Faster vs. bigger

Boeing Co. and Airbus Industrie are taking dramatically different routes and spending billions in their cutthroat fight to dominate the skies

By Matthew Brelis, Globe Staff, 5/6/2001

TOULOUSE, France - The full-scale replica of the double-deck A380 housed in a modern glass-walled building here on the Airbus Industrie campus is so large that it makes the mock-up of Airbus's longest plane, the A340-600, which is right next to it, seem like a narrow, single-aisle airplane. The A380 towers over the A340, which is a big wide-body twin-aisle aircraft that will seat 380 passengers. Airbus is going to spend between $10 billion and $12 billion developing the giant A380, a 550- to 650-seat plane that will finally crack Boeing's monopoly on jumbo jets held for 30 years with the venerable 747.

The Boeing Co. reacted slowly to the giant plane, saying the market for such aircraft was too small to justify the development cost, and air travel was fragmenting with more point to point service on 200-seat airplanes than trunk route service on jumbo jets. Yet Boeing salespeople spent more than a year trying to convince airlines to buy a 520-seat stretched version of the 747-400, which seats 416. That plane, known as the 747X, did not find a single taker, while Airbus gleefully announced order after order for the A380. But in late March, the Seattle-based Boeing fired back with a high-speed plane it says it can build that will cut hours from long flights without increasing airline operating costs. The bitter battle between Airbus and Boeing for supremacy of the skies has never been fiercer. It will not be clear for several years who the winner will be. The stakes are staggering: Development costs for new aircraft can run into the tens of billions of dollars and syphon off much of the considerable engineering prowess of each company. What is certain is that the two competing airplanes - one much larger than anything in commercial aviation and one about 20 percent faster than most commercial planes - will change intercontinental air travel dramatically.

Boeing has yet to commit to its new plane, which would seat between 150 and 300 and fly just below the speed of sound, between Mach .95 and Mach .98. Airbus has 62 firm orders for the A380, some of those obtained with steep discounts. The company expects to have 100 firm orders by the end of the year. Many in the airline industry believe a bigger plane, loaded with service amenities, could be something passengers demand, just like the 747 became the plane in vogue in the 1970s. And it might help alleviate congestion at some of the world's busiest airports. But a faster plane could revolutionize air travel the way the first commercial jetliners, the Boeing 707 and DC-8, did in the late 1950s, making conventional, slower jets obsolete on long-haul trips, or relegating them to the backpack set as high-spending travelers opt for speed.

In this southwestern French city where much of the giant double-deck A380 will be assembled, Airbus officials are fond of pointing out the numerous technological advances they have brought to commercial aviation, from common cockpits to fly-by-wire technology (which uses

electronic signals rather than mechanics to move control flaps) to composite material to make airplanes lighter and cheaper to operate.

And the first A380, which will seat 555 in three classes, will take Airbus's use of technology to new levels, says Robert Lafontan, Airbus vice president of large aircraft engineering and product development. Before Airbus voted to proceed with the project late last year, there were 700 engineers working on the new plane when it was still known by its development name, the A3XX. Once Airbus formally committed to build it, more engineers were brought to the program. Some 2,000 are working on it now, and by next year 4,000 will be working on the airborne leviathan, Lafontan said in an interview.

At one point several years ago, Boeing toyed with the idea of working with Airbus to build a superjumbo, and then pulled out of that effort, saying the market for large planes was not big enough to justify the cost.

On March 29, Boeing commercial airplane chief executive Alan Mulally said that his division of the aerospace giant would shelve the 747X and concentrate on the plane he dubbed the Sonic Cruiser. Boeing crowed that the delta-wing plane would be capable of flying at almost the speed of sound, at altitudes higher than other commercial traffic, and at a range greater than anything today, all without cost or environmental penalties. The plane would shave an hour off flights from Boston to Los Angeles, 90 minutes off flights to London, and three hours off long flights from the East Coast to Asia or the West Coast to Europe.

Checkmate?

