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THE KING Improved

THIRD-PARTY MANUFACTURERS CONTINUE TO RELEASE A VARIETY OF MODIFICATIONS DESIGNED TO IMPROVE UPON BEECHCRAFT'S KING AIR.

BY JAMES CARELESS

Aviation Fabricators is manufacturing a set of two lightweight, space-saving aft jumpseats for the entire King Air family. The seats fold up and stow away when not in use (see photo at right). AvFab Photos

Industry enthusiasm for the venerable Beechcraft King Air family of twin turboprops remains strong, half a century after the flexible, multi-purpose aircraft first flew. As a result, third-party equipment manufacturers continue to design and release clever modifications to make the King Air do even more than it does straight out of the factory. Here is a snapshot of some of the latest King Air mods on the market today.

SPACE-SAVING AFT JUMP SEATS

Aviation Fabricators (AvFab) is manufacturing a highly lightweight, space-saving set of aft jump seats for the entire King Air family (models 90/100/200/300/350). These two jump seats are built upon metal frames that stow almost entirely out of sight when not in use.

"Each individual seat folds into the nearest side panel, where it consumes just four inches in depth," said Jeff Lowe, AvFab's co-founder. "They fit into the aft baggage area, and can use the existing OEM aft seat installation hardware for quick and easy mounting."

For those King Air owners whose baggage area has never accommodated jump seats, AvFab includes all installation hardware, brackets, parts, the seat (un-upholstered), complete restraint system, life vest, overhead lights, vents, oxygen drop-downs, and installation instructions. These jump seats have received Canadian, U.S., European, Brazilian, Mexican and Indonesian STC approvals, with other foreign approvals pending.

"The King Air is so versatile, and so widely accepted for so many missions, that it just makes sense to offer mods for it," said Lowe. "This is why AvFab also offers high density seating replacements for the King Air family. In our highest density—13 seats for the King Air 350—we can reduce the aircraft weight by 400 pounds, in comparison to the double-club executive layout." In essence, the 400 pounds saved by the AvFab 13-seat system offsets the weight of two extra passengers; allowing them to fly for free from a fuel standpoint.

All told, AvFab offers 100 King Air modification products. They include seats, window shades, King Air 350 toilet kits, modern "hidden headsets" for seat, multi-seat and stretcher divans (mounted along one fuselage wall), table assemblies, lateral sliding seat bases—"to allow people to move their seats away from the aircraft wall," said Lowe—stretchers, and various parts kits.

"There's just so much you can do with the King Air, that it is not difficult to come up with new mods," Lowe concluded. "It is just that flexible an aircraft."

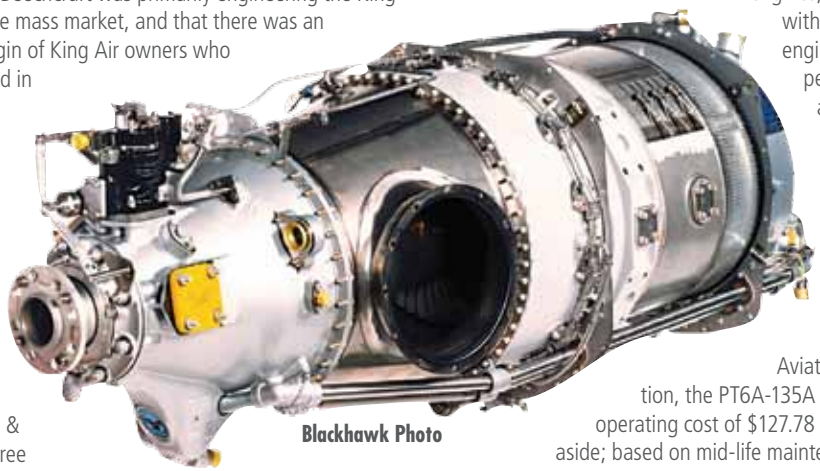
500 ENGINE UPGRADES AND COUNTING

For the past 15 years, Blackhawk Modifications has been upgrading the stock engines on Beechcraft King Air, Cessna Caravan, Cessna Conquest and Piper Cheyenne aircraft with more powerful models; delivering faster climb rates plus quicker cruise speeds at altitude.

Blackhawk Modifications has done more than 500 engine upgrades on various popular aircraft lines, including the Beechcraft King Air. All are designed to deliver maximum performance while lowering hourly operating costs, in many cases. **Blackhawk Photo**

Specifically, Blackhawk replaces the King Air 90's Pratt & Whitney (P&W) PT6A-21 engines with P&W PT6A-135As, and the 200's P&W PT6A-42s with either P&W PT6A-61s or P&W PT6A-52s. At the time of writing, the company had done 500 engine upgrades, and had more on the books.

"In the early days, our president and CEO, Jim Allmon, determined that Beechcraft was primarily engineering the King Air to serve the mass market, and that there was an unserved margin of King Air owners who were interested in getting more performance from them," said Abbey O'Brien, Blackhawk's marketing coordinator. "He had to convince Pratt & Whitney to agree to supply us with the engines we needed for the upgrades on a five-year contract. That was a hard sell, since no non-OEMs were doing these kinds of engine upgrades at that time. But the deal got signed, we started to do King Air engine upgrades, and the rest is history."



