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MRO

Aerospace Magazine



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and supply chain qualms

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MRO industry brings focus back to the European region

The MRO Europe event in London.

Photo: Keith Mwanalushi

It's October, so the industry including our team from AviTrader MRO converged on London for the 2022 instalment of MRO Europe.

Looking at many of the European legacy and flag carriers, the pandemic led them to further rationalise their mix of MRO performed in-house versus outsourced as the Covid crisis provided the perfect storm to better rationalise their cost structure. Experts reckon this should create an opportunity for independent MROs to expand their customer base.

The major MROs too are bringing back capacity significantly. At the start of MRO Europe, we already saw the signs of this upward trajectory. Recently launched carrier Norse Airways has joined the AFI KLM E&M's community of 787 operators and has engaged the MRO provider's component support services for its 12 787s. In recent weeks, Lufthansa Technik sealed major new long-term contracts for the strategic component support of renowned ultra-low-cost (ULCC) airline brands Wizz Air, Frontier Airlines and Volaris.

It's interesting to see that Fokker Techniek and Fokker Services have rebranded to become Fokker Services Group. Following the rebranding, the aviation aftermarket company is now building a widebody hangar in collaboration with Gaptek. The new facility will accommodate aircraft in the size category of the A330, A350 and B777. Fokker is seeing increased interest in widebody maintenance and VIP completions, and the new facility will play a pivotal role in supporting the market.

Given the current supply chain challenges, especially in Europe several MROs are reportedly seeing operators more willing to sign longer term contracts to resolve supply chain issues. Many MROs have told us that the biggest issue they foresee is the impact of price escalation by OEM suppliers, chiefly on components. Significant price increases are being forecasted for 2023 whilst MRO providers, like some in the region, have limited opportunities to mitigate the full impact of such increases.

In the European market though, there is a gradual shift to restore balance following the significant price escalations by most OEMs.

Keith Mwanalushi
EDITOR



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Returning to longer term spare engine provisioning



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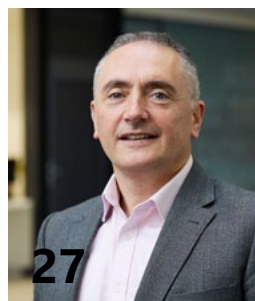
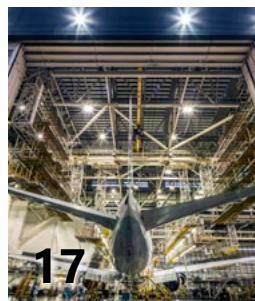
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EirTrade powers up

EirTrade Aviation, the aviation technical asset services and trading company, has had a busy two years. As the aviation industry started to rebuild after the first wave of the pandemic the organisation stepped up its planned programme of investment and growth. According to Ken Fitzgibbon – CEO, the impact on the business has been remarkable. “We’ve juggled ambitious growth strategies with recruiting the right people to turn our vision into reality. This means that our headcount has increased by 140% and we have welcomed new team members across the world from Dallas, to Dublin, to Lithuania,” he says. Additional resources have spearheaded four new satellite locations for EirTrade, including one new office and warehouse in Dallas, Texas, as well as significant expansion in Ireland. “EirTrade has been ramping up its aircraft disassembly activities at its dedicated facility in Knock, Ireland West, focusing on Airbus and Boeing aircraft,” explains Fitzgibbon. “We are working closely with the lessor

and airline community across a range of aircraft and have built up an excellent reputation with our technical teams. These relationships have been the catalyst for a steadily increasing volume of work we are undertaking on their behalf that ensures both the quality and a consistent timely flow of the disassembled assets.” These factors have also seen EirTrade increase its warehouse capacity by a further 115,000 ft² and the opening of its new engine teardown facility in Dublin. Fitzgibbon goes on to say that EirTrade is seeing a strong pipeline of teardowns across both facilities. “This additional capability has given us the capacity to handle over 70 aircraft and engine teardown projects over the past 24 months and raised awareness of our asset management services. We work closely with airlines, MROs and OEMs to maximise value from our streamlined post-disassembly supply chain for high-value components. We expect to see a huge wave of demand for USM next year and we are well placed to satisfy it,” he concludes.

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Honeywell appoints VSE Aviation as exclusive global distributor of LASEREF IV inertial reference system

VSE Aviation, a wholly owned subsidiary of VSE Corporation has been appointed by Honeywell as the exclusive global distributor of the LASEREF IV product line. The LASEREF IV inertial reference system replaces the existing LASEREF I, II and III systems, which are no longer supported through Honeywell. Honeywell's LASEREF IV is an all-digital ring laser gyro-based inertial reference system. The system uses gyroscopes, accelerometers and electronics to provide an aircraft with precise altitude, velocity and navigation information so it can determine how it is moving through the airspace. The LASEREF IV upgrade affects all business aircraft operators and owners that are using the obsolete LASEREF I, II and III systems. The upgrade is available for the following aircraft models: Bombardier Global Express, Global 5000, Cessna Citation X, Challenger 600, 601, 601-3A, 601-3R, Dassault Falcon 900, 900EX, 900C, 2000, 2000EX, Gulfstream GIV, GIV-SP, GV, Falcon 50EX, and Hawker 800A/B, 1000 and 800XP.

Drayton Aerospace to acquire first B737-900 for teardown

Drayton Aerospace has announced the first planned acquisition of a B737-900 aircraft for disassembly. After teardown, this ex-Jet Airways aircraft will provide a pool of components and parts to support the company's growing number of customers operating B737s around the world. With a goal of completing an additional six aircraft teardowns in 2023, this is an exciting year for the company as it determines to strengthen its position in global airline parts distribution. Drayton Aerospace Group headquartered in Xiamen, PR China is a multi-disciplined aircraft component MRO service provider with facilities located at Xiamen and Xi'An, China as well as Porto Alegre, Brazil.

