

TWIN & TURBINE[®]

FOR THE PILOTS OF OWNER-FLOWN, CABIN-CLASS AIRCRAFT



BLR
PERFORMANCE INNOVATION

800.257.4847 US & Canada
425.353.6591 International
www.BLRaerospace.com
davemarone@BLRaerospace.com

More Than Just a

Pretty Face

Winglets add climb, reduce drag for the King Air 200





by Steven Parker

Airplane envy. We've seen it in others, and perhaps experienced it ourselves. And while looks aren't everything, there's no question that a great-looking airplane will turn heads and get people talking.

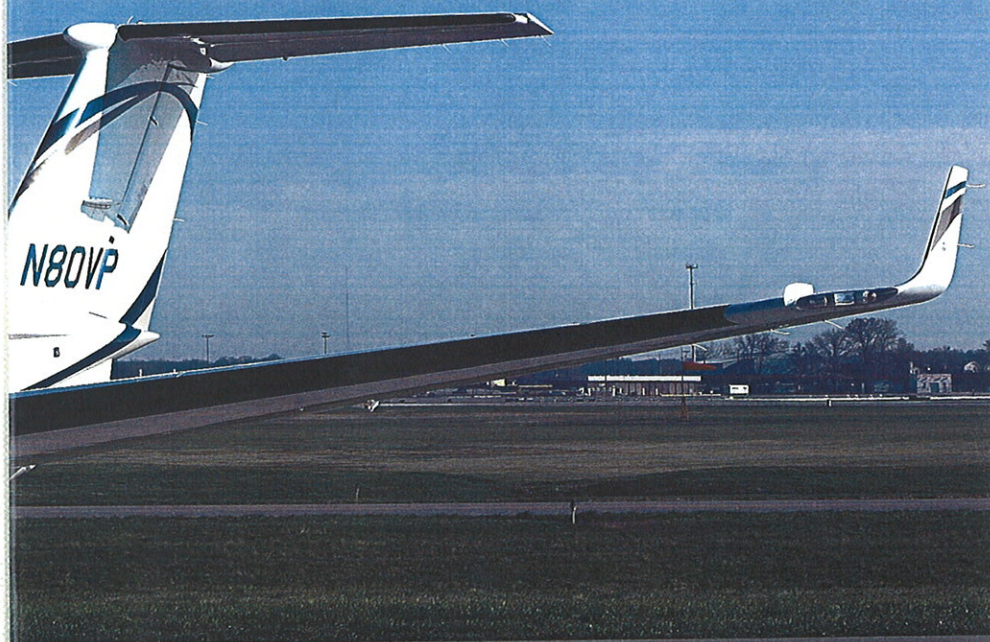
That's exactly what happened when BLR Aerospace unveiled its new Super King Air 200 winglet system at last year's NBAA convention. Drawn in by the winglets' modern good looks, pilot after pilot stopped at the BLR booth to admire – and inquire – about the system.

"There is definitely an aesthetic aspect to this product," says Dave Marone, BLR's director of marketing. "People love the way the winglets make their airplane look, although that's not usually what makes the sale."

The beauty of winglets is more than skin deep. Certified by the FAA in November 2005 for King Air 200s, the winglet system reduces drag, saves fuel, increases cruise speed and boosts vertical rate of climb while improving handling qualities for the King Air 200s on which they are installed. Less than a year after the initial product was launched, BLR earned certification for King Air 300 winglets. In addition, King Air 90 winglets are in development now.

"The new winglets look terrific and add an exciting appeal to our aircraft," said Freek de Villiers, an airline transport pilot flying for a corporation in Lanseria, South Africa. "But the performance is what really matters, and the winglets deliver."

When it comes to winglets, good looks, it seems, are just the icing on the cake.



Why Winglets?

Winglets are not really new. BLR began selling winglets for the Beech Duke in 1993. Over time, the company received an increasing number of requests to develop a similar product for King Airs. So, the decision to proceed was market driven but also reflected the company's commitment to develop worthwhile product improvements for both fixed-wing aircraft and rotorcraft.