Many are praising Boeing for a bold move that not only wrests the technology mantle away from Airbus, but also freezes the European company, which is now committed to the A380.

''From a manufacturer's perspective, one person is playing checkers and another is playing chess,'' said Gordon Bethune, who oversaw the 737 and 757 programs at Boeing before heading Continental Airlines. ''The guy playing checkers is dead.''

''They waited until the [A380] project gets launched and the other guys are committed to the project, and then they say: `We're going fast, not big.'''

It was, said Bethune in a recent interview, a deliberate sand-bagging strategy. ''[Airbus] can't catch up. They don't have enough resources since so much is committed to the big plane.''

If Airbus was caught flat-footed, the company certainly is not expressing any concern.

''You can't fault Boeing for their timing - no one likes to continually lose headlines to a competitor,'' said Airbus spokeswoman Maryanne Greczyn. ''The only time Boeing was mentioned was in noting how Seattle hadn't sold one 747X while Airbus continued to rack up orders for its new superjumbo.''

But Paul Nisbet, an industry analyst with JSA Research in Newport, R.I., said if Airbus officials are not worried, they should be. ''I would be very concerned, hoping against hope that Boeing has been exaggerating all this and trying to psych out Airbus or something. But I don't think Alan Mulally would personally make statements he could not back up.''

An airborne cruise ship

Airbus is looking at subsonic commercial airplanes, but virtually all of its focus is on the A380. The giant plane has been called a flying hotel, with duty free shops, restaurants, workout rooms, and showers. Derek Davies, an engineer by training and now the marketing director of the large aircraft division, clearly enjoys showing off the full-scale A380 mock-up here - especially the interior that Airbus envisions.

''Remember, this is five years before it enters service, and we are working on a bunch of cabin configurations, and we do not have anything finalized,'' he says before showing the plane to a visitor. ''What this is, is a concept of extreme first class.'' Extreme indeed. The two-story atrium that one enters is intentionally reminiscent of a cruise ship, said John J. Leahy, executive vice president of Airbus and the chief commercial officer.

Behind the wide staircase leading to the second deck is a social area and bar. In first class, storage areas are next to seats, not in overhead bins, adding to the feeling of space.

''This will be a completely new way to fly,'' said Leahy. ''Everyone will have more room. You could have a McDonald's on the third floor [the baggage compartment level]. On a flight you could walk around for 20 minutes and return to your seat. Forget about deep-vein thrombosis.''

So far, Fedex is the only US company to commit to the A380, but Singapore Airlines, a trendsetter in the industry, has a firm order, as does Virgin Atlantic and Air France, which will receive 10 planes between 2006 and 2009.

''If we could start tomorrow, we would put it on the New York, Miami, Los Angeles, Tokyo, and Montreal routes,'' said Jean-Cyril Spinetta, Air France's chief executive, in an interview with The Boston Globe.

''This new aircraft will be a money maker for the airlines that use it. The cost per seat is very low and in terms of marketing, it will offer a new style of travel. Maybe the airline that will not operate it will be, what the word, out of fashion is.''

British Airways, which is reducing capacity on its planes, has taken a pass on the A380. And no American passenger airline has ordered it. Indeed, only two US carriers - United and Northwest - still fly the 747.

Critics of the A380 contend it will be too big, creating long lines at check-in, baggage claim, even at the airport taxi stand. They say any amenities will go the way of the 747 piano bars, which were quickly

replaced with seats. And some say emergency evacuation issues on such a large plane will be tricky, a claim Airbus denies vigorously.

Airbus officials are confident the plane will succeed, maintaining that technological advances will keep its operating and maintenance cost low.

Lafontan said the 10-ton center wing box will be made of carbon fiber, reducing weight by 10 percent. The skin of the plane will be welded rather than riveted, which will result in additional savings. A fiber-metal laminate is expected to be used on the upper skin of the plane, further reducing weight.

Furthermore, Airbus plans to have a decentralized hydraulic system with pressurized reservoirs of fluid close to where it is needed to move flaps and slats. That would reduce weight by limiting both the liquid and the amount of piping needed.

