



# Rotating parts

A robust system is key to optimising inventory.  
Photo: AMG

A good rotatable inventory system should be able to optimise inventory and lower cost while meeting the target service. **Keith Mwanalushi** provides an overview of rotatable pooling solutions.

**'R'**otables' are those components of the aircraft which need to be 'rotated' at frequent intervals and air operators will usually keep a stock of such items. Rotables are aircraft parts or components that are serialized and tracked on an airline's database. It is also a part that can be rebuilt or overhauled (in-house or by a vendor) and put back in stock to use again. Rotables are basically the opposite of "expendable" (throw-away) parts.

By signing a rotatable support agreement with AAR, Deepak Sharma, SVP of Integrated Solutions – Commercial says operators lower capital costs because they no longer have to invest in multiple parts at multiple locations. "They gain access to AAR's parts pools at guaranteed service levels. Given AAR's long history of buying, selling and repairing components, we also have usage data, in addition to any data provided by the customer, we use gains to optimise inventory and lower the costs of carrying rotatables."



Deepak Sharma, SVP of Integrated Solutions – Commercial at AAR

A robust system is key to optimising inventory, says Ian Smith, Director of Commercial Strategy at AJW. "It must be clear, intuitive and above all, flexible."

Smith says the data must be configured in a structured and accurate manner, providing strong foundations on which to build inventory holdings. "Regular housekeeping is key and should be part of day-to-day activity as opposed to an occasional project. Once a clear system is in place, decisions about what to carry where, including decisions around obsolescence, become obvious; it is evident what inventory actions are required to allow the business to meet its business targets, including customer service level commitments, whilst balancing costs."

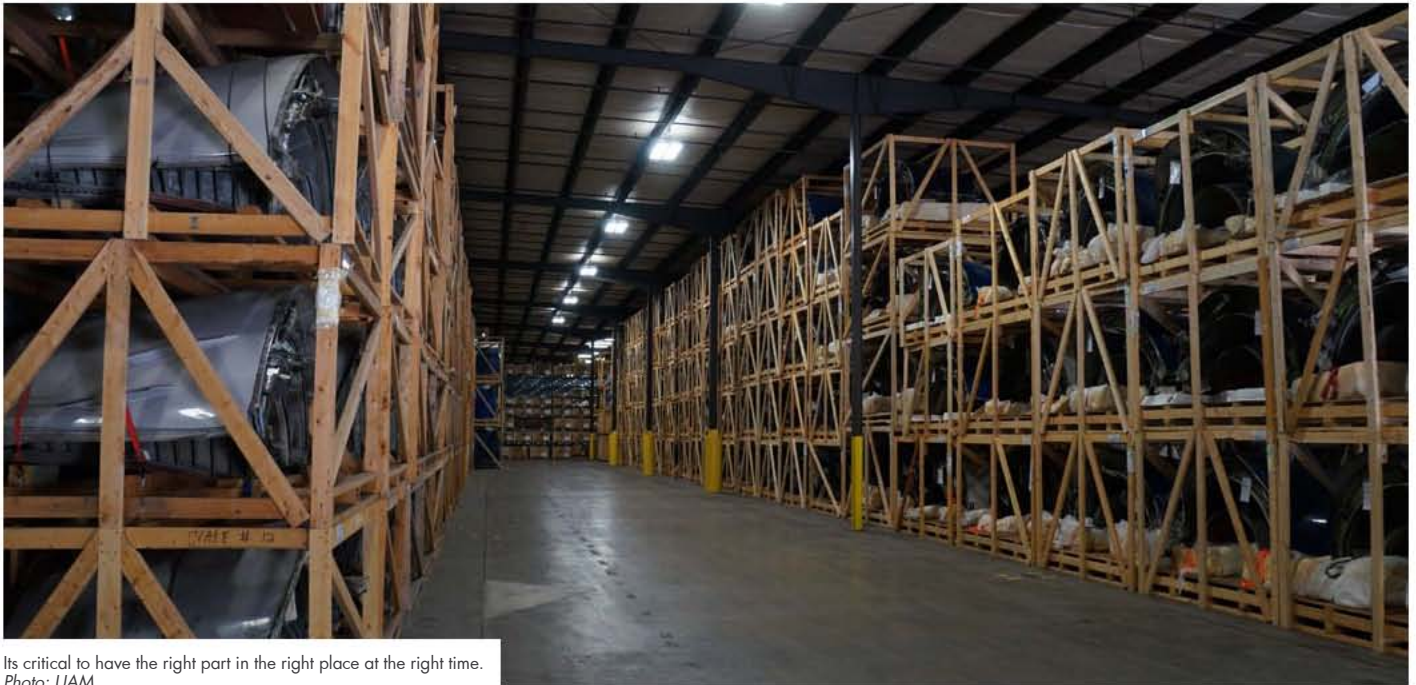
With increasing demand for an efficient and cost-effective supply chain for rotatables, there have been great efforts within the aviation industry to improve rotatable inventory systems and overall inventory management. "The use of a proactive and well-organised rotatable pooling system allows operators to reduce costs by carrying smaller inventories," notes Francis Cradock, CEO at Bii.

