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THE SUM OF THE PARTS

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Spare parts availability is challenging the aviation industry. *Bernie Baldwin* learns from some key players in the sector just how the challenge may be overcome

Whether they be new, repaired/ refurbished or USM (used serviceable material, mostly acquired from the teardown of retired aircraft), arguably the main spare parts challenge across the aviation industry is their availability.

“At present, there is still a significant shortage of parts in the market, although the demand decreased somewhat at the end of last year,” says Airina Kacienaitė-Krake, head of trading at Magnetic Group. “The main reasons for this are the decrease in the number of teardowns (out of the planned 600+ teardowns, less than half were done) and the TATs due to spare parts and

manpower shortage at the repair shops. Not only companies that engage in the secondary parts market but also airlines are trying to build at least a minimum stock of parts.”

According to Toma Matutyte, chief executive at Locatory.com, the status of spare parts availability across the aerospace industry is challenging but improving: “There are several factors contributing to the struggle, the main ones being the ageing aircraft fleet, the increasing demand for new aircraft and global supply chain disruptions.

“That ageing aircraft fleet poses a distinct challenge as the industry grapples with delayed deliveries of aeroplanes, resulting in continued demand for older aircraft,” she adds. “This strains the supply of replacement

components. Manufacturers are producing fewer new parts for these aircraft, and the supply of USM is further reduced. The retirement of older fleets is also further postponed.”

Matutyte also believes the entire sector is still grappling with the after-effects of the Covid-19 pandemic. “Despite the resurgence in demand for air travel and fewer supply chain disruptions compared with a year or two ago, manufacturers anticipate ongoing challenges. They had reduced production capacities during the initial uncertainty of the pandemic, resulting in the subsequent wave of massive layoffs.

“When the demand for new aeroplanes and parts surged once more, a significant labour shortage emerged, impacting the speed of new parts production. The



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“Having our own in-country MRO facility will ensure a quicker turnaround of our fleet maintenance”

demand is substantial but not fully met, contributing to the shortage of parts. Nevertheless, companies are addressing workforce shortages and are working to produce more aircraft and parts to meet high demand. Thus, we see the situation improving.”

For Lindsay Cooper, head of asset management for the AJW Group, industry challenges concern spares availability, characterised by two key factors: “Firstly, the ‘in service’ issues that operators are facing with new-generation aircraft have led them to prolong the operational life of older-generation aircraft. Secondly, supply chain disruptions are causing significant delays in the delivery of new components and affecting the shop processing times for the repair of unserviceable components.”

With parts more difficult to acquire, a key task is to manage stock well to ensure minimum equipment levels (MELs) are kept. “Effectively managing inventory to maintain MELs is a strategy-based balancing act,” Cooper states. “Notably, those who have made substantial investments in stock are better equipped to navigate supply chain disruptions. We employ a proactive approach by maintaining a robust inventory, ensuring a resilient buffer against uncertainties in the supply chain.

“A key aspect of our strategy involves a continuous influx of aircraft for disassembly. This not only bolsters our stock levels, but also provides a steady supply of serviceable material. Also, gaining a holistic understanding of customers’ fleets is crucial, allowing for better anticipation of their maintenance and repair needs.

“Managing stock levels is a data-driven science and utilising advanced analysis tools enables us to identify demand trends, TATs and stock levels. Our strong relationships with OEMs and MRO providers, including our MRO facility in Montreal, AJW Technique, play a pivotal role in our success.

“As an industry, we have proved our resilience and have adopted creative sourcing methods to reduce TATs at MROs and further enhance the overall efficiency of our business.”

“Perhaps the practice most worth mentioning is data management,” Kacienaitė-Krake remarks. “With enough data available regarding which parts are in the highest demand and how often they are replaced, it is possible to plan warehouse purchases and part repairs. This also allows us to forecast changes in part prices quite accurately. Tracking data helps plan when the customer will need one or other part.”

1. Parts don’t always have to be new, but they must be airworthy
2. Toma Matutyte, chief executive, Locatory.com
3. Airina Kacienaitė-Krake, head of trading, Magnetic Group

Locatory.com’s Matutyte notes that companies which manage their stock effectively “employ centralised platforms like ours to benefit from a complete view of their spare parts inventory”. This, she continues, “allows for real-time tracking, order management and efficient monitoring of stock levels. Our collaboration also benefits them through access to advanced inventory management systems that minimise inconsistencies. This ensures accurate tracking and accountability, reducing the risk of stockouts or overstocking.”