''In the 1970s, we used to put technology in for technology's sake,'' said Lafontan. ''Today, we are putting technology in to have a business advantage.'' And Airbus's Leahy dismissed out of hand the idea of subsonic planes shaving hours off travel time without incurring a huge cost penalty. ''At Mach .95 you are going to burn a lot more fuel and save 10 percent of the time,'' he said.

''That sounds like a lot, but you burn so much more fuel your operating costs are much higher.''

The cost of speed

But the Boeing entry - which, at this point, is nothing more than a vision since the company has yet to commit to make it - has created an incredible buzz among aeronautical engineers as well as airline executives. So far, Boeing officials insist that powerful engines in use today could be used to power the sonic cruiser without a big increase in operating costs.

It may burn 20 percent more fuel, but it will get you there 20 percent faster and can fly one extra trip a day, increasing revenue, they claim.

Airbus isn't buying it.
''Our customers have told us in no uncertain terms that they are only interested in a subsonic aircraft if the time savings can by justified in relation to operating cost,'' said Airbus's Greczyn. ''And that simply can't be done with the technology the industry possesses today. ... We are very skeptical that Boeing has discovered a new law of physics, but they have discovered a new law of PR.'' Said John Hansman, a Massachusetts Institute of Technology professor of aeronautics: ''Operating cost is a concern and I will believe it when I see it.

But Boeing clearly understands the issues, and they will not commit to black magic. I am not concerned about that.

''This has injected some real enthusiasm into the commercial airplane design business because, for a long time, Boeing was making derivative airplanes,'' said Hansman. ''This is truly a new airplane and if they

are successful, and I have no reason to doubt they will not be successful, it will be extremely attractive to airlines.''

Boeing officials say they think the plane will enter service in 2007, but that could be earlier or later, depending on what airlines want the plane to do.

''We could build it today, or we can spend a little bit more time and put some more advanced technology into it,'' said Michael Bair, a Boeing vice president.

Boeing has approached about two dozen airlines regarding the high-speed plane and ''every one we have talked to is interested, which is pretty unusual,'' Bair said.

The profit from speed

The jet age is nothing more than an advantage in speed. And people have always been willing to pay a premium for speed. Sometimes, in the case of the Concorde, that steep fare is necessitated by operating costs. Other times, like Amtrak's Acela, it is simply a way to increase revenue. ''You take the guy working for Merrill Lynch and he has to go from New York to Tokyo,'' said Bethune. ''He can save the company some money by flying on a 600-seater, or he can spend more money and get there three hours faster. ...

What do you think he'll do? Time is comfort. People will take faster if they can afford it.''

If the high-speed plane is built, it could feature all business- and first-class seating, a determination yet to be made. ''We do not think this airplane will require a premium fare, but I'd bet a paycheck that the first routes this plane flies will be heavily frequented by first class and business class and the seats will be mostly first and business class,'' said Bair.

The sonic cruiser has the potential to segregate commercial air travel - which, for a service industry, has been a very democratic exercise since deregulation nearly 25 years ago. In the hotel industry, for example, there are luxury chains at one end of the spectrum and discount motels at the other.

Inside the aluminum cylinder of an aircraft, there are both the high rollers and the hoi polloi. The airline industry is cutthroat, and advantages are ephemeral. Fares are matched in a blink of an eye. Getting a new airplane that produces high yields could be an advantage that lasts months, seemingly a lifetime.

Imagine, says Nisbet, the industry analyst, what the high-speed plane could do if placed in direct competition on the same routes with the A380.

''It would just take away all the first-class passengers.''

''We all want to be the launch customer,'' said Continental's Bethune. ''We have to be. [American Airlines chief executive Don] Carty knows it.

Delta's Leo Mullin knows it. That plane will get other people's passengers. Some might say, `What will it cost us to have it?' That is not the question. The question is, `What will it cost not to have it?'''

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