"The decision was simple," says Marone. "First, customers wanted the product. Plus, airplanes should have winglets because they significantly improve the efficiency of most wings and increase the safety of King Air operations."

Development of the Super King Air 200 system started in 2003 but, because of the complexity and rigor required to show compliance with the numerous FAA regulations,



A King Air 200 with winglets can achieve RVSM flight levels that were previously not practical.

BLR did not receive FAA certification until late 2005. Certifying the addition of winglets to an aircraft wing is no simple task and requires a significant investment of time and money. Fortunately for BLR, sales have been extremely good. BLR has outsold production every

month since the King Air 200 winglets were introduced.

Word of mouth – pilots talking to pilots – has been invaluable to the sales and marketing effort, Marone says.

"When people ask me about winglets I tell them that I am thrilled with the product," says South Africa's de Villiers. "General handling and roll control, in particular, are superb, with a noticeable increase in climb performance. Approach speeds over the fence are reduced, with the attendant advantages."

Go With the Flow

Winglets work by reducing wingtip vortices. These twistors represent an energy loss. Just how much energy is there becomes apparent when you think about the vortices' ability to flip following aircraft that blunder into them.

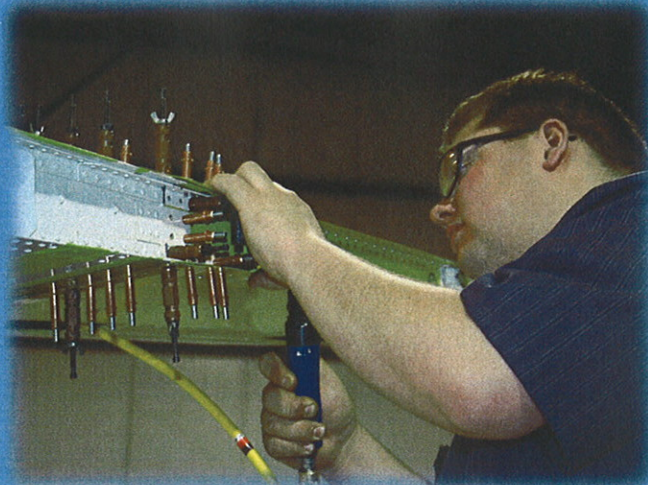
While the winglets shine at improving climb and low-speed handling, they also reduce drag – and that translates into slightly higher cruise speeds, generally between 4 and 8 knots. Operators may opt to take advantage of the drag reduction by throttling back to normal speed and pocketing the fuel savings, Marone says.

Manufactured by BLR in Everett, Wash., winglet kits are made of aluminum (wing extension) and carbon fiber (the winglet). Because of the efficiency of the design, the entire winglet system only adds 31 pounds to the empty weight of the aircraft.

However, part of the reason the winglets work their magic is because they extend the 200's wingspan (and aspect ratio) as well. The stock 54.5-foot span reaches 58 feet – a fact that may give pause to owners trying to fit the airplane through 60-foot hangar doors.

Winglet installation takes approximately 60 man-hours, or two people working three days. Kits may be purchased and installed through a

