

Giving freight a lift

Converting passenger airliners into cargo aircraft can be a costly and time consuming business. However, LCF Conversions is marketing a low-cost option that could provide a competitive alternative to conventional P2F conversions. **BILL READ** reports.

When acquiring additional cargo aircraft for their fleet, commercial freight aircraft operators have two choices. One is to buy or lease an all-new cargo-configured 'F' aircraft from the manufacturers while the second choice is to acquire an older aircraft which has been converted from passenger to freight use.

For larger wide-bodied freighters Boeing offers new-build cargo versions of its 747-8, 767-300 and 777-200 aircraft while the company's Commercial Aviation Services offers cargo conversions for the 747-400BCF, 767-300BCF and MD-11BCF. Airbus manufactures the A330-200F on its production line, as well as converting passenger A330s to the A330P2F. Meanwhile, Antonov is considering restarting production of its An-124 oversize cargo freighter aircraft while a number of other companies specialise in smaller passenger to freight (P2F) aircraft conversions.

The LCF alternative

Conventional P2F aircraft conversions require the floor to be strengthened and the installation of a large cargo door in the side of the fuselage to allow access to the main deck — an expensive and lengthy process which requires the

aircraft to be recertificated as a freighter aircraft. However, an alternative conversion concept is being proposed by LCF Conversions which could enable freight operators to convert any third-generation medium wide-bodied Airbus or Boeing passenger aircraft into a freighter without the need for either a large cargo door or floor strengthening. An LCF converted aircraft would load and unload standard unit load device (ULD) luggage containers via the two existing forward and aft cargo doors. The containers would be transferred between the lower and upper decks using two newly-installed LCF platform lifts which would also act as part of the load bearing floor of the main deck during flight.

"The floor for an LCF-converted aircraft does not need to be strengthened because third generation medium wide-bodied aircraft have significant cargo carrying capability already built into the pax airframe," explains LCF Conversions ceo Cliff Duke. "Look at the arithmetic, the lower holds of these aircraft are

basically mini freighters (50t capability in the case of a 777). Utilising the passenger floor without floor strengthening gives a significant payload capacity (44t on the upper deck of the A340-300) without changes to the certificated floor running loads. The result is that about 1.5 times the max payload of the airframe can be accommodated in the LCF conversion utilising only the certificated limits of the passenger airframe. Strengthening the main deck floor is

not necessary except for specialised loads that require the 10ft main deck door which represent less than 10% of cargo weighing over 40t. To illustrate this point, EFW-ST Aero are strengthening the A330-P2F to accommodate 65 tonnes on the main deck and 40 tonnes on the lower deck but the maximum payload capacity of the aircraft is

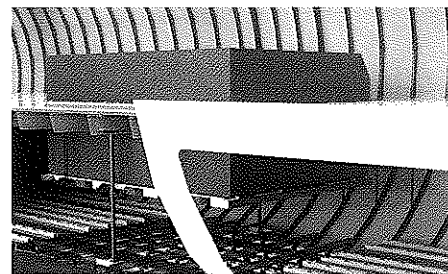
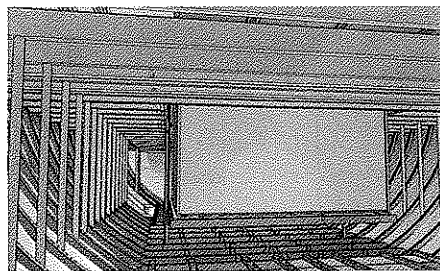
limited to around 60 tonnes.

Because it does not require major changes to the airframe, a LCF conversion would take around six weeks, compared to an average of four months for a comparable P2F

“The industry is sleep walking into replicating freighter conversion solutions ... which are unaffordable and inappropriate.”

LCF conversion process

- Removal of items related to the operation of the aircraft in a passenger role.
- Part replacement/modification of the floor structure in the forward and aft cargo holds with 'translating floor' devices installed in the lower deck, permitting cargo lifts to nest at lower hold floor level to discharge or receive ULDs that are to be loaded on to the main deck.
- Installation of an integrated lift control system adjacent to both fore and aft lifts, with operator stations in both lower holds and fore and aft on the main deck.
- Creation of fore and aft lift platform surround structures within the main deck.
- Installation of fore and aft main deck cargo lifts.
- Installation of roller mats around the lift platforms on the main deck.
- Installation of a segmented safety net within the surround structures of both main deck lifts.
- Installation of a main deck cargo loading system (CLS).
- Installation of a full-length cabin liner on the fuselage walls.
- Installation of an integrated lift control system adjacent to both fore and aft lifts, with operator stations in both lower holds and fore and aft on the main deck.
- Installation of a cabin lighting system above the main deck and proximal to the lifts.
- Modification of the ECS system.
- Installation of new systems (e.g. smoke detection) appropriate for freighter operations.
- Creation of a supernumerary crew accommodation area forward of the 9G barrier and aft of the flight deck.



