

Airlines have succeeded in leasing a higher portion of their aircraft and engine fleets, but the leasing of LRU and rotatable inventories has yet to become accepted by financial institutions. The potential benefits to airlines of such a development is an increased level of asset divestment.

The potential benefits to airlines of leasing LRU inventories

Since 1980 there has been a trend towards airlines leasing an increasing amount of assets. This started with aircraft, but has been followed in the past 10 years with a rapid growth in the leasing of engines. The last major asset group for airlines to lease on a large scale is inventories of rotatables and line replaceable units.

Benefits of leasing

The benefits of operating leasing have become clear to all airlines. Leasing allows off-balance sheet financing, dispenses with the need to invest valuable cash and raise debt, and removes residual value risk. Airlines have also used sale and leasebacks to release the equity they have in their aircraft and (more recently) engines, which can then be used for other purposes.

Leasing has developed over the past 25 years, with operating leasing initially being the preserve of poorer and less creditworthy airlines using older and used aircraft. It now accounts for about 40% of aircraft in operation, and is used by all categories of airlines.

Financiers were only originally interested in aircraft leasing, but more are becoming interested in the leasing of engines. Assets have to be monitored in terms of maintenance status and condition, but also in actual location. Aircraft are easily identifiable, but engines are switched between aircraft and

airlines. Engines, however, have a history of more reliable residual value retention, and so are less of a risk for financiers. Engine leasing has grown, and continues to grow, in popularity, since the capital investment in most airlines' spare engine inventories amounts to tens of millions of dollars, and the increased capital cost of modern engine types has put increased pressure on airlines.

Financial institutions have so far shown little interest in providing debt to specialist spare parts suppliers or airlines for the leasing of rotatables. The potential divestment for airlines, however, or ability to avoid investment in material at the introduction of a new aircraft fleet, has obvious benefits in cash saving to airlines.

Financiers have not yet, however, taken a positive view of financing rotatables. "Financial institutions have become more positive about engine leasing over the past 10 years," says Pat Aherne, vice president of marketing and business development at AAR. "Some are now becoming more open to the idea of financing rotatables, but they may only be comfortable doing this with large specialist spare parts providers. The major objection to leasing rotatables is that they are inventories of literally hundreds of parts, each with a high value. They can be installed on a large number of different aircraft, in repair shops or in storage facilities across an airline's network. Moreover, they can be loaned

between airlines. All this makes financial institutions concerned about being able to monitor the physical location and maintenance status of their assets. There are now, however, sophisticated tracking systems which can track each part with its serial number. These can not only locate parts, but can keep data and information about their maintenance and modification status."

Inventory acquisition

The supply and financing of spare parts and rotatables has developed over the past 25 years. From pure ownership and in-house repair by airlines, specialist spare parts providers have increasingly allowed airlines to divest more of their inventory and associated repair and management infrastructure.

The value of inventories required to support a fleet of modern aircraft extends to tens of millions of dollars. A fleet of 10 A340s or 777s, for example, would need to be supported by an inventory of rotatables and LRUs with a value in the region of \$20 million, or about \$2 million per aircraft.

It is now standard for suppliers of inventory, both specialist providers and airlines specialising in third party maintenance for other airlines, to divide inventories between a homebase stock of essential, high failure rate and insurance items, and other parts which have lower failure rates or have less of an impact on



the operation of an aircraft.

Homebase stocks are often owned by airlines, and some may be able to get debt financing for them. The remaining group of parts can be accessed by an airline from a 'pool' shared by other airlines. This can be paid for on a fixed rate basis. Repair and management of parts can also be paid for through some type of fixed rate arrangement.

One development yet to take place is the leasing of entire inventories of parts, so that airlines can divest and use cash for other purposes. Specialist spare providers may be interested in leasing inventories to airlines, but require the resources of financial institutions to do so.