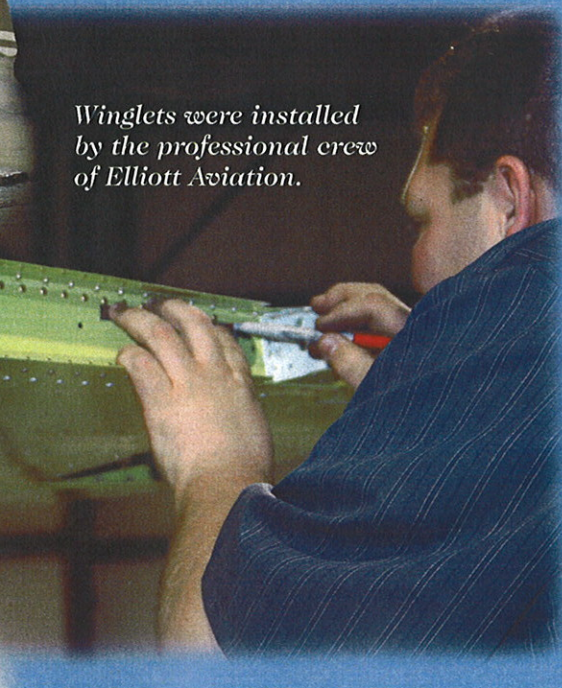




While the winglets shine at improving climb and low-speed handling, they also reduce drag – and that translates into slightly higher cruise speeds.



Winglets were installed by the professional crew of Elliott Aviation.





| | |
|---|-----------------|
| Winglet System: | \$49,950 |
| Installation Labor: | \$ 5,000 |
| Paint: | \$ 2,500 |
| Total Installation cost: | \$57,450 |
| Percentage of installed cost recovered by increase in resale value | 60% |
| Effective Cost | \$22,980 |

variety of dealers around the world, including Cutter Aviation, Elliott Aviation, Executive Flight, Flightcraft, Jet Center MFR, Galvin Flying Service, Landmark Aviation, Stevens Aviation, Mather, NAC (South Africa), Tulsair Beechcraft, Western Aircraft and Wiggins Airways.

The Bottom Line

In addition to increased cruise speeds, operators may realize an increase in rate of climb that ranges from 300 to 500 fpm, depending on density altitude. The advantage is that a King Air 200 with winglets can achieve RVSM flight levels that were previously not practical. Alberto Rossi, president of Palo Alto, Calif.-based Air Share, realized a 300-feet-per minute climb increase on his first flight with winglets installed and immediately noticed a significant increase in stability.

Fuel savings are also significant. A King Air that burns 100 gallons an hour could save approximately four gallons per hour with winglets installed. In the course of a year,

an operator who flies 500 hours could save 2,000 gallons of fuel, or \$8,000 to \$10,000 annually.

In addition to fuel savings, the overall return on investment is also turning heads, Marone says, because winglets can pay for themselves in a few years, depending on operations, the cost of fuel, and other factors, especially increased asset value.

Ken Glass, chairman of Stony Point Group in Asheville, N.C., installed winglets in March and quickly came to appreciate his King Air 200's new RVSM capabilities and other benefits.

"The change in performance is impressive," Glass says. "For the first time, we can effectively reach RVSM altitudes. At FL290 we are seeing five knots of additional cruise, and the return on investment should be less than three years at 500 hours per year."

All of this, of course, is gratifying to BLR President Bob Desroche, who has been involved with certification flight testing for almost 30 years and took a risk by investing heavily in the winglet development and launch.

"We're encouraged by the initial interest in the product and we believe winglets will have long-term appeal to the King Air community," Desroche says.

During the past 16 years, Desroche and his team have earned 60 FAA STC approvals for after-market aircraft modifications aimed at improving aircraft performance. And while Desroche won't say what new product enhancements BLR is planning, it might be safe to assume that, like winglets themselves, the company's future is "looking good."

T&T

Business case built on saving fuel

| | |
|-----------------------------|------------------|
| Hrs/Yr | 500 |
| Gals/Hr | 90 |
| Cost/Gal | 4.25 |
| Fuel Burn | \$191,250 |
| Estimated Fuel Savings (4%) | \$7,650 |
| Payback period | 3.0 Years |

Business case built on going faster

| | |
|-----------------------|------------------|
| Hrs/Yr | 500 |
| Dry DOC/Hr | \$500 |
| Cruise Speed | 260 |
| Speed Increase | 4% |
| Time at Cruise | 90% |
| Total Hours at Cruise | 450 |
| Time Cruise DOC | \$225,000 |
| DOC Savings | \$9,000 |
| Payback period | 2.6 Years |

