CFM56-5B values & aftermarket activity

The popularity of the A320 family has led to a shortage of spare -5A and -5B engines. This has firmed up values and lease rates, and engines trade quickly.

Both the -5A and -5B series engines are in short supply, with demand for A320 family aircraft as strong as it has ever been. The supply of engines is not only affected by the percentage of the fleet in active service, but also by how many aircraft have been scrapped for parts, the number of spare engines built, and the average time between shop visits and engine shop activity.

-5A series

There is still high demand for the -5A series, with few A320s now available on the market and only one or two aircraft having been acquired for stripping for engines and components. "There is actually little trading activity of -5As in the market, and their values have strengthened as a consequence," says Andrew Pearce, director at MacQuarie Aviation Capital. "The -5A is perceived as an engine with a short life-span, but many of the aircraft are also getting old. The oldest A320s are 17-18 years old, and there will come a point in the next 5-10 years when a large number of aircraft will get retired or parked. There will then be a surplus of engines, at which point values will decline. The engines are now full priced, which means that market values are what the major appraisers estimate them to be. This is is because demand is at such a level that engines are quickly bought when they come available. There are also many prominent parts and engine suppliers looking for -5As."

Lease rates are also strong, as Abdol Moabery, president and chief executive officer at GA Telesis points out. "Short-term lease rates are 50-75% higher for -5As than they are for -3C1s, which are the higher rated engines for the 737-300/-400. The -5A's long-term lease rates are 25-50% higher than the -3C1's because 25 737 Classics have been parted out, and there are also spare engine pools for the -3 series.

"Another issue affecting market values is the cost of maintenance, and maintenance status," continues Moabery. "Maintenance is expensive because the cost of replacement parts is similar to new parts, there are virtually no used life limited parts (LLPs) on the market and the shop visit costs are 25-30% higher than for the -3 series. The engine operates reliably, and achieves 7,000-9,000 hours on wing between removals.

"Short-term lease rates are $2,500-3,500 per day plus reserves, while long-term leases of more than 18 months command rates of $1,800-2,500 per day plus reserves," estimates Moabery. "Freshly overhauled, fully-dressed -5A3s have a market value in the region of $5.5 million, while lower rated -5A1s have values of about $4.8 million. The values of time-continued engines are simply these values less the cost of maintenance, so they are about $3.8 million."

Maintenance reserves for the -5A series include LLPs at about $92 per engine flight cycle (EFC). Shop visit reserves vary with workscope, but are $145-190 per EFC *(see CFM56-5A/-5B maintenance analysis & budget, page 15)*.

-5B series

Demand for the -5B series is even stronger, since it is the predominant engine powering the A320. "Most -5Bs are still young, achieving long on-wing lives and reaching LLP limits in many cases," says Pearce. "There are now more than 2,000 -5B/P engines in operation. Like the -5A series, supply of -5Bs and -5B/Ps has been tight, and few are being traded. Any engines that are being sold are traded at the full list price corrected for maintenance condition and LLP life." The engine's full set of LLPs has a list price of $1.83 million, while parts in the fan/booster module have lives of 30,000EFC, parts in the two core modules have lives of 20,000EFC and those in the low pressure turbine (LPT) have lives of 25,000EFC.

"The -5Bs are very desirable assets, and have the advantage of a large fleet and wide, global customer base," continues Pearce. "Moreover, the engine continues to be manufactured, with about 100 new aircraft going into service each year.

"Another factor that will influence the availability of engines is the level of shop visit activity. This is currently low, because many engines have not even been through their first shop visit yet," says Pearce. "Supply that is already tight will get tighter still as more engines are removed for the first time, and the older

The supply of spare -5As and -5Bs is tight, with any available engines trading quickly. The engines are fully priced; meaning trading values are similar to appraisers' estimates of fair market values.

engines start being removed for the second time. First run removal intervals are up to about 17,000EFC, but second and mature intervals are more likely to be in the region of 10,000EFC for most models. This would then effectively double the number of engines undergoing maintenance in the long term, thereby seriously reducing the supply of engines available for lease and trade. This issue is further complicated by LLPs. They have varying lives of 17,000-30,000EFC, and the supply of used LLPs on the market will depend on what airlines do in terms of removing or retaining them at the first removal."

A major issue affecting the supply of -5Bs is the low ratio of spare engines to installed powerplants. "The percentage of spare -5Bs is low compared to -7Bs," says Moabery. "Even when -5Bs do become available they are very easy to lease or sell. Short-term lease rates are about $4,500 per day plus reserves, while long-term lease rates for a three-year lease are about $75,000 per month. Airlines are not investing in as many engines as they used to. A few months ago there were only five or seven -7Bs on the market and no -5Bs available at all. Moreover, -5Bs are rarely available on the market, and when there are you have to pay the catalogue price.

"Time-continued engines, without a full quick engine change (QEC) kit, and which have accumulated 4,000-5,000EFC since new, have market values of $6.5-7.0 million. This compares to a list price of about $7.5 million, although the actual price varies with thrust rating," continues Moabery.

Pearce puts values even higher. "The -5B fleet only has a spares ratio of about 8%, which compares to about 12% for most other engine types. A fully dressed -5B4/P engine with a QEC kit has a list price of about $8.0-8.5 million. With the QEC kit worth $1.3-1.5 million, this means that the value of a bare engine is $6.7-7.2 million. There have been a few sale and leasebacks with long-term lease rates in the region of $75,000-80,000 per month, which is a lease rate factor of about 1.1%. This is borne out by recent long-term leases that have been signed for about $75,000 per month. Short-term lease rates will be higher."

Reserves for -5Bs depend on thrust rating. The highest rated -5B3/2/1 engines for the A321 are limited by temperature margin, so they have shorter removal intervals. LLP reserves are $85-105 per EFC, while shop visit reserves average about $145 per EFC for the highest rated -5Bs and about $127 per EFC for the lower rated variants powering the A320, A319 and A318.

"It would be desirable for lessors and traders like us to acquire -5Bs from the market through sale and leaseback transactions with airlines," explains Moabery. "Unfortunately, there are few airlines interested in selling their engines, which may be because there is plenty of liquidity the market. However, this could change if market liquidity were to diminish."

The -5B market is made more interesting by the presence of a smaller sub-fleet of engines with the double annular combustor (DAC). "The DAC did have some initial technical problems, but these have now been resolved," says Moabery. "The engines are still more expensive to operate than ones with a single annular combustor (SAC) because there is a limited number of spare DAC combustors, and the unit requires special repairs even though the engine has overcome its reliability problems. The demand for DAC engines is also limited because there are only a few operators that operate them, although airlines can be willing to take them if there is no other alternative available." AC