

FOUNTAIN OF YOUTH FOR AGING AIRCRAFT



By Jack Carroll

It's not an uncommon situation. That airplane that you've known and loved so long – the one that's as comfortable as an old shoe – is starting to look like one.

And lately it's been gulping fuel like an airborne alcoholic. Not to mention it seems to chug along so slowly now you're starting to worry about bird strikes from the rear – to paraphrase a mean old joke about the early Citations. Yup, your old faithful just can't keep up with the young ones any more. But the other problem is you can't afford a new plane, or perhaps even a recent used one. What options do you have?

Plenty as it Turns Out.

From new engines to aerodynamic add-ons or clever tweaking, there are more choices these days than ever from firms specializing in retrofits and mods, who literally offer laundry lists of different aircraft models and various fixes to keep them up to speed and, if not up with the pack, at least no far behind it.

The most visible modification being seen more and more as their efficacy



sinks in to the most skeptical are winglets. Which as it turns out are really wonders when it comes to enhancing performance and fuel efficiency. We'll start off with the acknowledged leader in the field.

Aviation Partners

Seattle-based Aviation Partners developed Blended Winglets™ technology, which was first proven on the Gulfstream II in the mid-90s, racking up both increases in range and more than seven percent in fuel efficiency. Its next big step was to provide winglets for Boeing Business Jets and the next generation 737 series aircraft. The company's data shows that a typi-

cal 737 with winglets saves some 100,000 gallons of fuel per year.

So far, so good: The company has supplied winglets for more than 3,500 Boeing aircraft worldwide (hence the joint venture).

In the Business Aviation sector, Aviation Partners offers Blended Winglets for the Hawker 800/800XP series, which has become so successful the company is looking at Blended Winglet programs for additional business aircraft types.

For the Hawkers, winglets result in a slew of benefits, including a seven percent fuel savings, 180 nm range increase, faster climb to altitude, more speed, reduced emissions, 2,000 ft. higher initial cruise and a higher residual value. And, yes, it looks pretty sharp sitting out there on the ramp. More than 100 Hawker aircraft have been outfitted with blended winglets and over 70 percent of the

Gulfstream II fleet wisely wears them as well.

Aviation Partners has also developed high-mach blended winglets for the Falcon 2000, which are now certified and delivering similar benefits. And how do these wonders work? In brief, blended into the wing they increase the effective wingspan, reduce wingtip vortex, resulting in less drag for lower fuel burn and improved cruise and climb. What more can one want?

In a stunning display of propaganda, Aviation Partners, Inc. and Aviation Partners Boeing recently announced that as of March 5, 2010, their unique Blended Winglet technology will save airlines and business jet operators

OPTION
Winglets turn out to be a good choice for enhancing performance and fuel efficiency.



over two billion gallons of jet fuel valued at some \$4 billion USD. The claimed global reduction in CO2 emissions is nearly 21.5 million tons.

As the company slogan goes, “The future is on the wing.”

BLR Aerospace

Probably best known for its rotary wing retrofit work, BLR has improved its visibility in Business Aviation circles by providing winglets for a range of Beechcraft aircraft, including the Baron, Duke 60, A60 and B60; the KingAir 200 and 300 series; and most recently received FAA certification for KingAir 90 series winglets. These are also featured as part of a KingAir 90X upgrade sold by Hawker Beechcraft for its C90 Gti model.

In addition to winglets, BLR also offers a range of equipment for Beechcraft aircraft, including aft body strakes, vortex generators and wing tip tanks, plus a similar range of equipment for Cessna, DeHavilland and Piper aircraft.

Premier Aircraft

Late last year Premier Aircraft received EASA certification for its popular 50Dash4 performance upgrade for the Falcon 50, thus opening its marketing horizons considerably. The program is supported by Honeywell,

3 and Premier has plenty of places to put it, as there are some 200 Falcon 50 owners in the Americas, as well as 40+ more in Europe and elsewhere. It should also be noted that the STC includes a re-designed engine nozzle, nacelle modifications and re-marked cockpit instruments.

Jet Aviation markets the 50Dash4 in the European region as well as in the Middle East and Asia, while Midcoast, Duncan and West Star Aviation – a joint owner of Premier Aircraft, along with Yankee Pacific Aerospace – handle North American Falcon 50 owners. Premier also offers Safe Flight’s AutoPower™ auto throttle systems for Falcon 50 series aircraft and Cessna’s CitationJet series.

Blackhawk Modifications

Self-proclaimed as “the largest non-OEM buyer of Pratt & Whitney turbo-prop engines in the world,” Blackhawk is now in its 11th year and has come a long way indeed. Its sole mission (for now) is to upgrade older aircraft to



which converts the Falcon 50s three TFE731-3 engines to the more fuel efficient TFE731-4-1C models. The STC meets both FAA FAR Part 36, stage four and EASA ICAO Chapter 4 noise regulations.

