



LEARJET ZR LITE (EXTENDED FLAPS)

# Keep 'Em Flying:

Upgrade options for the Learjet 30/60 aircraft. by John Brodeur

**F**or many operators, the idea of replacing their current aircraft after many years of utilization with a newer aircraft is naturally an area leading to much discussion. Nowadays the prudent operator will explore all options, and available aircraft, before deciding between an upgrade or outright replacement.

One aircraft that has proven itself over and over again for longevity is the Learjet 35. This aircraft is a rare breed: it has no life-limit on the fuselage. By sticking to OEM scheduled inspections, the aircraft can fly indefinitely (unlike others which have life cycle limits in the region of 30,000 hours, or in some cases much less).

This being the case, it obviously makes good economic sense for providers to develop and market aircraft enhancements for the

Learjet 35, since the OEM is still in the business of manufacturing aircraft, and many of these jets are 30 years or older and still in operation.

## STEVENS AVIATION: LEAR4EVER UPGRADE

Stevens Aviation with its Lear4Ever program offers upgrade options for older Learjets, currently including an upgrade for the Lear 35, and the recently added Learjet 60.

## LEAR 35

The package for the Lear 35 costs about \$2 million (not including aircraft) and takes approximately six-months to accomplish. The upgrade brings added performance from Raisbeck, avionics from Universal, Avcon, L3, Rockwell Collins and others, and

essentially, this classic aircraft gets transformed into a 21st century aircraft with superior 3-D synthetic vision, increased awareness and safety enhancements.

The avionic suite begins with three Universal EFI-890R 8.9-inch active matrix liquid crystal monitors. This system also provides Aeronautical charts, e-docs, and weather graphics and will interface with the optional Universal UNS-1L FMS to display terminal charts and provide real-time fuel management. Additional enhancements include TAWS (with 3D perspective view), Rockwell Collins with its AHRS-1000 (Altitude Heading Reference System), VHF-22A COMM, VIR-32 NAV and DME-42.

RVSM is provided by Avcon utilizing the Thommen Air Data Computer which accommodates the FC-110 and FC-200 Autopilots. To top it all off L-3



PART OF RAISBECK'S ZR LITE PROCESS: A 'ZEE' IS BEING INSTALLED ONTO THE EXISTING PORTION OF FLAP, AFTER WHICH RAISBECK INSTALLS ITS NEW COMPOSITE FLAP ONTO THE ZEE.

Communications provides the GH-3100 Emergency Standby Instrumental System which displays attitude, heading, altitude, airspeed and vertical speed on one compact instrument, while the PS-835D provides an emergency power supply.

When it comes to aerodynamic upgrades, Stevens Aviation installs the Raisbeck ZR LITE wing upgrade and Aft Fuselage Lockers which are described in further detail below. Another nice feature Stevens installs are Delta Fins which eliminate the FAA requirements for operable yaw dampers and thus remove a no-go item on the MEL.

The aircraft is then finished with a new paint and interior based on the customers personal preferences, and ends up looking as good as new, and will serve for another 20 years at a fraction of the price of a replacement aircraft.

### LEAR 60

The newest member to Stevens' Lear4Ever program is the Lear 60. "Aircraft modified receive a comprehensive cabin systems upgrade that transforms them into wired airborne offices," explained Mark Adams from Stevens. The cabin is equipped with true broadband Internet via Wi-Fi from an Aircell ATG 4000 transceiver. Voice communications are provided by a True North Simphone Duo telephone system.

The cabin is further upgraded for passengers by providing access to a top-of-the-line entertainment system, new interior panels and custom tailored LED cabin lighting.

The cockpit contains an all-new Universal Avionics UNS-1Ew FMS/WAAS/LPV system that provides fully certified LPV 3-D navigation. An EFI-890R multifunction display

delivers the first synthetic vision capability for a Learjet using the Vision-1 SVS.

According to Jim Williams, Stevens vp, avionics sales, the system also includes terrain awareness, onboard charting and Datalink weather graphics, all presented in high-definition color. Price is about \$4.9 million (about \$10 million less than a new

continued on page 81



RAISBECK'S SIGNATURE 'BATWING' FOR THE LEAR 35

Learjet 60XR), and the downtime required for conversion is about two months.

› More information from [www.stevensaviation.com](http://www.stevensaviation.com)

### RAISBECK ENGINEERING: ZR LITE UPGRADE

To focus on the ZR LITE upgrade in a little more depth, Raisbeck Engineering, founded by James Raisbeck, has a long history with the Learjet dating back to his involvement with the development of the 'Softlite Wing' back in the 1970s. He went on to develop further drag reduction programs for the Learjet and other aircraft, and henceforth started Raisbeck Engineering back in 1973.

Raisbeck Engineering went on to develop op stowage lockers for the Learjets which resulted in Bombardier installing them during production on the Learjet 31 series. Similar lockers along with other performance enhancement systems are currently being installed on Beechcraft King Airs. In 2005 the ZR LITE Performance System was approved for the Learjet 35 and 36 models, followed in 2006 for the Learjet 31.

Raisbeck has engineered and developed these systems, and has a worldwide network of approved service centers that carry out the actual installations.

Among the benefits on offer from the ZR LITE upgrade are increased range, reduced fuel burn, higher initial cruise alti-

“With these enhancements one could easily justify keeping a classic Learjet 31/35/36”

tudes, less time-to-climb, new 14-degree flap position for take-off which results in a slower V-speed allowing for greater access to smaller airports.

A marvel of engineering, The 35/36 ZR LITE upgrade is achieved first by adding Vortilons to the wings. These are leading-edge devices that improve low-speed performance, enhance low-speed roll authority, and improve airflow effectiveness. Horizontal Winglets are then added between the tip tank and wing which reduce drag, wingtip vortices and increase aileron effectiveness.

The project is completed with the addition of Flap Trailing Edges which reduce high speed drag and improve lift distribution and flap effectiveness.

This allows for a 14-degree takeoff/ approach flap position which shortens field

### INSIDE MAINTENANCE

length, enhances second segment climb and improves approach characteristics.

Raisbeck's 31 ZR LITE utilizes similar technology with the main component being the Recontoured Flap Trailing Edges, part of the 35/36 ZR LITE Performance System.

In essence the ZR LITE will allow your Learjet 30 series to fly higher, faster and further from more airports than it ever could, and again at a cost of much less than the replacement cost of a new aircraft.

With these enhancements one could easily justify keeping a classic Learjet 31/35/36 flying for many more years to come. In other related news, Raisbeck is currently in development of a new Aft Fuselage Locker for the Learjet 60 models, with certification expected in 4th Quarter 2010.

› More information from [www.raisbeck.com](http://www.raisbeck.com)

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