



Delivering power

Investors buying up surplus engines and parts for the CFM56.
Photo: Magnetic MRO

The CFM56 is the most popular engine flying today. **Keith Mwanalushi** looks closer at the leasing market and maintenance trends for the powerplant.

Back in May, aviation consultancy firm IBA reflected on the overall stability of the engine market and flagged some strengthening market values for engines indirectly impacted by recent engine EIS issues. IBA highlighted growing awareness that some operators are extending existing leases on current engine options and this is keeping values buoyant whilst new generation technology enters the market. IBA also sees stronger short-term lease rates for the CFM56-5B/-7B due to tightening availability of supply and increased shop visits.

As with last year, the CFM56-5B/-7B and the V2500-A5 engines are still experiencing frequent trades and stable values with demand expected to grow as more engines are removed for maintenance. Due to the supply, demand and ease of access to credit, IBA have seen investors buying up surplus engines and parts, resulting in artificial inflation.



Rune Veenstra, Chief Business Officer at Aero Norway

"CFM56-5B/-7B short-term lease rates are also stronger than in the past two years, driven by shop visits and reduced availability of spare parts," said Kane Ray, Head Analyst - Commercial Engines at IBA.

At Stavanger-based Aero Norway, the company uses modern equipment and integrated technologies to ensure the engineering capabilities to cope with increased demand. "In addition, our ERP

system, combined with planning tools and the focus on streamlined paperless processes, keeps us organised and operating at maximum lean efficiency," declares Rune Veenstra, Chief Business Officer – Aero Norway. The company presently operates a 2-shift system with 155 employees, "we are forecast to ship 84 engines in 2018 and have the investment and structure in readiness for future growth," he adds.

The AJW Group is actively buying engines to meet the demand for USM from these engine variants, states Ian Malin, the Chief Investment Officer. "Admittedly, it's presently difficult to source engines at realistic prices to satisfy the demand that is expected to increase due to a shortage of engines and material on the market," he observes.

Over the past 12 months, AJW have bought several both unserviceable and serviceable -5B and -7B engines specifically to address this. The unserviceable engines go right into tear down to be sold through AJW's Parts, Sales and Support ("PS&S") division.

The serviceable engines are part of AJW Leasing's broader strategy to establish a pipeline of product supply. AJW Leasing burns off the greentime in the engines by providing the AJW Group's customers short term engine leasing support. "Once an engine reaches its cycle limit, it is then given to the PS&S division for disassembly and third-party sales.



Ian Malin, Chief Investment Officer, AJW Group.



MROs are working on buying as many assets as possible to meet demand.
Photo: Magnetic MRO

This strategy allows the AJW group to forecast the pipeline plan around expected engine removals and be more selective in its engine purchasing," Malin states.

Magnetic MRO are working on buying as many of these engine assets as possible to meet the demand in the market. "Arrangements have already been made with part repair vendors and teardown facilities, so we can prepare materials for sale as soon as possible," confirms Filip Stanisic, Head of Engine Management Department at Magnetic MRO.

Hans-Dieter Reimann, Director Engine Programmes for MTU Maintenance says the CFM56-5B should have its shop visit peak before the end of the decade and start to tail off slowly thereafter, though with a large installed fleet, there should still be strong demand throughout the next decade.



Filip Stanisic, Head of Engine Management Department at Magnetic MRO.

"MTU Maintenance is extremely well prepared for this wave of shop visits and the maturing assets, with both variants being served in Hannover, Germany and Zhuhai, China."

MTU performed close to 150 shop visits on -5B and -7B engines last year at its facilities in Hannover (Germany), and Zhuhai (China). "We are

currently increasing our capacity in response to rapidly growing customer demand, especially on the CFM56-5B. We expect to process close to 200 CFM56 shop visits in our shops in 2019, with a further increase in the following years."

Furthermore, MTU have a mature engines programme suited to maturing fleets in the longer term. The programme focuses on reducing costs for operators of ageing engines through cost-effective MRO alternatives.

Volo Aero MRO are adding capital equipment and training the workforce in anticipation of increased volumes, whilst at the same time focusing the business on where the future growth will come from regarding the customer base. "Using lean processes, we are working to increase our capacity and throughput without adding cost and headcount. In the North American market, the largest challenge we face is the labour market constrains," affirms Andrew Walmsley, President at Volo Aero MRO.

When looking at the market, it seems investors are buying up surplus engines and parts, resulting in artificial value inflation. And lease rates are being driven by shop visits and reduced availability of spare parts.