Blackhawk Photo

INSET
Partners in mods: Blackhawk's SuperXPR61 engine upgrade integrates factory new Pratt & Whitney PT6A-61 engines with the full Raisbeck EPIC performance system, optimizing performance.

It helps that replacing engines on the 90 and 200 models is simply a matter of unbolting the originals from the airframe, and bolting the new ones on. But what really matters to King Air owners is the extra performance these new engines deliver.

The numbers tell the tale. Compared to its original PT6A-21 engines, a C90 equipped with two PT6A-135A engines climbs 21 per cent faster to altitude on average, and cruises 25 knots faster (272 versus 247 knots). As well, according to data from Conklin & de Decker Aviation Information, the PT6A-135A has an hourly operating cost of $127.78 per hour set aside; based on mid-life maintenance at 1,800 hours and overhaul at 3,600 hours. The PT6A-21 comes in at $145.06 per hour, based on the same maintenance/overhaul schedule.

The metrics on the B200 upgrades: As measured by Conklin and de Decker, the comparisons are a bit different. In contrast to the stock PT6A-42s, a B200 with two (newer model) PT6A-52s or two PT6A-61s (plus a Raisbeck Ram Air

Recovery System) cruises 23 knots faster (307 versus 284 knots), and costs less to run per nautical mile ($4.73 for the PT6A-52/61; $5.17 for the PT6A-42s.) The hourly operating costs also favour the PT6A-52/61; $189.89 per hour set aside versus the PT6A-42's $222.56.

"We don't just upgrade engines," noted Abbey O'Brien. "For instance, adding our XR Fuel Lockers to the C90's nacelles can add 80 gallons more fuel to a flight, extending the aircraft's range by 300 nautical miles."

BLR Aerospace got its start in 2005, offering winglet mods and now upgraded LED lighting kits for the King Air family. **BLR Photo**

SERIOUS PERFORMANCE ENHANCEMENTS

BLR Aerospace began offering winglet mods for the King Air family in 2005. To date, the company has sold "677 winglet systems and counting," said Dave Marone, the company's vice president of sales and marketing. "Today, we offer BLR winglet systems for the King Air 90, 200 and 300. Putting winglets on a King Air 200 wing turns it into a 350 wing."

Seriously enhanced performance is why so many King Air owners have modified their aircraft with BLR winglets. "The improved lift offered by winglets can reduce a King Air's takeoff runway requirement by as much as 25 per cent," Marone said. "They can decrease the time to climb by as much as 15 per cent, and reduce fuel burn in the range of 3 to 5 per cent." Shorter runway requirements and better climb rates means that winglet-equipped King Airs can clear ground obstacles more easily during takeoff, and fly at high altitudes with better handling and lift characteristics.

That's not all; BLR winglets improve the King Air's aerodynamics so much so, that they extend the aircraft's range, enhance its slow-speed flight stability, and boost its overall handling qualities. They also increase the value of King Airs upon resale, because winglets are proven performance boosters—and they look cool, too. In fact, BLR's winglet systems are so respected as King Air mods, that Beechcraft is now including them as standard features on its new King Air 90 GTx aircraft.

FOUND ON A KING AIR NEAR YOU

Raisbeck Engineering makes a wide range of STC'd mods for the entire King Air family. "Over half of the world's King Air fleet has at least one of our STC'd products on them," said Scott Keefe, the company's director of sales. "Overall, we've sold more than 8,000 King Air mods to date."

Winglets improve lift and reduce runway requirement, making them an attractive option for aircraft owners. **BLR Photo**

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These swept blade turboprop propellers incorporate military technology that allows diameter to be increased while dampening operating noise. **Raisbeck Photos**

"THE KING AIR IS SO VERSATILE, AND SO WIDELY ACCEPTED FOR SO MANY MISSIONS, THAT IT JUST MAKES SENSE TO OFFER MODS FOR IT."

Raisbeck's latest King Air modification is its swept blade turbofan propeller, which is available for the C90/E90 and 200/B200/B200GT models. Designed in conjunction with Hartzell Propeller, the swept blade props exploit cutting-edge technology already used by the U.S. military to deliver high performance while keeping operating noise down.

"In traditional propellers, the two notions of performance and noise dampening were at odds," explained Keefe. "Typically, increasing propeller diameter leads to increased performance, but that also increases noise. Introducing blade sweep allows you to increase diameter without paying the normal noise penalties."

In addition to swept blade propellers, Raisbeck makes King Air mods that include dual aft body strakes to reduce drag and noise, crown wing lockers to increase storage, and ram air recovery systems that improve air flow to the engines for better performance.

James Careless writes on aerospace issues for Skies, Vertical, Rotorhub and Aviation Maintenance magazines. He is a two-time winner of the PBI Media Award for Editorial Excellence.