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Air Cairo signs ATR Global Maintenance Agreement



Air Cairo ATR 72-600

Photo: ATR

Egyptian carrier Air Cairo and regional aircraft manufacturer ATR have announced the signature of a Global Maintenance Agreement (GMA). Through this five-year pay-by-the-hour contract, Air Cairo will benefit from the repair, overhaul and pooling services of line replaceable units for its fleet of six ATR 72-600s currently being delivered. This agreement also includes an on-site stock of spare parts, along with blades availability and maintenance services. Operating more than 200-weekly flights to 35 international and domestic destinations, Air Cairo offers invaluable connectivity for both local communities and tourists, who can rely on a quick, modern and responsible access to all the beauties of Egypt and opportunities of a connected world.

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Werner Aero acquires one E175 aircraft

Werner Aero has acquired an Embraer E175 aircraft, msn 355, that was last operated by Flybe airline. This is a young aircraft that operated for about six years only. The aircraft is currently being parted out and all spares will be used to support Werner's growing E-Jet customer base worldwide. "We are committed to expand our E-jet platform, so we keep up with the increasing demand for support from our customers" said Mike Cazaz, CEO of Werner Aero. Werner Aero, LLC widely regarded for its high quality and customer care, is a leader in the aviation industry providing asset management and logistical solutions to airlines worldwide. With offices around the world, it is known for its innovative and total global transportation solutions specialising in supplying jet engines, rotatable pooling and repair management. Werner is an ISO 9001 company and an FAA AC0056B approved supplier.

Limco Airepair signs contract expansion with Collins Aerospace

Limco Airepair (TAT Limco), a wholly owned subsidiary of TAT Technologies located in Tulsa, Oklahoma, which specialises in MRO services for heat transfer components and OEM production of heat transfer solutions, has reported the signing of a significant contract expansion with Collins Aerospace, for the provision of MRO services for Boeing 777 thermal components. This is an expansion of an existing successful partnership for over 20 years between the companies, where Limco Airepair is providing MRO services to Collins' customers in North America. The contract will expand the scope of services to be provided to Collins' customers worldwide. The contract expansion represents potential additional revenues of US\$6 million per year.

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IAE, Royal Jordanian secure exclusive deal for V2500 engines

Pratt & Whitney has announced that Royal Jordanian has agreed to a fixed price repair deal for its fleet of V2500 engines, powering as many as nine aircraft. The agreement represents 15 shop visits over three years, the first of which will be completed this month. The highly reliable and versatile V2500 engine is offered through IAE International Aero Engines AG (IAE), a multinational aero engine consortium comprised of shareholders Pratt & Whitney, Pratt & Whitney Aero Engines International GmbH, Japanese Aero Engines Corporation and MTU Aero Engines.



Royal Jordanian

Photo: Pratt & Whitney

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Panasonic Avionics' Dundalk, Ireland MRO facility now 500% its original size

Panasonic Avionics Corporation (Panasonics Avionics) has announced that its Dundalk, Ireland maintenance, repair and overhaul (MRO) facility, operated by company offshoot Panasonic Technical Services (PTS), has been further expanded and now covers 23,000 ft². The MRO facility, when first opened in 2019 covered just 6,000 ft² and this latest expansion has also seen the site's workforce triple in size. PTS provides repairs, line maintenance, spares parts supply, and technical services and training to customers in the EMEA region (Europe, Middle East and Africa) and is Part 145, TCAA, FAA and UK CAA approved. PTS expects to induct 1,500 – 2,000 units per month at its Dundalk facility. It will repair the X series and Next IFE systems and Boeing CSS equipment, as well as being its



Line Maintenance

Photo: Panasonic Avionics

European distribution centre. The recently expanded Dundalk unit is one of ten PTS locations within Europe. In addition to the Ireland-based repair shop, there are also airport line maintenance stations at Amsterdam, Frankfurt, Lisbon, London Gatwick, London Heathrow, Madrid, Paris Charles de Gaulle, Paris Orly, and Rome Fiumicino. Panasonic Avionics' investment in the Dundalk facility has been supported by IDA Ireland (Industrial Development Agency) on behalf of the Irish Government.



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Vallair ramps up wide-body MRO capabilities at new hangar with A330 12-year heavy-check programme



Photo: Vallair ramps up wide-body MRO capabilities with A330 12-year heavy-check

Vallair, the mature asset specialist, has completed its first A330-200 twelve-year check for a major lessor at its new wide-body maintenance facility in Châteauroux, France which fully opened for business in August. As the programme of inductions ramps up steadily airline and lessor customers are benefitting from its range of complementary support services on-site, including skilled aerostructure repairs, which facilitate streamlined and cost-effective maintenance processes. Some weeks after starting this first check Vallair started its second A330 MRO line. A C-Check was inducted on an A330-300 Trent-powered aircraft last month. This aircraft had also been in storage and needed to be made ready for transition to its new operator. On completion of that C-Check, Vallair has now inducted a further A330-200 for a 6Y/12Y heavy-check which also includes a landing gear change and full repaint with an imminent transfer to an operator in the Far East. A further 6Y/12Y heavy maintenance check commenced mid-October and according to the company A330 bookings are extremely healthy with a number of airlines and lessors booking slots way into 2023.

