

The success of the A300 passenger-to-freighter programme has been greater than most would have expected. Now that the A300B2/4 has started its second life, we take a look at what potential operators can expect from the aircraft.

The elixir of long-life for the A300

The A300 freighter has been touted as the most economic, medium-capacity freighter available. The payload, range, volume, direct operating costs, and market lease rates all combine to make it economically efficient on short and medium-range networks, where an operator does not expect to generate high aircraft utilisation.

Basic description

The A300B4 has a structural payload of between 90,000lb and 100,000lb, depending on the variant and conversion programme used. This payload is reduced by 12,000lb tare weight of the containers. Containerised volume is about 11,000 cubic feet. The aircraft has a range of 1,800nm to 2,100nm with maximum payload, and the highest specification models can fly 3,000nm with about two-thirds payload.

As a comparison, the 767-300PF has an extra 20,000lb structural payload, 2,000 cubic feet more container volume and has a longer range. The 767PF, however, is only available as a new aircraft and has a list price of \$90-\$98 million, while converted A300B4s have market lease rates in the region of \$225,000 per month.

Conversion programme

Interest in the A300B2/4 was sparked by the bankruptcy of Eastern and the move by Continental to retire its considerable fleet. This excess of A300s on the market reduced their values, and

so accelerated the freighter conversion programmes.

Daimler Benz Aerospace (DASA) and British Aerospace Aviation Services (BAe) offer conversion programmes.

The purchase by Channel Express of an ex-Eastern aircraft for conversion by BAe was followed by a contract by C-S Aviation to convert six ex-Air France aircraft. This was followed by further purchases by C-S Aviation, Pinnacle and other operators.

US lessors C-S Aviation and Pinnacle account for the bulk of aircraft committed to conversion. Between them they have orders for 52 B4 conversion slots, which represents 28% of all A300B4s ever built. C-S Aviation has the majority.

Payload

BAe only offers a conversion for the A300B4, while DASA converts both the B4 and B2 series.

Under the DASA programme the B4-100 and B4-200 have payloads of 89,000 to 97,000lb (*see table, page 46*). BAe manage to create an additional 3,000lb of payload capacity in their conversions for the same aircraft.

The efficient use of structural payload depends on the internal volume and tare weight of containers. There are several container options for both upper and lower decks. Pat Monk, consultant to Air Cargo Equipment explains that the A300B4 can use AAC, AAY and AMA containers on its upper deck, and either LD-3, AAF and ALF containers on the lower deck. The particular configuration



will determine the maximum payload and volume. (*See table, page 46.*)

Freighter aircraft typically “bulk out” prior to “grossing out”; meaning containerised volume is usually occupied before the aircraft reaches its structural payload limit. This happens when freight of a low packing density is loaded.

The A300B4 has a low packing density, which means it is well suited to small-package operations; the most attractive to many operators because of high yields. “Aircraft volume is the economic driver on short-haul operations, such as overnight package deliveries. For example, DHL bulks out at an average density of 6.9lb per cubic foot,” explains Neil Whitehouse, former senior vice-president at C-S Aviation, who was a central figure in the development of the BAe services programme.

A300 in operation

UK operator Channel Express was the first to operate the A300 Freighter. Heavylift, another UK airline, operates a fleet of two, leased from C-S Aviation, and will be leasing another aircraft. MNG in Turkey has a single aircraft, which it operates into the CIS.

Jetline, based in Holland, has an A300 which it uses to fly general freight into Egypt. JHM Cargo Airlines, a Costa Rican operator based in San Jose has a fleet of seven, which it flies into Miami from various Central and South American markets. Whitehouse explains that JHM Cargo Airlines is a rated credit, and that the lease-deal it struck with C-S Aviation put it on the map.



Nearly 60 conversion slots have been reserved with BAe and DASA for A300 conversions. The aircraft is suitable for medium-distance small package operations.

TNT is also looking to acquire up to 14 aircraft, and is believed to be interested in a mix of leased aircraft and its own purchased fleet. Emery also requires nine aircraft from 1999, while DHL is supposed to be taking seven ex-Thai aircraft.