Demand forecasting and analysis of big data help to improve operational certainty, predict future problems and boost efficiency.

Bii sees that the use of big data has opened the door to



Ian Smith, Director of Commercial Strategy at AJW



It's critical to have the right part in the right place at the right time.  
Photo: UAM

new ways of thinking about business processes which allow for greater inventory optimisation and more accurate health monitoring of aircraft parts and equipment.



Francis Cradock, CEO at Bii

Many airlines currently maintain their own pool of rotable assets but Bii has noticed a recent shift with a significant number of operators now choosing to share component pools and this delivers cost savings. "The use of rotable inventory systems make it possible to create accurate demand forecasts, build and adjust replenishment plans and provide key information around asset failures in order to optimise usage, maximise product availability and lower the total lifecycle cost," says Cradock.

When performing an analysis and modelling a pool of parts for its customer base, GA Telesis looks at variables such as consumption, interchangeability, effectivity, and global fleetwide coverage. "We focus our efforts on the initial buy price heavily, so that in the ideal scenario, a good part or lot of parts will almost pay for themselves. Having the ability to turn a part for exchange multiple times with various operators allows a continuous write-down of the book value of the part before ultimately selling those items for an additional amount of profit," tells Jason Reed, President of Component Solutions Group at GA Telesis.

GA Telesis offers various solutions to its customers whether it be customised on-site exchange and LRU rotable programmes, main base kit and lease pools, full flight hour programmes, repair management pools, in-house parts pooling, or access programmes which are on-demand for more long term-low demand items such as flight control surfaces.

"Our goal is to ensure that a customer minimises their cost of operation while having confidence in maintaining their desired levels of dispatch reliability," Reed continues.

Spare parts management plays a very important role in aviation, especially for the line maintenance unit where you may never know which rotable parts will be needed right away.

Magnetic MRO is working closely with operators and their CAMO to get the latest and up to date information when and what needs to be changed on the aircraft.

"Thanks to the effective supply chain, nowadays there is no need for MROs and airlines to keep many assets in the stock, as most of the rotable parts can be shipped and installed on the very same day," observes Kaarle Karp, Logistics Manager at Magnetic MRO.

Justas Celkonas, Account Manager, responsible from PBH Supply Management at Magnetic MRO reminds that how fast the components will be rotated is the critical point as every day counts.

"If we rotate the components in standard 14 days once a month and system might save us 1 day per each rotation; in the end it saves 12 days a year, which is one more additional rotation generating income which can be average \$3,000.00 per component and more if we also consider the exchange in the market," Celkonas explains.

One way of managing rotable inventory is to work with a partner. MTU Maintenance is specialised in asset and material management for engines and components and also has a dedicated accessory repair centre



Jason Reed, President of Component Solutions Group, GA Telesis





MTU Maintenance has a large in-house demand for spare parts.  
Photo: MTU

at its facility in Vancouver that manages Line Replaceable Units (LRUs) and accessories on behalf of customers.

MTU Maintenance offers asset maximisation services that covers green-time engines, used serviceable material and other spare parts, such as rotatables. "Parts management is particularly interesting for customers with surplus inventory, as we are able to generate maximum income for them and their parts. As an MRO provider with a large customer base and significant logistics experience, we can optimise inventory levels for customers and also help them to reduce costs," says Ruediger Heinrich-De Stefano, Director Asset Management at MTU Maintenance.

The parts market is volatile, and prices can fluctuate largely according to demand and availability. "As such it is important to know this market inside out," continues Heinrich-De Stefano.

MTU Maintenance has a large in-house demand for spare parts and sources both from and to asset owners, creating more value for asset owners. "We use our own proprietary system to manage and assess engines, modules and parts.

"The amount of rotatables in our pool is driven by repair turn time, the amount of rotatables to be supported based on age or soft time of the affected parts, and the age of the affected fleets. To predict these aspects, we review the manufacturers' recommendations for the repair handling of such parts. We also take into account vendor performance and the predicted number of shop visits of the respective engine type."



Ruediger Heinrich-De Stefano, Director Asset Management, MTU Maintenance

Tom Covella, Group President of STS Component Solutions advises that when implementing an inventory optimisation strategy within an organisation, it's essential to ensure the solution provided is properly aligned with the goals and objectives of the organisation and the customer.

"There are multiple approaches to reducing the carrying cost of inventory while increasing your service level," states Covella. He says one of the more popular solutions is through

the establishment of rotable pooling programmes. "Pooling inventory allows the customer to reduce the carrying costs associated with inventory levels, while also guaranteeing availability based on a pre-determined service level. Many low-cost carriers are utilising this business model as a means to maintain a competitive position in the market."