FL Technics to provide wheels and brakes solutions for Norwegian Air Shuttle



Photo: Norwegian

FL Technics and Norwegian Air Shuttle (Norwegian) have signed a five-year contract as the companies identify synergies and growth potential in mutual operations. One of the keys of the successful partnership became an aligned approach towards sustainable and efficient business models, highly focused on reducing impact on the environment. FL Technics has invested in the Europe-based wheels and brakes business to add a new service to its MRO portfolio, with clear competitive advantages of LEAN-based operations, own supply-chain solutions, and convenient locations of the facilities, including the wheels and brakes shops. The capabilities and infrastructure allow the company to provide fast and efficient services, granting quick turn-around times for airlines and operators. As a result, FL Technics contributes to the global effort within the aviation industry to reduce CO2 footprints by optimising delivery times and shortening ranges necessary to be flown in between aircraft services. In the meantime, one of the measures that Norwegian is taking to improve efficiency of operations and reduce its CO2 footprint is the purchase of 50 Boeing 737 MAX 8 aircraft, that are due to be delivered between 2025 and 2028. The Boeing 737 MAX 8 is approximately 14% more fuel-efficient compared to the previous-generation aircraft, putting the company on a strong footing to achieve its target of reducing emissions by 45% by 2030. Both approaches lead to a perfect match for the two companies as they will reduce operational costs, improve efficiency and in general – will shape a sustainable model of mutual business.



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VAS provides a significant boost to A320 **aftermarket** parts supply

VAS Aero Services has seen a significant increase in A320 family aircraft for teardown activity recently with a major rebound in used serviceable material demand and end-user spending habits over the last year as *AviTrader MRO* finds.

In September, VAS Aero Services (VAS) announced it had acquired six managed Airbus A320 aircraft from Genesis Aircraft Leasing Services Ltd, a full-service aircraft leasing company based in Dublin, Ireland, further strengthening VAS's position in the aftermarket parts supply sector.

During the pandemic, the industry saw several operators and lessors make the difficult decision to store (long term) most aircraft instead of retiring them to generate immediate cash flow. Now that the narrowbody market has recovered, excluding certain areas such as within the Asia region, aircraft owners are making new decisions on which A320 aircraft are

economical to deploy back into service versus to retire and monetise in the aftermarket.

"VAS has seen a significant increase in A320 aircraft advertised in the market during 2022 as compared to 2021," VAS Chief Executive Tommy Hughes tells *AviTrader MRO*. For example, he says VAS has secured 11 A320 family airframes for teardown during 2022 after zero A320 family airframes during 2021.

"We have seen that demand on the A320 platform is very strong due to the quick fleet recovery around the world during 2021 and 2022. Major operators and maintenance providers focused during the pandemic on reducing



Tommy Hughes, CEO, VAS Aero Services



Demand on the A320 is strong due to the quick fleet recovery worldwide.

Photo: Avion Express

inventory holding costs and limit over provisioning, and even harvested spares from parked aircraft to support necessary inventory needs,” states Hughes.

The combination of global supply chain issues coupled with lower-than-average inventory spares levels has resulted in a substantial demand cycle for A320 inventory around the market, he suggests. “Although the market is witnessing many aircraft teardowns during 2022, demand is still outpacing supply and this trend should only continue for the near to mid-term.”

With USM being an acceptably lower cost alternative to new OEM parts could this create a quicker rebound for used aircraft parts and aftermarket materials spending. “The acceptance of USM around all global regions has continued to grow so much that we are witnessing a vast majority of A320 operators researching

USM availability as a primary option when procuring most rotatable materials.”

Hughes stresses that USM material provides cost saving as well as reduced delivery lead-times and life limited parts alignment on mature and lease return asset.

The six A320 acquisitions announced last month were previously operated by LATAM with serial numbers 1652, 1802, 1827, 1835, 1591 and 1891. The airframes will be allocated for teardown and the surplus parts staged in the United States, UK and Europe for rapid distribution through VAS’s aftermarket network to its airline operator customer base.

“Our experience with A320 parts harvesting, refurbishment qualifications and pristine documentation and certification, mean VAS parts are ready to fly upon receipt, helping our customers return aircraft to revenue production in as

little time as possible,” Hughes adds.

The entire industry is seeing significant supply chain disruptions currently and VAS’s business has been directly impacted by the current supply chain issues and other effects of the pandemic, Hughes attests. “A core part of VAS’s business includes aircraft and engines teardowns to harvest USM inventories for market demands. The lead-time from initiating an aircraft teardown to delivering the final serviceable rotatable to a key customer is now severely extended due to current disruptions.” And with labour shortages at teardown vendors, the average disassembly is taking weeks longer. Additionally, transportation delays then affect VAS’s disposition of part out inventory to repair shops and VAS storage locations – “We are taking proactive measures to reduce these delays by working closely with our vendors and key customers to expedite work scopes and supply USM to meet our customer’s expectations.”

VAS’s operator base covers almost all commercial aircraft fleets and engine types and is active across various platforms to maintain a comprehensive inventory in the market. Other examples of asset types VAS is investing in to align with strong market demand levels include B737NG, CFM56-5B/7B, PW4000, V2500, and CF6-80C2.

“The acceptance of USM around all global regions has continued to grow so much that we are witnessing a vast majority of A320 operators researching USM availability as a primary option when procuring most rotatable materials.”

Tommy Hughes, VAS Aero Services



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Steady MRO demand for the 777 as its climbs out of pandemic

MRO cost trends will depend on the post-pandemic utilisation of the aircraft.
Photo: HAECO

There is strong demand for Boeing 777 maintenance in the coming months as operators increase post-pandemic utilisation, but recent incidents have put the spotlight on improving inspections of older fleets.

By Keith Mwanalushi

As of September 2022, industry data shows 1,551 Boeing 777s in the global fleet operated by 116 airlines, making the 777 one of the workhorses of long-haul operations around the world. Almost half of the fleet (771 aircraft, or 49.7%) are operated by the top 10 airlines that have a fleet of over 50 aircraft - Emirates, United, Qatar, American, KLM and Air France, British Airways, Cathay Pacific, Saudia, Korean Air and FedEx.

