, and the marketplace overall, and expect the A350 to be the ideal aircraft for its mission when it enters service."

This official Airbus statement did not rule out a major redesign, but one given to *Business Week* certainly seems to:

The two executives' comments were an unusually sharp and public blow to Airbus, whose top salesman, John Leahy, was present at the conference. Airbus CEO Gustav Humbert phoned Udvar-Hazy and Hubschmann soon after the meeting, an Airbus spokeswoman said. However, she said Airbus has no plans to redesign the A350. Plans for the aircraft's design were finalized in January, "and that's the aircraft we are going to build," she says.

Despite the statement, does Airbus truly rule out a redesign?

Can Airbus Afford a Redesign of the A350?

Airbus is in the midst of its A380 program and has yet to deliver its first airplane. Thus, the billions of dollars in redevelopment costs so far represent a cash drain. The company will soon begin receiving cash flow (aside from any progress payments that have already been received from airlines) when it delivers the first aircraft before the end of the year. But with only 159 orders booked so far, the A380 program is well short of the 250-300 sales needed to break even. Airbus says it expects to sell between 700 and 800 A380s over the next 20 years, a quantity at which officials say the company will make a great deal of money.

(Parenthetically, Hazy has also said that he believes Airbus will sell only 300-400 A380s, echoing Boeing's forecast and that of some other analysts and critics. Airbus disagrees, of course, and we've got an Op-Ed column this week by a former Airbus official further discussing the market analysis of the A380 potential.)

Boeing launched the 747-8, a stretched and re-engined version of the 747-400 that also incorporates aerodynamic improvements. So far only a handful have been sold (fewer than 20), all to cargo airlines. The research and development cost of the 747-8 is unannounced but is thought to be in the $1 billion-$2 billion range, a pittance compared with the estimated $12 billion for the A380, and an amount Boeing can finance out of petty cash.

Hazy doesn't think the passenger version will sell very well. Regardless, every 747-8 sold represents one potentially lost order for the A380. If Boeing only sells 100 of these airplanes, this represents a theoretical denial of more than $200 billion in cash flow to

Airbus, not to mention the actual profits to Boeing. Not a bad return on investment either way for Boeing.

Airbus has the R&D costs on the A350 to contend with. The most recent figure we've seen on this is about $5 billion, with the possibility of up to one-third coming from launch aid from Airbus member states if the company decides to draw the funds. This, of course, is the subject of challenge by Boeing before the World Trade Organization; the outcome remains in doubt.

Hazy estimates that a totally new A350 will cost Airbus $8 billion to $10 billion (other estimates place it as high as $12 billion). With or without launch aid, we're talking real money here. The pressure will be greater without launch aid.

Aside from the financial issues is one of engineering resources. There is considerable market speculation—and so far, that's all it is—that Airbus' engineering talent is already stretched thin. In addition to the A380 and A350 programs and the engineers assigned to these, Airbus engineers are working on the KC-30 tanker proposal, which is based on the A330 passenger airplane; the new A330/A340 air freighter conversion program; refinements for the troubled A340 program; the program for the successor to the A320; and the military A400M. And Airbus is already designing the larger A380-900. Does Airbus have the resources to undertake a further major redesign of the A350?

Can Airbus afford not to redesign the A350?
This is a good question. Airbus, rightly or wrongly, is perceived to have a long history of difficulty with its widebody program. The perception of those we talk to is that Airbus can't get its widebody designs "right" the first time. The A300/A310 designs were considered inferior to the 767-200/300 in range and performance. The A340, a four-engine airplane coming at a time when the industry was already moving toward twin-engine airplanes, has always been a question-mark. The A330-300, while certainly a capable airplane, is second-best to the A330-200—a design which effectively killed the competing 767 product line.

The A330 is the first widebody airplane considered by critics to be a winner for Airbus. This was considered to be Leahy's airplane because it was designed for the American airlines, whereas the A300 and A310 were better suited for Europe's carriers. (The A380 is also considered by some to be Leahy's airplane, along with retired Airbus executive Adam Brown.)

Hazy says if Airbus doesn't design an entirely new A350, Airbus will sell only a few hundred of these and be relegated to a distant second to Boeing in the medium-widebody field, with his forecast of just a 25% marketshare for the A350.

Airbus is already two-three years behind Boeing's 787 with its A350. A further redesign could well delay Airbus another year or more. But is this fatal?

Not necessarily. The A320 entered service 20 years after the 737 and today outsells the aging Boeing product by almost 2:1. The A330 followed the 767 by about 10 years and the A330 beat the 767 hands down. And although we are loath to quote former Boeing Chairman Phil Condit on much of anything, he was correct when he once said that Boeing is often not first with an airplane but usually produces the better model. Witness the 737, which was third in the market segment it initially entered, behind the Douglas DC-9 and British Aerospace BAC-111. The 737 has outsold every other airliner except the venerable DC-3/C-47, whose production was exponentially boosted by World War II. The 767 followed the A300 and was a superior airplane. The 777 followed by years the A330/A340, DC-10 and Lockheed L-1011. The 777 was vastly superior to the DC-10 and L-1011, and while there has always been debate over the merits of the A330 vs. the 777 and some versions of the A340 vs. some 777 models, the marketplace certainly has made its choice for the 777 over the A340 today.

So the history is there; Airbus could be delayed but conceivably wind up with a better product than the 787 by coming up with a better design. Adding just nine inches to the fuselage width, for example, would allow the A350 to have wider coach seats than the 787 in nine abreast while preventing the airlines from going to 10 abreast—thus replicating the improved passenger comfort vis-à-vis the A320 compared with the 737.

Will Airbus undertake this redesign after "freezing" it in January?

For those with long memories, Boeing initially designed the 707 for only five abreast. United Airlines wanted six across and Boeing refused to widen its plane, which was already flying as a prototype. United selected the Douglas DC-8 instead, which was still only a paper plane at that stage and could easily be widened. A few more early orders went to Douglas, and only after Boeing realized it stood to suddenly lose its lead did the company widen the fuselage (as well as offer long-ranger versions). The rest, as they say, is history.

If ILFC's Hazy is right—and he usually is—Airbus may be better off biting the bullet and widening the fuselage. Better to get the plane "right" the first time than not.

By Scott Hamilton, April 4, 2006