DHL has a European operation, European Air Transport (EAT). UK carriers Hunting and Channel Express, and German airline Farnair Air Transport operate DASA converted aircraft on contracts for EAT.

Mike Hayles, managing director at HeavyLift, explains that it would like to have a fleet of up to seven aircraft, which would be required if new business contracts were secured. "First, we have a sub-contract operation for KLM and Lufthansa scheduled freight routes, which are similar to the wet-lease agreements Gemini and Atlas have with other major airlines," explains Hayles. "We also have a general cargo business feeding KLM's 747 operation. This involves interlining 96" x 125" x 10' high containers between the two, with one fitting abreast on the A300 and two-abreast on the 747.

"Our operation comprises routes from the UK to Scandinavia, Italy and Spain, and none are payload-restricted," says Hayles. "The schedules mean we do not get pressured for turn times. We perform our own line maintenance, but otherwise sub-contract airframe work to FLS Aerospace and engine repair and support from MTU Maintenance. The aircraft utilisation is quite low now because of the KLM contract. The aircraft has been placed on a low utilisation schedule, with calendar-based

C-checks. We are also still crew-restricted, so it is too early to tell what level of utilisation might eventually be possible".

Whitehouse estimates that the A300 requires about 30 minutes to off-load freight, and takes another hour to load, taking total turn time to one-and-a-half hours.

Operating costs

The A300 has several operating cost advantages over its rivals. These are basically related to the ratio of the aircraft's gross weight and payload capacity compared to other widebodies.

The L-1011 and DC-10 are the low capital cost, widebody alternatives to the A300B2/4. The L-1011 has particularly low values, making it economical for low utilisation operations, although only the -200 series is regarded as having any respectable payload-range performance. The DC-10-10 is reasonably similar, but FedEx's acquisition of all -10s makes its consideration academic.

The L-1011-200 is the A300B4's closest rival for intra-European and US domestic operations. The L-1011-200 has 20,000-40,000lb more payload, but 70,000-100,000lb more gross take-off weight and 36,000-44,000lb more hull weight.

The A300B4's prominent advantage over the L-1011 is lower fuel burn. Some may also expect the A300B4 to have an appreciably lower engine-related ownership and maintenance cost by having one less engine. This may not be the case.

The A300B4's CF6-50 powerplant removal rates are closely linked to cycles, and typically achieve not much more than 2,500 cycles between removals. This would be only about 5,000 flight hours, and contrasts to about 9,000 flight hours the RB211-524 might achieve between removals on the L-1011-200F. This differential means the two aircraft will have similar engine-related shop visit and spare provisioning costs.

There are nevertheless a limited number of L-1011-200s left for conversion, and the experience of some operators has now changed the market's view of the aircraft for the worse. The L-1011-200 and A300B4 have similar range capabilities but the A300B2/4's payload and lease rate are better matched to market requirements. This makes the A300B2/4 a viable candidate for replacing 727s and DC-8-60/70s on low aircraft utilisation, small package operations. This is already beginning to occur.

The A300B2/4 is not totally free of criticism, however. "The A300 has a reputation for high maintenance costs," says Hayles. "All areas of the aircraft are expensive to maintain. The A300 has about 50% higher maintenance charges than a DC-8-71, which has twice the number of engines. Also, the 727 is half the size of the A300 but has one-third the maintenance costs. The A300 has high engine-related charges because it operates short flight cycles. It also has a large airframe, while line replaceable units (LRUs) and spare parts are expensive. The aircraft's lease rate then has to reflect this."

A300B2/4 CONTAINER CONFIGURATION			
	configuration I	configuration II	configuration III
Upper deck containers	20 AAC	18AAC & 2 AAY	14 AMA
Cubic feet	8,360	8,372	8,666
Tare weight (lb)	8,820	8,842	7,714
Lower deck containers	20 LD3	20 LD3	20 LD3
Cubic feet	2,820	2,820	2,820
Tare weight (lb)	3,260	3,260	3,260
Total container volume (cubic feet)	11,180	11,192	11,486
Total container tare weight (lb)	12,080	12,102	10,974

Technical support

The high cost of spare parts and LRUs is explained by Airbus' previous monopoly on A300 spare parts. "This was because Airbus told its partners to buy into the aircraft if they wanted to be a part of it. These vendors then became sole-source suppliers, and parts could not be bought from third parties," explains Abdol Moabery, director of marketing and sales at C-S Aviation. "This also meant that vendors did not invest in the parts business. It often took 90 days to turn parts. Their monopoly meant they could control prices.