With more B777s being reactivated from storage for revenue duties, there is

significant demand for heavy maintenance for the coming six to nine months. At HAECO for instance, the MRO demands they anticipate include damage assessment and repair work, cabin restoration, modification and retrofits. B777 freighters have also been robustly flying even during the pandemic and the usual heavy maintenance demand remains.

The HAECO Group offers solutions on base and line maintenance, engine on-wing support and overhaul, landing gear overhaul, component services, cabin reconfiguration, cabin and seat products



Benjamin Scheidel CEO HAECO Hong Kong

for the B777 fleets. HAECO has cabin reconfiguration experience on over 500 B777 aircraft across its facilities in different locations, supporting the worldwide customer base.

In terms of maintenance trend costs, especially on early B777 models, Benjamin Scheidel, Chief Executive Officer, HAECO Hong Kong says it depends on the post-pandemic utilisation of the aircraft. "Considering that several B777s were stored during the pandemic, the maintenance costs are expected to remain steady. Naturally, when the aircraft are utilised more post-pandemic, we may see higher maintenance costs, especially on the early models driven by both cycle-based and hard time inspections in which more findings are expected when compared to the younger models. The same may apply to the engines and other major components of the 777 too."



Mike Scott, Senior Director of Sales at Ascent Aviation Services

“Naturally, when the aircraft are utilised more post-pandemic, we may see higher maintenance costs, especially on the early models driven by both cycle-based and hard time inspections in which more findings are expected when compared to the younger models.”

Benjamin Scheidel, HAECO

Scheidel suggests that some passenger airlines may want to include cabin refresh, which will drive cabin maintenance investment – "Besides, during the pandemic, the B777 has been viewed as surpluses by some airlines and as relatively less fuel-efficient compared to newer generation aircraft."

Ascent Aviation Services had several B777s come in for storage during the pandemic period. "With the increased normalisation of international travel, we are experiencing higher demand for B777 C-check slots and many passenger B777s are going into P2F conversions after storage," says Mike Scott, Senior Director of Sales at Ascent. He mentions huge demand from cargo operators. "With the increased demand for flyers and cargo conversions, we are not seeing any being sent to teardown currently, at least at our Ascent Marana and Ascent Roswell facilities. It has been about 18 months since we had the last B777 go through teardown at Ascent Marana" reveals Scott.

Ascent Aviation can perform MPA runs, full gas path BSI inspections, engine records review, and issuing serviceable 8130-3's for the B777 engine types. "We can also perform some fan blade boro blend repairs on-wing," Scott adds.

Parts of Asia and especially China has been slower to return to a post-pandemic utilisation with restrictions being lifted more cautiously. "As soon as the current international flight restrictions are removed, the utilisation of the B777 fleet with long-range transport capability will increase significantly. This will require adequate maintenance capacity to ensure airworthiness and safety," indicates Norbert Marx, the Chief Executive at GAMECO. He says the MRO organisation has plenty of experience at all levels of inspection, maintenance and modifications for different operators.

For the global B777-200 variant fleet, the maintenance demand for passenger fleet is expected to shrink; there might be some PTF conversion demand, but the feedstock pricing might be too high; the only highlight might be in maintenance demand for the freighter fleet.

As the age of the aircraft increases, the cost of maintenance of the fleet will increase to some extent. "Older





There are good prospects for the 777-300 fleet maintenance market.

Photo: GAMECO

aircraft are more likely to have inspection findings and defects, resulting in increased maintenance man-hours and longer down time, especially in the fuselage section, so we see more repairs coming up," Marx continues.

Improving B777 inspection services

Almost half of the -200 variants in operation are 20 years or older. These aircraft are all passenger aircraft and it's expected that once they enter their second 12-year heavy maintenance cycle, most of them will retire from service. Therefore, the maintenance market for the -200 variant over 20 years old is reducing.

United Airlines recently had to ground several of its B777-200 due to

missed inspections that led to significant flight cancellations. The FAA said the airline disclosed the issue to the agency and proposed a plan to complete the inspections.

Marx indicates that presently, one of the major maintenance issues of the B777 fleet is the structural inspection on the underlying longerons. "The possibility of cracks is relatively high and once cracks are found, the aircraft must be repaired immediately, which requires special jacking methods. Meanwhile we have optimised our work arrangement and introduced some specific tools and shop aides, which allowed us to reduce the TAT for the retrofit to about 12 days," he says.

Airworthiness directives are

“Older aircraft are more likely to have inspection findings and defects, resulting in increased maintenance man-hours and longer down time, especially in the fuselage section, so we see more repairs coming up.

Norbert Marx, GAMECO



Norbert Marx CEO, GAMECO

commonplace and, in most cases, airlines are told to look for and correct any faults during maintenance, but occasionally greater or more intense inspections and directives are required.

Lufthansa Technik Philippines (LTP) offer heavy maintenance services for B777. LTP is currently operating two lines with capability for B777-300 with GE90 engines and the lines are booked up for 2030. The current customer base includes Philippine AL, Saudia AL as well as Lufthansa Cargo for B777-300 freighter.

LTP has performed the inspection and modification of the longeron on several 777 aircraft in 2022.