There are still practical difficulties to consider and overcome, but some may present excessively large barriers for airlines to take sufficient interest. "The problem with high value components, such as avionic boxes and complex parts is that there are many versions of the same part number. Upgrades and modifications mean new versions are always being developed and added," explains Rosco Musselwhite, executive vice president at Airliance Materials. "The difference between these versions, or dash numbers, of the same part means they are not interchangeable between different individuals of the same aircraft type. Older component versions are only compatible with older aircraft and younger versions with younger aircraft. Moreover, components are often modified to one airline's specifications and requirements. Many airlines have difficulty in standardising the modification and specification standards

in their own fleets, without considering other airlines' aircraft. It is not a problem for a customer to lease inventories of parts, but the suppliers need to have economies of scale and this implies a large fleet across which the entire inventory can be used to achieve acceptable costs. This is not possible if expensive parts are being underutilised."

This is one practical limitation to both leasing and owning inventories for small fleets. Self-contained inventories can theoretically still be leased by one airline operating a large fleet, saving it a huge investment. This way, it would be easier to track and monitor inventories, but there has been little development of this potential so far.

Ownership & lease

While it is now common for inventories to be split between homebase stocks and pooled parts, there is no actual limitation to the percentage of parts that could be leased. "All parts can be leased," says Aherne. "The homebase stock can be leased by the parts provider and sub-leased on to the airline, while the pooled parts can also be leased by the specialist parts provider."

The actual split between these two portions in an airline's operation depends on several factors. "One example is the the physical location of the spares provider and customer airline. If they are at the same airport then the size of homebase stock can be reduced, which is beneficial if the airline it is required to invest its own cash in its homebase stock," explains Joerg Asbrand, director

Leasing inventories of rotables and LRUs would allow airlines to divest and generate millions in dollars of cash. Although this has not been achieved yet by many airlines, specialist suppliers expect financial institutions to help finance these transactions, setting a new trend in airline asset leasing over the next few years.

customer support component services at Lufthansa Technik. "The split between homebase and pooled stock can also be affected by airline unions and the regulations regarding minimum equipment list items that have to be held at the home base. If a supplier is adjacent to the airline it is possible for the airline not to need any stock, and transport times are all that have to be considered. The other extreme is when supplier and airline are separated by large distances, and in this case homebase stock has to be large. Some providers will only usually offer pooling to an airline if it also leases the homebase stock."

One example of the split between homebase and pooled stock is with the fleet of 10 A340s or 777s, where value of total material is in the region of \$20 million, and homebase stock is about \$8-10 million.

FLS Aerospace is a supplier that offers airlines a package to relieve them of the complete burden of ownership of parts in the agreement. This will include several hundred part numbers for avionics, mechanical parts, LRUs and also wheels and brakes. "If an airline already owns its stock we may purchase it from them. A consignment of fast moving and no-go items may be leased back to the airline. This group of parts might be worth \$3.5 million for a fleet of five narrowbodies," says Charles Warboys at FLS Aerospace.

Cost of leasing

Cost of leasing of modern and new equipment is a reflection of its capital cost, while cost of leasing for older and

used equipment is more a function of market demand for the equipment, its age, cost of financing, the currency of the lessee and issues such as obsolescence and insurance for parts going missing and being damaged. "New aircraft and inventory have a wide range of lease rate factors of 1.2-2.0%," explains Aherne. "The lease rate charged will be dependent on the lease term, the lessee's creditworthiness and range of services included with the supply of the parts, such as repair and management. If just the leasing of parts is included then the lease rate factors for good quality credits will be in the region of 1.0% per month."

Lease rates for poorer quality credits will be in the region of 1.5% per month. One important issue for airlines to remember is that over the long term parts may become surplus on the aftermarket, allowing them to be acquired more cheaply than leasing them from a supplier. This factor should be considered by airlines when entering into a leasing agreement.

"Airlines also have the option of a finance lease for their home stock," says Asbrand "which then gives them title of ownership at the end of the term and so allows them to gain from its residual value. Another possible scenario is that a specialist provider is able to buy parts

from the surplus market, after an aircraft type has become established in the global fleet, and the supplier can charge a monthly 1% lease rate of lower used market prices rather than the manufacturer's list price. The benefits of this can be passed onto the customer in terms of a lower lease rate."

Airliance Materials specialises in acquiring surplus inventory from the aftermarket. "We have found it is cost effective for us to acquire surplus material for an aircraft type on the aftermarket which has been acquired in excess by airlines and is not being fully utilised," says Musselwhite. "This way we can pass on savings to airlines and prevent them from having to acquire material at list price from the OEMs. Our main product is offering low cost material to airlines, and also saving airlines the effort of having to acquire material themselves. We also buy in large quantities and get discounts that way. We can also provide an EDP system to help airlines manage their parts."