STS Component Solutions develops customised inventory management solutions that are unique to each customer, according to Covella. Whether it is strategically placing inventory in geographic locations, establishing repair management solutions, or developing inventory pooling programmes each solution is built to meet the financial and operational performance goals of the customer. "Each of these programmes is unique in their own way, they need to be developed and adjusted to accommodate an airline's operational needs and support their flight schedules. STS Component Solutions prides itself in the ability to adapt to each of our customer's needs and develop a customised solution to deliver value and cost reduction opportunities."



Kaarle Karp, Logistics Manager, Magnetic MRO

Jeff Sabo, SVP of Global Technical Operations at Universal Asset Management (UAM) feels that the optimal means to achieve smaller inventories and lower costs is through fleet standardisation programmes and engineering orders specifically focused on predictive analytics. "These orders are focused on the reliability of the sub-components and correlates directly to overall component reliability. Therefore, the quality of the repair station is vital to stock holdings. The inventory system should be able to run the metrics therefore closing the loop in-between strategic planning and parts lifecycle management."

Sabo explains that there are varying levels to the criticality of different parts ranging from "it cannot be deferred" to "it can be repaired at the next check". He says intermittent demand is the hardest to predict and can quickly escalate from having no demand to being an immediate and urgent requirement. "This happens due to flying conditions and maintenance practices. As such, control of the data is vital to the owner's decisions on predictive maintenance practices. UAM currently engages



The parts market is volatile and prices can fluctuate.  
Photo: MTU

with customers, including MROs and OEMs, in finding ways to optimise their pool, utilising engineering improvements at the statistical level."

As aviation technology becomes increasingly sophisticated, Mike Cazaz, CEO and President at Werner Aero Services is seeing innovations that forecast maintenance needs which can significantly reduce costs. Us-

ing existing data, he says airline engineers can now anticipate problems thereby removing and replacing components ahead of failure. "Many airlines today load up on spares to ensure that they have the right parts available should they ever need one. This new technology reduces the need for carrying large amounts of every spare by identifying what may not be needed or used. The right inventory management system can also lower overall inventory costs by moving units quicker through the management process."



Jeff Sabo, Sr. VP of Global Technical Operations - Universal Asset Management

In terms of pooling, Werner Aero Services mainly focuses on engines 'nacelles and APUs which are available in US, Europe and Asia. "These assets are extremely expensive, and airlines typically don't like to carry them on their balance sheet. Having them physically closer to our customers enables them to take advantage of this opportunity."

Cazaz says most of these assets are used for short term leases and provide committed operators JIT inventory without the major capital expense that would have been needed if they had to procure the assets themselves. "Within our rotable pool, we manage the inventory levels as well as reliability in addition to the entire process of inspections, repairs, and modifications processes through our trusted MROs. We save our customers substantial amounts of money by reducing their capital investment."

AAR is the third largest provider of rotable inventory support around the world, according to Sharma. "There is no repairable component that we don't cover under some sort of arrangement. And, given our landing gear and airframe maintenance capabilities, we can support an aircraft from nose-to-tail if needed."

For airlines and government customers, AAR supplies both new and

serviceable parts. Parts can be purchased from AAR or as part of an integrated solution including access to parts pools. Parts are shipped from the nearest warehouse in AAR's worldwide network. Orders can be tracked online including via the customer portal, AARive. AAR can also repair components in-house and/or manage the repair for customers, including working with its subsidiary Airinmar, a component repair cycle and warranty management company.

AJW does not operate a single, "one-size fits all" PBH programme for its customers. "Instead, we listen to them to understand what they need, and then build a programme specific to their requirements," says Smith.

AJW supports the majority of Boeing and Airbus aircraft types, both narrow-body and wide-body, across all engine types; and supports all sizes and types of operators, from 1 to 300 aircraft, whether they're scheduled, charter, LCC or freight operators.

Smith adds: "Our typical PBH offering includes access to our pool of inventory, management of all component repairs, management of any warranties, and frequently the provision of an on-site inventory of operationally critical components. Our coverage is normally defined by ATA chapter rather than by specific part numbers, giving our customers peace-of-mind that when something goes wrong, we'll cover it."

Bii specialises in the supply of rotable components and the sale of aircraft consumables. "Our customer service teams source spares from our extensive inventory and ship them worldwide," states Cradock.

Bii also offer consignment asset management, by airlines consigning their rotable stock to Bii, the company is able to establish loan/exchange

pools on their behalf. "The pool is managed and added based on customer demand and shortages. Bii controls the level of stock for usage for our Tier 1 operators allowing them to reduce their own inventory levels knowing that we will manage scrappage, repairs and realisation of dollars on their behalf," Cradock concludes.



Tom Covella, Group President of STS Component Solutions