HAECO has been offering solutions for to AD/SB embodiment during the heavy check. One example is the re-entry into service of the PW-powered Boeing 777 fleet. Since the grounding of the fleet in early 2021, HAECO has been working closely with operators and OEMs to identify solutions on the required works on the nacelles for re-entry into service. The efforts required strong capabilities in airframe and composite repair services. Over the past few months, when the AD was released, the base maintenance and composite repair entities – HAECO Hong Kong, HAECO Xiamen and HAECO Composite services, worked closely with operators to accomplish the required nacelle inspections and modifications during heavy maintenance visits. Under this arrangement, the aircraft operators were able to get both the checks and AD accomplished at the same time, reducing the lead time to get the aircraft ready for service.

Supporting the freighter market

While most of the aircraft fleet is a story of recovery, cargo aircraft is a story of growth, particularly on the B777



Ascent had several B777s come in for storage during the pandemic.

Photo: Ascent Aviation Services

fleet. "Along with the production rate of B777 freighters exceeding pre-pandemic levels, freighter conversion from passenger configuration is on evolution," comments Kevin Guan, Chief Executive Officer, HAECO Xiamen. He highlights that the demand for passenger-to-freighter conversion brings along associated heavy and line maintenance checks to MROs. And as B777 freighters operate more, demand on maintenance service in the component area is also expected to increase.

HAECO Xiamen is also actively developing the B777 freighter conversion capability, which sees the first 777 P2F conversion induction in 2024.

Scott from Ascent Aviation adds that any B777 passenger aircraft that do not go back into revenue service are being looked at for P2F conversions by cargo operators – "we are seeing P2F conversion demand increase for both the -200 and -300 versions."

There are good prospects for the B777-300 conversions as the existing fleet is large and deploys the more common GE90-115B engines. The -300

variant fleet is much younger than the -200 variant fleet therefore has a stronger maintenance market.

Marx from GAMECO adds: "The B777 freighter has excellent international long-range transport capacity, while the daily use rate has remained high. We will continue to maintain a high standard of 777 fleet maintenance, and it is a good candidate for freighter conversions. The new B777X freighter is expected to replace existing B747-400Fs.

In the China perspective, GAMECO sees mid-term demand for MROs services on the B777 to be huge, as the checks were either deferred or cancelled (e.g., some non-critical cabin works). However, in the long term, once these deferred MRO works are completed, GAMECO expects the B777 MRO market to quieten down especially with increased competition from new aircraft like the B787 and A350s, which have new materials, similar capabilities to the B777 but with less seat fuel-burns and higher operation flexibility and require less maintenance.



Kevin Guan CEO HAECO Xiamen



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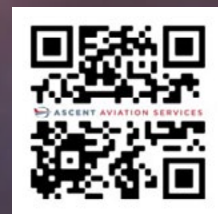
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Market availability of CFM56-7B spare engines continues to reduce.
Photo: GA Telesis



Returning to longer term spare engine provisioning

There is greater demand for spare engines than the market is able to supply but repair capacity and other supply chain issues will be the biggest challenges facing the sector.

By Keith Mwanalushi

With long-haul operations slowest to recover from the pandemic, analysts at Engine Lease Finance Corporation (elfc) have noted a steady increase in requests for certain widebody engine types including the GE90 and PW4168, while Trent 700 demand has remained fairly constant - the XWB and GENX did not reach the low base of preceding engine types.

"Demand across all current and new technology narrowbody engines

has surged over the past few months," declares Julian Jordan, EVP and Head of New Business at elfc.

He said shop visit activity is heading towards pre-pandemic levels, but MRO providers are struggling to achieve comparable TATs because of labour and material issues. "Currently demand for some MAX and NEO spare engine types is greater than the available supply and the OEMs are working hard to accelerate additional spare engine delivery programmes whilst



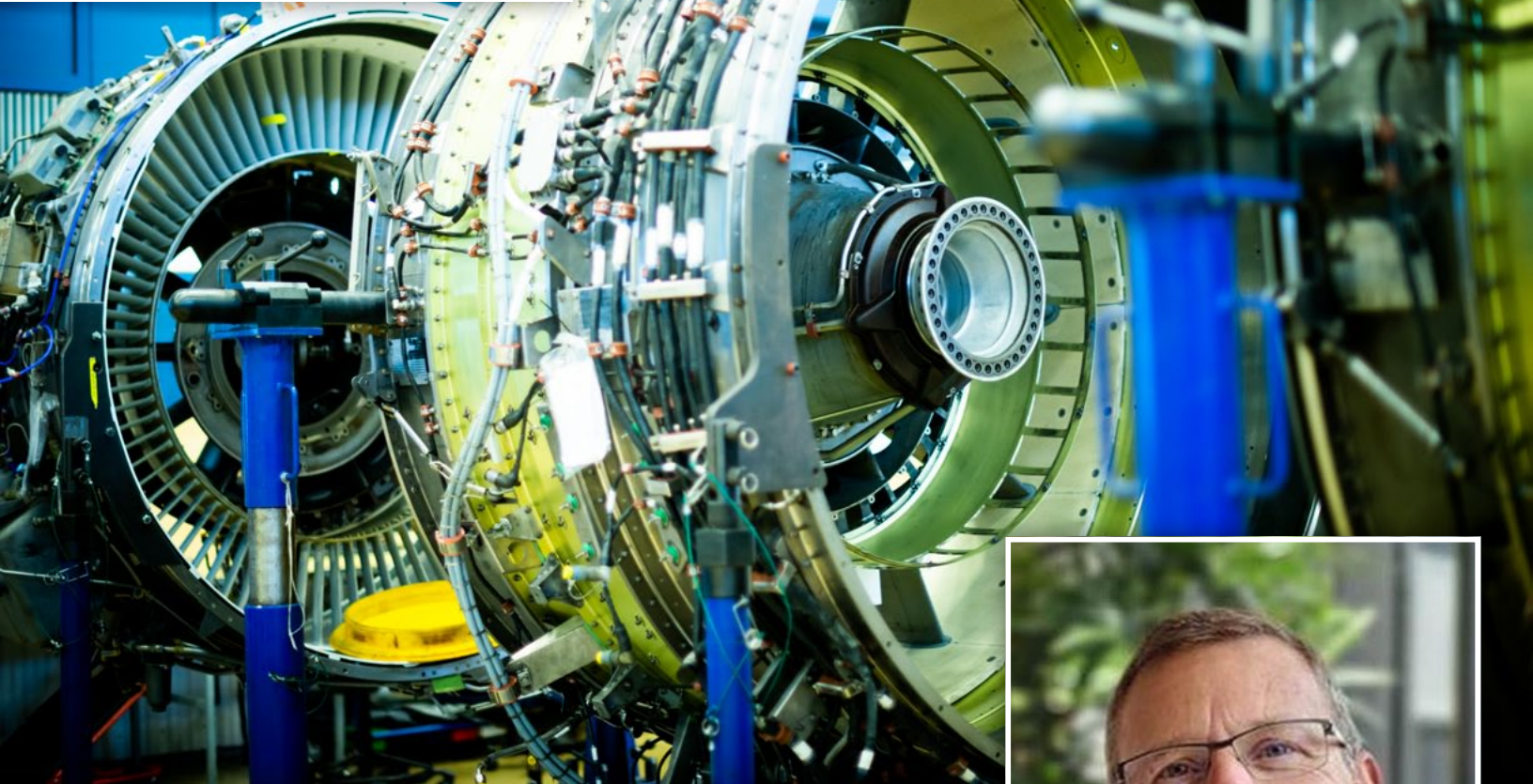
Julian Jordan, EVP and Head of New Business at elfc