Hans-Dieter Reimann, Director Engine Programmes for MTU Maintenance

"Prices on tear down engines and green time flyers have increased this year on CFM56-5B/7B and until there is a change in demand we do not expect that to change in the short term," Walmsley anticipates. He observes that factors such as the delivery of new aircraft, the growth in single aisle fleets by the low-cost carriers and the relative low cost of fuel are all pushing the values upward.

On spare parts, Walmsley says the industry supply chain is being stressed by the significant ramp up on new engine deliveries as well as the increase in 5B/7B engine overhauls. "The suppliers are the same so are dealing with increased demand on two fronts with an added pressure of an ageing work force and a tight labour market."

Veenstra from Aero Norway reckons it is very difficult to find CFM56-5B engines available for lease in the marketplace and this engine type accounts for approximately 35% of Aero Norway's shop visit activity. "We are one of Europe's largest providers of CFM56-3 maintenance and with regard to this engine module swaps - and small visits that we call surgical swipes - account for circa 35% of our maintenance activity. We find there is generally many retired aircraft to generate enough surplus and spares for this engine type."

There are now more speculative financial investors than ever pursuing investment strategies for these assets, according to Malin. "In addition, the engine shops are actively buying available engines from the market directly and managing the disassembly of these engines, to procure USM to support their own shop visits. In the past, the MROs would focus primarily on their shop visit activity rather than investing in such whole assets."

While this activity is expected, given the demand for this material, AJW still sees plenty of opportunity in this space. "Financial investors won't necessarily have the capability, nor the appetite to develop a go-to-market strategy for selling off USM, whereby holding assets for lease is a much lower barrier to entry. In disassembling engines and selling off their constituent parts, often a spare parts partner is required, thus eroding sales margins to compensate such partners for their efforts," Malin adds.

Stanisic agrees that there is growing interest by the industry to buy engine parts and try to trade them, but most of them are selling them instantly, so this is probably not making some artificial extension of shop visit duration, he says. "It does however increase the price of parts. Lease rates are also increasing based on the fact that more and more engines are sent for repair these days and there are no additional spare engines on the market to cover the demand. We see the increase in lease rates because of current market supply and demand situation."

Experts say limited availability of spare parts could mean longer downtime during maintenance compounded by a longer wait and higher pricing for those parts, plus possible increases in lease rates too.

Veenstra agrees. Aero Norway has already seen that some of the used parts with limited availability have increased in price. "Limited availability of spare parts will inevitably increase TAT on engines in the workshop thus creating the need for more -5B lease engines. We are focusing on a flexible range of maintenance modules to cope with older aircraft that utilise the -3 engine. Our customers need to ensure they can remain in profitable operation for as long as possible - so we offer a workscope that provides enough EGT margin to match remaining EFC lives of LLPs in the HP modules."

The folks at AJW also agree, albeit partially. Malin says despite

heightened demand, markets are inherently efficient, and airlines will demand rapid turnaround times to satisfy their operations. "We do believe that the scarcity of these engine will cause the cost of parts to increase and as a result the investors in these assets will suffer from compressed margins. We expect speculative investors to move on to other opportunities and those asset managers who have the ability to extract value across the spectrum of an engine's life to remain successful during periods of more frequent engine shop visits."

Though as with every challenge, there are also opportunities. MTU together with its customers are always looking at alternatives. USM is one example, as is customised workscooping, which is used to avoid the removal of supply chain critical parts, wherever possible. "Furthermore, our high-tech EASA-approved repairs represent an alternative that also can significantly reduce costs as well as extend on-wing times as a way of keeping our customers flying," says Reimann.

MTU Maintenance is expanding its Zhuhai facility by 50% to a capacity of 450 shop visits per year by 2021 and are also expanding the throughput of its Hannover facility as part of a multi-pronged strategy to increase overall capacity throughout the network.

Aero Norway is continuing investment in apprentices supported by the Norwegian Government and increasing capacity to manage more engine overhauls and smaller shop visits. Aero Norway is also investing in inventory of spare parts to reduce TATs. The recent announcement that the International Air Transport Association (IATA) has formed an agreement with CFM International (CFM) to improve the opportunities available to third-party providers of engine parts and MRO services on the CFM56 and the new LEAP series engines will have a great impact on Aero Norway and we are ready to absorb this.

Magnetic MRO are working on establishing more capabilities to strengthen their position in the market and make more complicated on-site repairs. To achieve this, the company is making additional investments both in tooling and training fields.

The CFM56-5B and -7B platforms are going to be a considerable source of repair work in the coming years particularly with the OEM MRO facilities clearing space for the next generation LEAP platforms. Walmsley sees this platform as an area of growth and opportunity for Volo Aero MRO moving forward. "We have recently invested in increased capabilities for grinding so that we can support larger parts off these engine types."



Andrew Walmsley, President at Volo Aero MRO.