Premier’s 50Dash4 package allows higher hot ‘n high takeoff weights, up to 620 nm range increase, lower noise and carbon emissions, a cruise speed increase of 35 ktas and shorter time to climb direct to 37,000 ft. And, when it’s finally time to sell, you’ll get a lot more back than you might expect for an ordinary Falcon 50. One would have to admit that Honeywell squeezed an amazing amount of performance out of the original TFE 731-

better-than-new performance, *without modifying the airframe*. The company offers PT-6A series engine upgrades for the KingAir 90 and 200 series aircraft, Cessna Conquest I, Piper Cheyenne I/II series and, most recently, a new 850 shp PT6A-42A engine for the Cessna Caravan series, set for certification in 3Q 2010. Blackhawk has installed well over 500 PT-6A engines for over 250 customers.

In all cases, the engine retrofits mean increased true airspeed and maximum range, with less time to climb and lower operating and maintenance costs.

Blackhawk stresses that all engine replacements are simple, bolt-on

DASH

Premier Aircraft Falcon 50Dash4 is supported by Honeywell and promoted in Europe by Jet Aviation (center).



upgrades that require no airframe modification. For the KingAir 90 series, Blackhawk also offers its XR fuel lockers installed at the rear of the engine nacelles, extending flight endurance by 20 percent. The company's own Hawkeye DigiLog™ engine monitoring system combines two-inch round analog gauges with micro-processor-based signal processing and digital display technology. It is available for installation on the KingAir 90 series, B200, Cessna Conquest I and Piper Cheyenne I, II and IIXL.

Raisbeck Engineering

For over 25 years, Raisbeck has raised the hackles of new aircraft salesmen by continually bringing out product enhancement systems for some thirteen models in the Beechcraft KingAir line, followed by programs designed for the Learjet 31, 35/36 and, most recently, Learjet 60 models.

The various enhancements for KingAir models are packaged under the "EPIC" brand name and allow EPIC KingAirs to outperform the basic models in a number of areas, including takeoff distance, climb, speed, range and fuel efficiency. Individual systems available include quiet turbofan propellers, ram air recovery systems, enhanced performance leading edges, dual aft body strakes, high flotation

gear doors, nacelle wing lockers and crown wing lockers. That's what we mean by a "laundry list." As an incentive, Raisbeck is offering a *free* C90/E90 gross weight increase to 10,560 lbs. with the purchase of its Crown Wing Lockers.

In the Learjet department, Raisbeck Engineering has developed what it calls ZR Light Technology for the Models 31 and 35/36, which delivers an annual 30-50 percent return on investment through fuel savings, via reduction of wave, pressure, interference and induced drag. Raisbeck's popular aft fuselage lockers for additional cargo space (and uncluttered cabins) are also available for the Learjet 31 and 35/36. As customers demanded, Raisbeck is now developing an aft fuselage locker for the Learjet 60 as well, which is expected to be certified by 1Q 2011. The company also has "strategic partnerships" active with Blackhawk Modifications and Lear4Ever. They don't miss a beat it seems.

Sierra Industries

Probably best know for its Sierra Stallion, Sierra Super II and Eagle 400 modifications, the company can turn the tamest Citation into a tiger, so to speak. The Stallion mod to the Citation 501SP includes new

Williams FJ44-2A 2,300 lb. turbofans, including digital electronic fuel control units. And what a difference an engine makes: Climb direct to 41,000 ft. at gross weight in less than 23 minutes, cruise more than 50 kts faster and fly 250 miles farther at economy cruise, to name but a few improvements.

The Sierra Super II is a Citation 550 mod with new Williams FJ44-3A engines with 2,820 lbs. thrust, plus digital channel FADEC for total power management. The payoff: Climb direct to 43,000 ft. at gross weight in less than 30 minutes, cruise on economy 30 kts. faster and fly more than 400 miles farther at economy cruise power. It's no longer a Citation, it's really a Super II.

The Eagle 400 mod, Sierra's first engine replacement program, promises "Citation II" performance for a fraction of a new aircraft's cost." Just take a stock Citation I, substitute more powerful P&W JT-15D-4 engines with 2,500 lbs. thrust, increase gross take-off weight to 12,500 lbs. and get a 43,000 ft. ceiling all combined with "significant improvements in climb and cruise speed." If you have a slow senior Citation, now you know where to go.

EXPERTISE

Raisbeck has been bringing out product enhancements in the King Air and Learjet lines for over 25 years.

