



Playing the part

Spare engine forecasting and usage is driven by several factors.
Photo: Pratt & Whitney

Leasing and pooling solutions for engine parts supply requires a strategic plan. **Keith Mwanalushi** looks at the adoption of best practices for parts planning.

Back in 2011, a report by Pratt & Whitney Canada (P&WC) found that successful spares planning and forecasting needs more effective collaboration and sharing of information (fleet data, engineering change orders, part reliability, service bulletins, etc.) across the supply chain.

The global demand for parts is directly correlated with the number of engines in the field. For instance with over 10,000 operators operating more than 50,000 engines in more than 200 countries [2014 P&WC statistics] it still shows the magnitude of the international demand. Every year new engines enter the market place both on existing and new applications which increases demand year over year.

In terms of engine leasing, Carl Glover, Americas VP, AAR Parts Supply says there is a continual demand for leasing with the larger population of narrow-body engines on A320 and B737NG. "The demand for parts also remains strong with used material supply requirements being driven by engine shop visit events (ESV)." Glover observes that there is an increase for shorter term "green time" engines as operators and lessors alike await fleet renewals or look to defer some ESV activities.

Cliff Topham, SVP Sales and Business Development at Werner Aero Services sees the demand for engines to be very strong - as an efficient mechanism for providing assets without the necessity for major capital expenditure. "The demand of course varies by programme," he notes.

Pooling solutions are constantly monitored and reviewed by most of the key players in the field to allow engine owners to improve their inventory flow. Parts pooling is typical amongst non- 'core' inventory types such as LRU's, engine accessories, and fan blades. Glover agrees that pooling can play a strong role in inventory support.

AAR offers a number of solutions including both closed pooling and tailored partner pooling programmes that meet a customer's specific requirements. "We accomplish these support programmes through repair management, as well as hourly operational solutions. These programmes are offered across most commercial engine types."

Glover further explains that inventory flow is managed alongside component reliability via AAR's internal processes and repair solutions tailored for each client's shop activities. "Whole engine pooling is a different approach that requires technical understanding of the pooling partners, lease obligations, build standards, PMA, DER and scheduled fleet maintenance programmes. More recently we have seen operators looking for exchanges options from a pool of engines to support their demands for fleet sustainment. In this scenario, AAR works with engine MRO shops to ensure we have engines available to 'seed' the pool," Glover states.

Topham also stresses that engine owners have to be cognizant of modification standards of engines and to a large degree the designated thrust ratings of engines to ensure the ability of the asset to be marketable in bigger markets.

It's clearly necessary for engine parts suppliers to forecast demand and possibly, for engine owners to predict their own needs. "Spare engine forecasting and usage is primarily driven by flying hours, harshness of operating environment and thrust rating," comments Topham.

The P&WC 2011 report highlighted the advantage of being able to forecast spare demand accurately, and that the process was more of an operational advantage putting emphasis on being able to have the correct parts in the correct quantities in the correct location with the need



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Photo: Pratt & Whitney

for more effective sharing of information and greater collaboration.

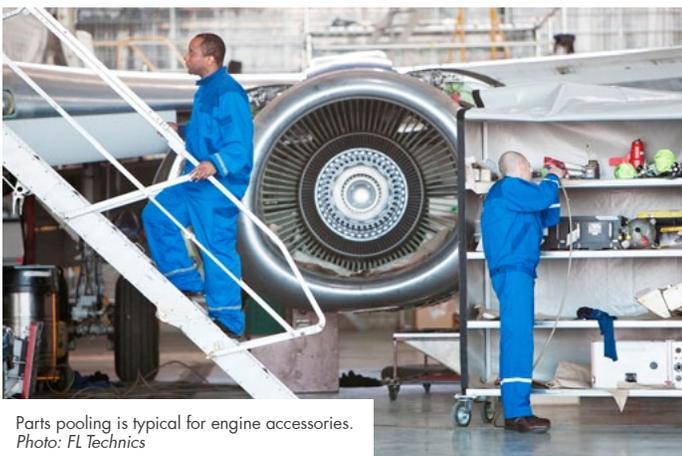
As stated, forecasting spares demand involves a great deal of information. Spares forecasting requires various types of internal and external data collection prior to using manual and/or statistical-based forecasting tools.

But this data is hugely confidential and each OEM and parts supplier guards this information carefully. Therefore organisations are unlikely to share detailed models and forecasts with the market, that said, suppliers and MROs will often share information under non-disclosure type agreements to develop mutually beneficial supply agreements.

Engine parts suppliers use various data points, either historical or proactively to ensure they have the right level of surplus spares available to satisfy the markets requirements.

Some companies have a complex algorithm that forecasts spares demand on an aggregate as well as on an engine model by engine model basis.

Glover adds that spares forecasting must be tailored to a customer's unique requirements. He says whole engine spares forecasting is strategic in nature to ensure engine availability for fleet usage and thrust availability. "It becomes more tactical when considering the impacts of seasonality, flight hour peaks, network changes, and other impacting factors such as AD and SB compliance. AAR's spares forecasting model



Parts pooling is typical for engine accessories.
Photo: FL Technics

looks at both long-term [strategic] and short-term [tactical] horizons to ensure we have both whole engine and inventory spares available to support fleet demand."

Software enabling capabilities that aid to forecast demand for engine parts already exists, but some experts believe there are too many variables to manage the wholesale supply properly.

These days the global demand for spare parts is driven almost exclusively by the OEM and its level of participation in the MRO aftermarket. Usually, where the OEM has complete control of the aftermarket there is no material supply because of the control exerted by the OEM.

Analysts observe that when an OEM is very active in the aftermarket such as Rolls Royce, the engagement of the surplus material providers is inverse to the OEM's involvement.

Engine owners will ultimately want to improve their inventory flow. Industry experts recommend that engine owners could improve their inventory flow by working closely with the industry to reduce costs taking advantage of the surplus equipment coming available to reduce total MRO costs for ESV's.

AAR looks at global trends in fleet demand and some of the volatility patterns on certain engine types to ensure it has engines available. "We



Glover says there is a continual demand for leasing especially for narrow-body engines

maintain a 'close-to-the-customer' business model that verifies market intelligence and helps effectively plan for proper support," says Glover.

AAR also works alongside a number of its key customers (operators and owners) to forecast their ESV demand schedules with consideration of shop capacities to ensure AAR can support engine spares and material demands when required. This information sharing looks at engine trends monitoring, EGT, on condition items alongside hard time LLP removals. "In an ideal world, there will always be spares available for the operators; this is where communication is key and AAR can help," Glover states.

Topham from Werner stresses that engine parts suppliers basically need to understand the demand for engine shop visits (performance restoration and full overhauls) which drive the main consumption of parts.

Demand forecasting information and the resulting inventory, manufacturing, and MRO capacity to meet the predictable and unexpected needs of the commercial aviation market are critical as growth expands.