continuing to keep pace with aircraft production from the OEMs."

Pressure is also building on available spare engine stock to support current technology types. Market availability of CFM56-7B spare engines continues to reduce and lease economics have returned to pre-pandemic levels; 5B demand has

“Many engines are being disassembled which feeds the stock of spare serviceable modules which are cheaper and quicker to fit, however, we see waiting time for teardown slots increasing.”

Ramon Peters, Aero Norway



Engine owners are opting for hospital repairs to return the engine to service.
Photo: Aero Norway

been slower to rebound but is now on a similar trajectory and elfc is anticipating huge demand for V2500-A5 spares driven by performance driven shop visit activity.

“Across all engine types, operators are gradually returning to longer term spare engine provisioning, rather than relying on the spot market for AOG cover,” Jordan stated. elfc’s lease extension rate returns to 80% in October 2022, in all cases at the request of lessees, he adds. “There is an evident flight to quality with lessee focus returning to spare engines offering the latest hardware standards and sufficient life remaining to operate long term. The cheapest available green time engine is no longer necessarily first in the queue.”

Aero Norway is focused on CFM56 engine MRO and sees that the market for

CFM56-7B and -5B engines is recovering steadily following the impact of the pandemic on global aviation. However, Ramon Peters, Global Sales and Marketing Director at Aero Norway feels the external environment remains challenging with inflationary pressures, the war in Ukraine, and supply chain constraints all continuing to impact on its airline and lessor customers – “We expect these issues will persist into 2023 and we have put in place many measures to minimise the impact,” he said.

Peters indicates that the steady resurgence of air travel continues to make it difficult for part manufacturers to raise production quickly enough to meet the demand for both new and in-service aircraft, intensive maintenance checks



Ramon Peters, Global Sales & Marketing Director,
Aero Norway

on airframes can now take seven weeks instead of four, and overhauls of some engine types that used to take around 60 days can now take up to 80. Additionally, shortages of spare parts, including engines, are impacting the ability for airlines to operate efficiently.



Oliver James,
VP Commercial Trading
at AerFin

At AerFin in the UK, they see a strong leasing demand for narrowbody engine types in the long term as post-pandemic recovery continues to favour shorter domestic and regional travel. "In the short term we have seen a ramp up in narrowbody aircraft utilisations to near pre-covid levels, this key recovery driver has led to a surge in engine maintenance activity, however global supply chain issues and labour shortages are continuing to cause capacity challenges for many of the major MRO's which is driving demand for short term leasing," says Oliver James, VP Commercial Trading. He specifically mentions the CFM56-7B, CFM56-5B and V2500 high thrust variants.

Meanwhile, Willis Lease Finance will unite its multiple businesses under a new branding that will better demonstrate the extent of its combined offerings.

By adding business units Willis Engine Repair Center US/UK and Jet Centre by Willis, as well as subsidiary Willis Aviation Services Limited, the Company has expanded its service offerings to include Part 145 engine maintenance, aircraft line and base maintenance, aircraft disassembly, parking and storage, airport FBO and ground handling services. Serving over 120 countries, WLFC commands a portfolio of \$2 billion in assets owned as of June 30, 2022.

Repair capacity challenges

The MRO sector has been hit by stringent capacity constraints as a consequence of global supply chain issues and AerFin observes vendor TATs averaging between 60-90 days on Life Limited Parts (LLP's) and 50 to 60 days on non-LLP's and this has created a delay in how quickly engine shop visits can be completed due to the lack of good quality USM being available at the right times. Therefore, as James mentions, the demand for spare engines will naturally increase. "The pandemic has put serious pressure on an already struggling repair vendor network with no signs of this easing in the short to medium term," he states.

Jordan from elfc echoes similar thoughts on TATs trending upwards consistently over the last year. "It is no longer the exception when an engine is out of service for shop maintenance for six to 12 months. In fact, at elfc we have experienced a new-technology

engine in shop for over 12 months for a repair, which in pre-pandemic times would have been closer to 90 days."