Opposite page: Cutaway of Airbus A340-300 converted to low-cost freighter configuration. Above: LCF platform lifts which can move cargo containers between the lower and the main decks.

programme. It would also be cheaper, with an estimated cost of between \$6-8m, half the price of a P2F conversion.

Enter the A340

LCF intends to begin by marketing its system for the conversion of (now out of production) four-engined Airbus A340-300s and -600s, followed later by a cargo conversion option for passenger Boeing 777-200s.

"The LCF programme is not a one-trick pony — it's going to be applied across all third and fourth generation medium widebody aircraft," declares Cliff Duke. "The A340 is at the forefront at the moment because it is becoming available at very low prices but it is part of a much bigger picture. The conversion market is now tied up by the two OEMs (Boeing and Airbus) which only offer conversion solutions for a limited number of aircraft. LCF will allow operations in the over 40t segment to gain access to a greater number of third generation airframes."

"The fundamental of the conversion business is the opportunity to acquire feedstock at economic prices. As a rule of thumb, good pax airframes do not make good freighters as the more popular aircraft command high prices in the passenger market. If you add in conversion and other costs, OEM third generation conversions could be on the ramp at unrealistic lease rates — in some cases nearing the new build freighter costs/lease rates."

Operating flexibility

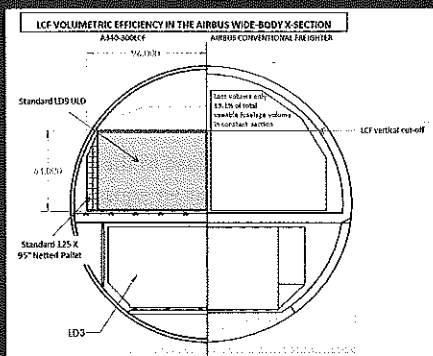
In addition to being cheaper to convert, Cliff Duke believes that LCF freighters will also offer operational advantages. "We have constructed an analytical model to calculate the turnaround time for LCF converted aircraft within typical integrator and general cargo airline operating environments," he explains. "Because of the two lifts and two doors the loading procedures will be different from a conventional freighter but the model indicates that an A340-300 LCF converted aircraft could be offloaded and

loaded within 75 minutes. LCF airframes also have the advantage that they are more versatile and can generate good returns from lower utilisation operations in all variants. They can be used not just for freight but converted into pax-freight and pax-only configurations. This permits operators to develop market niche operations and provide better asset investment protection."

Foot in the cargo door

As yet, there have been no firm orders for an LCF conversion. "We are actively marketing both the Airbus and Boeing solutions and had a number of discussions with potential customers," says Cliff Duke. "We have made significant progress generating interest in the LCF programme and there is now awareness that there is an alternative to the conventional P2F programme. However, while LCF now has a 'foot in the door', we still have some way to go to convince the industry."

Despite the current poor state of the air freight market, Cliff Duke is optimistic about the economic potential of LCF freighters. "The gold rush is over," he says. "The current poor state of the freight market is a consequence of a number of factors, including the economic downturn, poor forecasting, oversupply by the OEMs, over ordering by operators and a failure by the freighting fraternity to recognise how the freighter model is changing. Today, 60% of cargo is being carried in the bellies of all wide-bodied aircraft (including freighters) whereas the reality is that 90% could be. The industry is sleep walking into replicating freighter conversion solutions which worked well in previous generations of airframes but which are unaffordable and inappropriate with a one-size fits all solution for third-generation wide-bodies. Looking forward, the composite construction of fourth generation airframes, such as the 787 and A350) will be more difficult to cut holes in to for a large cargo door, so the LCF has to be the solution for the future. We are confident that, once demand returns, we will be in the running."



A converted A340-300 LCF could carry 25 pallets on the main deck and ten in the lower holds.