"This has now changed. Aviation Systems International (ASI) bought an A300 passenger aircraft for parts breakage, which were primarily sold to Carnival. ASI bought a further three aircraft, as well as acquiring Sogerma's inventory. Since then, another 17 aircraft have been stripped. This has then led to

prices of some parts dropping by as much as 50%. The industry has transformed from being a single-source vendor to having 10 providers.

"The repair business has also grown. Barfield, a repair station, now turns parts in two weeks guaranteed and has a 48-hour aircraft-on-ground response time. This means US operators no longer have to go into Europe to acquire parts. Other spares providers, which have broken down A300s in the past three years, are The Memphis Group, IASG, Nortek, The Avatar Alliance, AAR, Aviation Airmotive and The Ages Group. As well as ASI buying Continental's stock, Aviation Sales bought Eastern Airlines', The Memphis Group acquired Malaysian Airlines System's inventory and Thai's material should become available later this year.

"The increased availability has made parts so cheap that vendors are offering customers zero-dollar consignments. That

is, a vendor will provide initial consignments and fly away kits at no cost, and then charge the airline exchange fees," explains Moabery. "The value of a flyaway kit is about \$90,000, while a basic spares support kit, comprising about 125 various rotables and consumables, has a value of about \$500,000."

Warren Barber, vice-president of leasing, at Aviation Sales says that according to Airbus, Aviation Sales has the largest A300 inventory in the world, which apparently could support about 10% of the global fleet. "We acquired Eastern's entire inventory, which supported about 25 aircraft, and tore down Air Inter and Korean aircraft," says Barber. Aviation Sales is now looking to place A300 inventory in Europe, probably on a purchase and exchange basis.

"The huge number of conversions contracted for by DASA and BAe will create a huge demand for aircraft," says Tom Donegan, executive vice president at The Avatar Alliance. "Although there are a number of B4s available for conversion not all are good candidates since the cost for some is just too high considering their modification and maintenance status. We prefer to have B4s for parts because of the later dash numbers, but still have to get the aircraft at the right price."

Ownership

Probably the most important element of operating costs is the aircraft's lease rates. "Market rates have firmed since the introduction of the first few converted aircraft," explains Pete Seidlitz, president

A300B2/4 PAYLOAD SPECIFICATION ANALYSIS						
Conversion programme	DASA	DASA	DASA	DASA	BAe	BAe
Aircraft variant	B2-100F	B2-200F	B4-100F	B4-200F	B4-100F	B4-200F
MTOW (lb)	302,030	313,050	347,230	363,760	347,230	363,760
MZFW (lb)	265,650	265,650	273,370	277,780	273,370	277,780
OEW (lb)	174,610	175,480	178,570	179,890	177,780	177,780
Maximum structural payload (lb)	91,040	90,170	94,800	97,890	95,590	95,590
Net structural payload (lb)						
configuration I	78,960	78,090	82,720	85,810	83,510	87,920
configuration II	78,938	78,068	82,698	85,788	83,488	87,898
configuration III	80,066	79,196	83,826	86,916	84,616	89,026
Maximum packing density (lb/cubic foot)						
configuration I	7.06	6.98	7.40	7.68	7.47	7.86
configuration II	7.05	6.98	7.39	7.67	7.46	7.85
configuration III	6.97	6.90	7.30	7.57	7.37	7.75
Volumetric payload @ 6.5lb/cubic foot (lb)						
configuration I	72,670	72,670	72,670	72,670	72,670	72,670
configuration II	72,748	72,748	72,748	72,748	72,748	72,748
configuration III	74,659	74,659	74,659	74,659	74,659	74,659



of Bristol Associates. Bristol Associates has been retained by Pinnacle Air Cargo Enterprises (PACE) to market the aircraft Pinnacle has acquired for conversion under the DASA programme.