Fortunately, Jordan reports that with INAV (a joint venture with Donata Partners) they have been able to alleviate material supply for current technology engines. "INAV is one of the most reliable global providers of engine material and aircraft parts and this has enabled us to coordinate our portfolio requirements with INAV's USM programmes.

"Reducing the time our engine is out of service is important but due to the depth of our portfolio we have been able to meet our customer demands for spare engines to date despite increasing extension rates, and the increasing demand for longer lease terms, which have increased significantly since demand was weakest in 2020," Jordan explains.

Several airlines and lessors are still choosing the option of using green time engines or partial hospital repairs and module changes instead of full overhauls. "Many engines are being disassembled which feeds the stock of spare serviceable modules which are cheaper and quicker to fit, however, we see waiting time for teardown slots increasing. We see that airlines and engine owners are opting for hospital repairs to return the engine to service for another year or two or replacing modules with expired LLPs from donor engines or from teardown," notes Ramon from Aero Norway.

Ramon adds: "Engine OEMs are repairing and reusing spare parts in light of supply chain issues that are causing issues for the aerospace industry and this is likely to continue well into 2023. A lack of spare parts is already impacting airlines, and aircraft are facing being grounded because regular maintenance cannot be carried out."

“It is no longer the exception when an engine is out of service for shop maintenance for six to 12 months. In fact, at elfc we have experienced a new-technology engine in shop for over 12 months for a repair, which in pre-pandemic times would have been closer to 90 days.”

Julian Jordan, elfc

Spares for both planned, and unplanned removals

There are several considerations which need to be carefully reviewed to help airlines guarantee availability of spare engines for both planned, and unplanned removals, which should be tailored to the specific needs of each airline, suggests James from AerFin. "A streamlined engine removal plan and long-term forecasting for fleet phase in and phase outs can help to ensure effective efficient engine management."

James says ensuring the right balance of owned and leased engines is also critical in managing healthy cashflows. "Sale and lease backs, can, in some cases be effective ways for airlines to boost liquidity and better manage the balance between capital expenditure versus operational expenses."

"Understanding fleet reliability and accounting for MRO turnaround times for engines which are undergoing repair and overhaul can highly affect the number of spares required."

For maturing fleets, James recommends selecting the right aftermarket service provider for effective fleet phase outs and engine management that can help alleviate some of these challenges.

By 2024 Aero Norway anticipates that the flow of engines will return for full overhaul, particularly the CFM56-5B and



Demand for some MAX engines is greater than the available supply.

Photo: American Airlines

-7B. "Those engine MRO shops that reduced both capacity and their workforce will not be able to meet this demand immediately. Fortunately, at Aero Norway we kept all of our technicians, further streamlined our operation, and invested in our repair capabilities when others were cutting back," Ramon states.

Aero Norway is still active with the mature CFM56-3 engine, mainly heavy shop visits and some hospital repairs. However, the company has intentions of maintaining this capability until 2027 to support

legacy customers and cargo airlines that increasingly use the engine type.

An increase in engine exchange activity is evidently needed to support younger narrowbody aircraft as operators look for the most economical solution to meet increasing demand, Ramon notes. "But research tells us that the number of high-quality engines to satisfy such demand is limited despite the apparent abundance of green time engines available on the market. Unscheduled downtime will continue to present airlines with serious challenges as flight schedules ramp up."

Meanwhile, elfc has a portfolio of over 350 spare engines and strategically located engines in Europe, the Americas and APAC to best serve the global customer base. 85% consists of CFM56, V2500, GTF, LEAP, GENX and XWB engines, which power the most in-demand aircraft.

"We are also focused on the most technologically advanced and fuel-efficient aircraft engines; hence new technology engines already comprise 40 percent of the portfolio," comments Jordan. elfc offers several leasing solutions which provide full use of an asset to an operator over a fixed or flexible term without the burden of ownership. "We can define leasing schemes tailor-made to suit each operator's specific needs. This may include long term leasing, shop visit engine cover, providing engine support through maintenance events and even AOG cover," Jordan said.



There are supply chain pressures on an already struggling repair vendor network.

Photo: Lufthansa Technik

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A portrait of Richard Hough, a middle-aged man with grey hair, wearing a grey blazer over a pink shirt. He is smiling slightly and looking towards the camera. The background is a blurred indoor setting.

Q & A

In the
hot seat...

Richard Hough
Chief Operating Officer, elfc

What attracted you to this industry?

Initially it was circumstance, my need for a career and an opportunity that arose! I left school in 1989 with the intention of learning while working rather than going the college route. It took about 7 months of various applications, assessments, and interviews before I was fortunate to have options in banking, as a pilot or aircraft maintenance apprenticeship. I chose the most hands on role in a new MRO startup called Shannon Aerospace. The dynamic around the clock and global nature of aviation absolutely hooked me and I quickly concluded it was the industry I wanted to spend my career in. Fast forward 32 years later I think I can safely say that early conclusion has proven accurate. After 7 years working in heavy maintenance, I swapped my stamp and a toolbox for a laptop and a phone when I started a technical manager position in what was then a young and small elfc.

What does a typical day involve in your role?

After 25 years working in the technical aspect of leasing, I started my current role as Chief Operating Officer in January 2022 and there is no typical day. Much of the routine work relates to supporting the CEO and interacting with our parent company Mitsubishi HC Capital Inc. on various matters. The functions of finance, HR, IT, legal, risk and technical all flow through me but each of those departments have excellent managers and very strong teams, so my involvement with them primarily relates to interdepartmental synergies and operational problem solving across the organisation. I also have responsibility for the integration of our parts subsidiary INAV LLC in Illinois, our global offices - in particular the set-up of our new regional office in Singapore which opened on October 1st, and our ESG framework/reporting, all of which require different levels of focus from time to time.