Matutyte continues: “Effective spare parts management involves collaboration with suppliers to enhance inventory visibility and reduce lead times. Our platform enables such collaboration to ensure that the right parts are available when needed, minimising disruptions.

“Organisations excelling in spare parts management maintain a balance between inventory levels and MELs through a combination of advanced technology, predictive maintenance, streamlined procurement, continuous improvement, and collaborative relationships with suppliers.”

To maintain ample stock, repair parts when feasible; technological advancements can boost the repair of more parts. “In recent years, there have been exciting developments in using 3D printing,” says Matutyte. “For example, Airbus Services subsidiary Satair used 3D printing to make a wingtip fence for



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▼ Lindsay Cooper, head of asset management, AJW Group



“More parts being repaired highlights the role that parts pooling can play as a tool for airlines and MROs to help manage stock”

a single air carrier. This part aids in air circulation around the wings. The unique aspect here is that they used 3D printing to create a part for an older aircraft type, the A320ceo, at lower cost and faster speed.

“These components are specifically designed for the A320ceo but are no longer in production. The single supplier of spare parts for the traditional cast version of these components faced challenges, resulting in a consistent shortage of the moulds used to secure the wingtip fences on the aircraft. The absence of these parts hampers the operation of the aircraft. However, this approach helps older fleets stay operational when there aren’t enough suitable spares from scrapped aircraft and new parts are no longer produced.”

Matutyte observes other promising applications. “Despite being applied in mass production since early 2000s, laser welding offers enhanced accuracy compared to traditional methods. Lasers focus heat on precise areas, minimising heat-affected zones and reducing the risk of damage to surrounding components. This improves the integrity and lifespan of repaired parts.”

Viktoras Baltaduonis, repair management lead of Magnetic Trading at Magnetic Group, is less enthusiastic on the repair front. “So far, there is not much new technology in the repair field because

the manufacturers strictly regulate the repair process. However, due to new technologies, new parts are already appearing, the production is shorter and the service life is much longer.

“Owing to the aforementioned spare parts shortage, we have noticed a growth in the PMA (Parts Manufacturer Approval) spare parts market and heavy usage of these spare parts in the repair process of non-critical components. That means aircraft operators are slowly softening their position towards PMA spare parts and are willing to accept components containing them, in exchange for shorter repair TATs and fewer beyond economic repair cases.”

More parts being repaired highlights the role that parts pooling can play as a tool for airlines and MROs to help manage stock. AJW’s Cooper says: “As operators face hurdles such as prolonged logistic lead times, among others, there is a trend towards greater regionality in sourcing. AJW’s operational agility has led us to drive a pooling strategy with inventory placed purposefully around the globe. Our strategically developed stock management and logistics solutions meet our customers’ demands, which is invaluable to operators and MROs.”

Locatory.com’s Matutyte believes that parts pooling is extremely valuable. “Providers of pooling services are addressing supply chain complexities

related to the procurement, stocking, transportation and repair of parts, relieving MROs and air carriers from these complexities. Against the backdrop of the ongoing global supply chain disruptions, this assumes heightened importance. This strategic offloading of responsibilities enables airlines to focus on their core activities while ensuring a seamless and efficient flow of essential components within the industry.

“Major manufacturers offer exchange programmes to assist aircraft operators in reducing inventory, cutting costs and ensuring aircraft reliability. If a valuable part requires repair and overhaul, a replacement can be easily requested, installed, and the old one returned which is then refurbished and added to the exchange inventory.

“As more airlines and MROs adopt pooling programmes, we can expect even greater benefits in terms of reduced costs, improved availability and enhanced efficiency. Benchmark programmes demonstrate the success of pooling initiatives in effectively managing spare parts inventories and supporting the sustainability of airline operations.”

The spares and repairs situation is thus likely to remain fluid for some time, with even small advances likely to be valuable. Add a few of those together though, and the outcome is likely to be greater than the sum of the parts. **M**