

# Heating up in Paris

BY J.A. DONOGHUE | FROM PARIS



**While not global warming, the hot pace of orders at the Paris Air Show creates concerns about coping with a rapidly expanding world fleet.**

Paris Air Show 2007 displayed the energetic expansion of nearly every aspect of the global aviation industry, with tens of billions of dollars in sales commitments being announced, a development that was both encouraging and worrisome. While the vigorous economic health of the industry certainly is welcome, the infrastructure and training challenges that will accompany the delivery of the thousands of ordered aircraft must be considered with a degree of concern.

Airbus, to a much greater degree than Boeing, targets the show as a stage from which to announce major sales, and this year the European manufacturer outdid itself with 728 orders and options announced during the show's five days, with additional orders trickling in during the following days. Boeing and Airbus together got 545 firm orders during the show. Others announced sales as well, money changing hands so quickly that, by show's end, the value of sales tallied by just the three major





Dassault displayed its newly certificated Falcon 7X to the crowd.

Photos: J.A. Donoghue

engine manufacturers exceeded US\$20 billion, with Rolls-Royce alone claiming sales of more than \$15 billion.

Continuing a trend several years in the making, most of the orders came from the developing world, including the Middle East, Asia and Latin America. With many orders coming from new or rapidly growing airlines, most of these aircraft will be fleet additions, not replacements. Given today's shortage of pilots and other skilled aviation professionals, the source of additional crews for these new aircraft seems important to figure out.

Canadian simulator builder CAE Inc., which also has a training arm, estimates that 16,000 pilots need to be trained each year for the next 20 years to meet the demand in both the airline and corporate aviation markets. The company is expanding the capabilities of its global network of 24 civil training centers to handle corporate and airline training.

Alteon, Boeing's training subsidiary, forecasts an even greater demand, predicting the need for an average of 18,000 new pilots every year, plus 480,000 new mechanics during that 20-year period.

Europe-based Thales is making simulators for a wide range of new customers, including four full flight simulators for Rudradev Aviation's new airline training center in Chennai, in southern India; just before the air show, Thales announced orders for additional A320 simulators for Sichuan Airlines' new training center in Chengdu, China.

Avionics news at the show included the announcement by ACSS, the joint venture of L-3 Communications and Thales, that it had concluded development of its SafeRoute system, with certification by the U.S. Federal Aviation Administration (FAA) expected soon. Using automatic dependent surveillance-broadcast (ADS-B) technology, SafeRoute has two functions: surface area movement management (SAMM) and merging and spacing (M&S).

In the SAMM function, SafeRoute displays the equipped aircraft's own-ship position on a moving map of the airport surface, plus the position of any other transponder-equipped aircraft. The M&S mode allows airborne aircraft to line up behind and follow another aircraft at a precise interval.

Nicholas Sabatini, FAA associate administrator for aviation safety, said at the show that SafeRoute will enhance pilot "situational awareness and allow air crews to separate themselves." Sabatini also credited the work of UPS and Karen Lee, UPS operations director, for working with ACSS to develop the system, "leading edge stuff, way out there in front," he said.

Lee said the certification testing was "flawless in high density traffic," and she hoped to get SafeRoute into UPS service this month.





ACSS's SafeRoute simulates how an aircraft approaching an occupied runway would be warned (left). Gulfstream's PlaneView cockpit would use the primary flight display on the left for the synthetic vision presentation.



The system will be installed in class 3 electronic flight bags (EFBs) on 107 UPS 757s and 767s for use to control spacing approaching its hub in Louisville, Kentucky, U.S., from the west. Tests have shown that this ability will increase airport capacity by 10–15 percent, cut local noise 30 percent and reduce emissions 34 percent below 10,000 ft, Lee said. UPS's plan is to expand use of the system in Louisville, and it is considering using SafeRoute for its Cologne, Germany, hub, she added.

The SAMM function, Lee told ASW, not only will increase pilot situational awareness on the ground, but, with a glance at the display taking the place of following “a finger on the [airport] map,” creates a more head-up taxi environment.

Use of SAMM on a class 2 EFB seems likely to get FAA approval, which will dramatically cut the cost of equipping with the system, Lee said, but FAA “is still not confident about [approving] M&S” on a class 2 EFB.

Gulfstream, which pioneered the use of enhanced vision systems (EVS) in civil aircraft five years ago — 294 EVS-equipped Gulfstreams are now in service — plans to certify a synthetic vision system this year. Pres Henne, senior vice president for programs, engineering and test, said, “We’re looking for things that represent a difference, an advantage for our customers.” The synthetic vision view of what the world in front of the cockpit should look like, taken from a simplified version of an earth database, will be displayed behind the primary flight display (PFD) graphics, showing terrain, obstacles, airport layouts and other significant features,

providing pilots “a significant increase in situational awareness,” Henne said.

The next generation head-up guidance system (HGS) Gulfstream will adopt, a Rockwell Collins system Henne called HUD2, will integrate the EVS with synthetic vision in the HGS display.

Jeffrey A. Standerski, Collins vice president and general manager, air transport systems, said the HGS for Gulfstream, which Collins calls the 5860, will be the first HGS with active matrix liquid crystal display, and will have a wide field of view. Standerski foresees in the very near future the combination of EVS, synthetic vision, weather radar, traffic information and more on the HGS plate. Collins also builds the 2200 HGS for both pilot positions in the Boeing 787, using the same technology on its Embraer and Dassault installations.

Also using synthetic vision is a Honeywell PFD-displayed view of the world supplemented by radar sensors to guide helicopter pilots during takeoff and landing in “brownout” conditions (ASW, 12/06, p. 44). Called Sandblaster, the system currently is being developed under a U.S. Defense Advanced Research Projects Agency contract. While initial use would be by the U.S. military, Honeywell expects civil users would benefit from the system’s capabilities. ●

The Antonov An-148, recently certificated, flew daily at the show.

Photos: J.A. Donoghue

