

Some Encouragement From the Feds

Not surprisingly (and some might say, thankfully), most of the FAA's environmental attention these days is concentrated on the airlines.

"It makes the most sense to focus on the class of activity that contributes most greatly to the impact — commercial service," Lourdes Maurice, the FAA's chief scientist for environment, told us. "That has been our focus; all of our models are aimed at [the airlines]."

Lourdes admitted that in its tracking of aviation activity, the FAA does not have a separate category for business aviation, but rather wraps it into the general aviation category. "There are some privacy restrictions to the access of information on business jets operating in the system," she said. "We are working with IBAC to differentiate business aviation as a category. There needs to be some cross referencing; it isn't the same as the commercial carriers, where we have [DOT] Form 41 reporting data."

Environmental impact, of course is dominated by the commercial sector, and diminishes in descending order to business aviation and then to general aviation. "We look at workload measures," Lourdes said, "and if we consider operations, about 15 to 20 percent represents the business category — that is, jets and turboprops. But when we look at the emissions and noise, it falls below that . . . simply because the aircraft are smaller [than those used by the airlines]."

It's important to note the successes of aviation over the last six years, Lourdes continued. "If you look at our fuel usage over the last decade, it's been reduced for the commercial sector. There's been a shift in the type of aircraft there that we believe has contributed to a 4-percent decrease in fuel usage . . . but I can't speak for the business aviation side."

What can business aviation operators do to lower their environmental impact? "Within that context, you want to focus on operations," she answered. "Can the same things apply to business jets that apply to the commercial sector? You can reduce weight in whatever way possible, since a lighter aircraft uses less fuel. You can fly more direct routes and use continuous descent approaches [CDAs]. You can look at the efficiency of ground operations, like taxi time." And finally, Lourdes advised, install automatic dependent surveillance-broadcast (ADS-B) equipment in your aircraft to be ready for NextGen, the FAA's modernized ATC system, which is being built around ADS-B.

And how will NextGen contribute to reduced emissions? "It will facilitate a number of operational efficiencies, more direct routing, more efficient ground operations," Lourdes said. "We are also looking at advancing new aircraft technology and alternative fuels, as well. It's in the work plan." At this point, FAA public affairs officer Hank Price interrupted, citing "Flight Plan," the FAA's published proposal for its budget reauthorization, the congressional hearings which continue to drag on. The preamble to the document states that it is the FAA's goal to create "the most efficient global aviation system in the world . . . in an environmentally sound manner."

improvements are typically intended to enhance engine durability and extend TBOs rather than provide improvements in fuel consumption and emissions.

Blending Winglets for Performance (and Lots of Profit)

In terms of enhancing the efficiency of older airframes, particularly those designed without the benefits accorded by today's powerful computational fluid dynamics (CFD) software, one of the most effective retrofits is the installation of what were originally known as Whitcomb Devices, or now simply as winglets. One of the notable

business aviation aftermarket success stories in the past two decades has been Aviation Partners, the Seattle-based engineering company that developed so-called "blended" winglets for more than 10 types of business jets and airliners and numerous variants among them.

Starting with the Gulfstream II in 1993, Aviation Partners has extended its product line to the Hawker 800 and 800XP; Falcon 50, 900, 2000 and 2000LX; Boeing BBJ, 737-300, -500, -700, -800, and -900, 757-200, and soon, the 767-300ER and 777.

Company founder, CEO and Chairman Joe Clark said, "You can take an existing

airplane anywhere from brand new to 40 years old and save in the area of 5 to 7 percent on fuel by reducing the wingtip vortex drag." He continued, "Arguably, ours are the most effective that have ever been designed, and they're now on more than 2,400 airplanes." Clark said he believes that for the 767-300ER application, the Aviation Partners winglets will save operators 600,000 gallons of fuel annually.

A major endorsement for the firm's blended winglet technology has been its adoption by airframe OEMs Boeing for the BBJ and 737 product lines and Dassault for the Falcon 2000LX and, soon, the 900LX. Both these manufacturers are installing the respective winglet kits on their assembly lines, Dassault as standard equipment and Boeing for airline customers that have specified them as an option on their 737s. Aviation Partners has also worked with airline customers in programs for specific types, American for the 767-300ER project and that carrier and Continental for the 777. "I probably get 25 calls a day from people wanting to save fuel," Clark said. "We will address the ones with the broadest market, like the classic Boeings. If an airline comes to us and the business model works, we'll go do it."

Aviation Partners airline customers represent 88 different carriers from around the world. "The first were German carriers who had to deal with the green issue," Clark said. "They were being taxed on total noise and carbon footprint on an annual basis and could earn tax credits for reducing these, and that was one of the big drivers for us in that market. The payback [in price and installation cost] for them is about two and a half to three years in fuel savings."

While the first airline users were European, the carrier that really put Aviation Partners on the map was Southwest, which to date has ordered 540 shipsets for its all-737 fleet. "Other big ones are Ryan Air, Continental and American," Clark said. "Continental is putting them on every aircraft it operates, including the Boeing 777, which we will also do."

World's Largest Winglets for 'Fat Al'

Aviation Partners even took a crack at the Boeing 747 as a research project for widebodies back in the 1990s. Flight-tested aboard a 747SP, the winglets were 16 feet high with a chord of 13 feet at the wing attachment point. One of the prototypes is mounted on a stand at the entrance of Seattle's Museum of Flight at Boeing Field. While the prototypes were constructed of fiberglass, if they'd gone into production, they would have been fabricated from carbon fiber with aluminum leading edges. "The performance was compelling," Clark