Additional services

The leasing of rotables is especially attractive to small and start-up airlines which have limited capital and lack the economies of scale that larger fleets

have. Not only do airlines have to consider the acquisition of rotatable inventories and their associated costs, but also the infrastructure of staff and facilities required to perform line maintenance on the aircraft, and the management of the parts.

The logistics of managing parts in an airline are those relating to the removal of items from the aircraft, transport to a storage depot, registration of removal and other paperwork, packing and transporting, testing and repairing, receiving of returned items, keeping records of repairs and modifications performed and location of storage once returned.

Warranties on younger failed parts have to be claimed and failure rates of parts also have to be monitored for reliability data to be accumulated. This requires an engineering capability.

Both types of activity require an extensive investment for airlines, which is a large cost for small and start-up airlines. It may be simpler to sub-contract this process where possible. This not only avoids major investment in staff and equipment, but also allows start-up airlines to develop and evolve their in-house engineering capabilities.

"One way of managing parts is to monitor them through an EDP system,

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Besides investment in inventories, airlines require large infrastructure for the management and repair of parts. Specialist spare parts providers can provide small and start-up airlines with the staff and infrastructure to manage the process of handling components and getting them repaired and claiming warranties while they have time to develop their own engineering expertise and infrastructure.



which has logistics software. Some parts, for example, have a limited shelf life and these have to be monitored and raised when life is due to expire,” says Asbrand. “Parts are often exported to other countries for repair and then reimported. This process has to be monitored in terms of the customs and shipping time, and an EDP system is needed to manage all the paperwork for this activity. Setting this up all requires in-house capability and infrastructure. There is a large choice of software types that can be used for this management process. Airlines also need another computer system, which can be integrated with the first, to track components and keep reliability data. The issue is that older and mature aircraft have 100-150 component removals per year, and so a fleet of five will see 1,000-1,200 component removals per annum. The average number of daily removals dictates the size of staff required to manage the operation.”

Lufthansa Technik and FLS Aerospace are specialist providers that provide customers with the facilities to manage the full repair cycle process: management of consignment stock; and maintenance and all other functions in the management of parts.

AAR can also take on the whole logistics process for an airline. “Besides stand alone leases of material, we can add the repair and management process,

warranty management and access to pools of remaining components for airlines. We can also add other types of components, such as wheels, brakes, landing gears and auxiliary power units (APUs),” says Aherne. “We can also supply the necessary staff and operate the logistics, warehousing, paperwork, record keeping and shipping. As airlines become larger they generally become more independent in each of these activities as they build up infrastructure for each of these functions.”

Many specialist providers offer these services as part of a fixed rate per flight hour (FH) agreement, or on a similar basis. There are many elements an airline can have included over and above the straightforward supply and leasing of components.

Basic infrastructure

Although it is possible to outsource virtually every type of activity, airlines still need to have a minimum of in-house capability and infrastructure. “A major impact on cost for airlines is operating their purchasing and warranty claims departments,” explains Asbrand. “Managing parts for warranty claims and purchasing requires contact with 300 to 400 suppliers and original equipment manufacturers. This requires a large infrastructure in terms of staff and

facilities, which can only be justified if the fleet is large enough for the cost to be absorbed. Small fleets and airlines cannot justify this level of infrastructure, and outsourcing this activity is more appropriate. Outsourcing the process means an airline is dealing with only one supplier and shipping address. By comparison, a fleet of 15 aircraft will need a purchasing department of up to 12 people. A pool access or rate per FH fee means it is simpler for the airline. An airline will still need a small facility for storing components if most of the activities are outsourced.”

In-house capability

An airline would initially still need to have its own logistics staff to handle the dispatch and receipt of unserviceable and serviceable components. Airlines that have their own in-house capability can divest much of it, and benefit from the reduced overheads and administration costs, as well as the sale of stock and inventory. Some specialist third party providers can actually provide training for airlines, and even line maintenance staff.

The main advantage to airlines, however, is the potential to divest their inventories and also pass the residual value risk of their stock to a specialist supplier. **AC**