“The original deliveries got lease rates of about \$190,000 per month, but the market rate has now stabilised at the \$215,000 to \$235,000 per month level, depending on credit. With the popularity of the aircraft, market values have also firmed up, but of course they still have to remain at a level where a lessor can justify the investment at the lease rates it’s likely to receive,” says Seidlitz.

Other major ownership costs are the investment in a package of LRUs. The various methods of acquiring LRU inventory means it is impossible to analyse all the permutations. One technique, however, is for an airline to make an initial investment, and then arrange a power-by-the-hour deal with a supplier. Typical rates for the A300B4 are about \$470 per flight hour.

Most aircraft converted are mid-1970s to mid-1980s-build aircraft. Average age is therefore about 20 years, and freighter conversion will extend the aircraft’s life to 45 years. As Whitehouse explains, the freighter conversion process changes the aircraft’s life curve. “The A300B4 originally had an eight year heavy check interval, and is now nine years. A heavy check will be included in the freighter conversion, and so a lessor will want to completely amortise its cost,” he says. “This will extend the life by eight years, taking it to about 29 years. The aircraft will then receive another heavy check, which will again be fully utilised. This will take it to at least 38 years, which will be about the minimum age the aircraft is scrapped. Moreover, the heavy check interval is about to be extended again to 10 years.”

Market values for a passenger B4-100 in mid-time maintenance condition are \$8-10.5 million and for a B4-200 \$9.5-15.5 million. Some acquisitions for freighter conversion were bought for as little as \$5 million.

	\$million
Freighter conversion	6.5
D-check	3.0
Engine shop visit	1.25
Landing gear	0.40-0.65
APU overhaul	0.35-0.40
Total	11.5-11.8

Total build cost for the aircraft would then come to about \$20 million.

Lessors also have to consider the four month downtime for conversion, the six weeks the aircraft has to arrive early prior to conversion, and another six weeks for the operator to become acquainted with the aircraft before operation can start. The time value of the total investment over this seven-month period adds to the lessor’s cost, increasing the amount that has to be amortised by the lease rentals.

Values of converted aircraft are put at \$17 million to \$19 million for 1975 to 1980-built aircraft, and \$19-\$24 million for 1975 to 1985-built B4-200Fs.

Future viability

The A300B2/4’s immediate future looks good, but investors are also concerned about the aircraft’s long-term future. As Seidlitz points out, the aircraft are being acquired to replace 727s and DC-8-71/73s. This provides a secure market for the A300s, since there are only a limited number of them, and it seems likely that B4s will be the only ones to get converted. The A300 will also

Total build cost for B4-100 and B4-200 freighters are about \$20 million and \$25 million. Remaining lives after freighter conversion should be in multiples of eight year periods.

benefit from the forecast rate of freight traffic growth.

Indeed, it seems the number of A300B2/4 freighters could be all accounted for in a just a few years, making the A300B2/4 as popular as the DC-8-70 series.

While the A300B4 will now not get overshadowed by other widebodies of its generation, Daimler Benz already has a conversion programme and supplemental type certificate for the A300-600. Their values, or a possible shortage of medium capacity freighters, in the next ten years may encourage a stream of conversions.

There is also the possibility of a conventional freighter conversion programme arriving for the 767 at some point. Airborne Express has developed one already; albeit a system without a conventional freight door and low volume containers.

The A300B2/4 will only face competition from the 767 and A300-600 as short-haul freighters on a low utilisation operation when their values are low enough. The 767 and A300-600 have the advantage of a smaller flight crew, lower fuel burn, lower maintenance costs, being younger, and having more modern technology. The A300-600 has the advantage of the same fuselage cross-section as the A300B2/4 making operation with the same containers convenient. The short range of the A300-600 means it will have few other secondary market uses, depressing its value. The success of the A300B2/4 conversion programme may yet lead to the same for the A300-600. AC