How is the engine leasing sector performing post-pandemic?

It is still recovering, but the pace of recovery has picked up significantly in the past 6 months. Operators are moving beyond the approach of just getting the cheapest engine available for the

shortest time possible. There is now better visibility on the recovery path for the industry and accordingly operators are making longer term plans for their fleet management and shop visit programmes, with more emphasis on the most appropriate engine for specific needs. Enquiries and requested lease terms are increasing and in tandem with that, market lease rates are also moving back towards pre-pandemic levels as surplus stocks of quality engines diminish.

What demands are you seeing for new engine platforms like the LEAP engines?

At present there is very strong demand for additional spare engine support for both CFM LEAP and P&W GTF engines, primarily due to the widely reported performance and reliability issues that both OEM's have had to deal with. These issues have been compounded by a combination of a shortage in MRO capacity to process the additional unscheduled shop visits and pressure from the aircraft OEM's to increase deliveries of new engines to support higher aircraft production rates, resulting in a shortage of spare engine supply.

What is the rate of recovery for more mature engines like the CFM56?

Demand is improving for all mature or "prior generation" engines, but at a slower rate than latest technology equipment and within those mature fleets there is also variation in demand. CFM56-7B demand has increased significantly throughout 2022 and lease rates are moving back to pre-pandemic rates as supply of good quality engines tightens. CFM56-5B demand has also increased but with a larger pool of spare engines to support that demand, yields lag behind. The V2500-A5 market currently lies somewhere in between the two CFM models, but this engine model is currently seeing the strongest rate of increase in demand with Select hardware standard engines attracting higher lease rates. We expect a significant increase in demand for all three engine models in the coming years as utilisation increases at a faster rate than the MRO supply chain can step up capacity for engine maintenance.

Are you seeing any significant challenges in the MRO supply chain that is impacting the engine sector?

In a word, Yes! One can look at anywhere along the MRO supply chain and see blockages, any one of which can cause a problem, but when aggregated, manifest themselves in the huge increase in TAT that we have seen since 2019, a time when the supply chain was already stressed. In addition to the increased TAT from induction to completion, there are significant increases in the waiting time to obtain a slot due to MRO capacity limits. All this added downtime increases demand for additional spare engines and that demand is likely to further increase significantly in 2023 as aircraft utilisation moves closer to 2019 levels while MRO capacity struggles to keep pace.

What is the biggest challenge facing the spare engines market currently?

Trying to forecast with any accuracy the levels of demand and therefore an appropriate portfolio for supply over the next 12-36 months. That exercise is a challenge at any time but made even more difficult because of the simultaneous number of highly volatile external factors such as inflation, interest rates, energy prices, carbon reduction requirements and a residual risk of pandemic related restrictions.

What are you most looking forward to in the coming months?

Apart from a first sun holiday in three years at the end of November, I am relishing the continued recovery in the aviation industry and managing all the challenges that will bring. We all hope we have seen the worst of the Covid19 pandemic and that airlines can return to a more stable market environment in which to trade. As airlines lengthen the focus for their plans, we at elfc hope to assist them in delivering on their objectives through highly competitive engine financing, high quality engine support when they need it and through our subsidiary INAV, the supply of competitively priced engine material for their shop visit programmes.

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Tracey Downes

APOC Aviation has appointed experienced aviation professional, **Tracey Downes**, as Head of Component Sales. Having previously held senior positions at Aerospace Asset Trading and Nova Systems, Downes has a wealth of experience in the USM market, as well as detailed knowledge of airframe and engine disassembly. In this 'hands on' role, her key responsibilities will include growing the commercial team and developing new sales processes to streamline and optimise efficiency, as well as regular liaison and support for key accounts. "Having worked in the USM sector for a number of years, I was aware of APOC's culture, values and innovative nature. It was these attributes, which are aligned to my personal and professional beliefs, that first attracted me to the business. After having met the team, I could see we were a good fit, so the decision to join was an easy one," said Downes.

GA Telesis (GAT) has appointed **Amir Taher** as Vice President of GAT Logistics Solutions Group. Taher will be tasked with leading all aspects of strategy, sales, operations, contracts, revenue and margin targets, as well as managing all future partnerships in the logistics space. He will also be responsible for growing the GAT Logistics Solutions Group network globally. The growth and emphasis on GAT Logistics Solutions Group is part of a larger strategy of the Flight Solutions Group's (FSG) ability to offer comprehensive, vertically integrated support solutions to its customer base worldwide. With 15 years of professional logistic experience, Taher brings the level of knowledge needed to facilitate growth at GAT Logistics Solutions Group. With a proven track record of excellent leadership and managerial skills, GAT Logistics Solutions Group looks forward to Taher leading the team.

AerFin has announced that **Tom Crawford** has joined the company to serve in a newly established role as Chief People Officer (CPO). As CPO, Crawford will be responsible for developing and implementing the company's people strategy, ensuring that people, culture and organisational plans are aligned to the organisations core values. Together with his team, he will develop an innovative people agenda which is designed to underpin AerFin's commercial ambitions. Crawford brings exceptional experience across all facets of human resource strategy and development. For the last decade, he has been consulting and supporting businesses to help them improve their commercial performance through implementing organisational change and developing effective people strategies, covering a magnitude of sectors, including: assurance, communication, aviation and energy.



Orlando Fernandez

Kellstrom Aerospace Group, a leader in aviation life-cycle cost management solutions, has released that **Orlando Fernandez** has joined the company's leadership team as Chief Financial Officer. Fernandez has over 25 years of executive experience working with global companies in diverse industries, including aviation distribution, consumer goods manufacturing and perishable goods distribution. Prior to joining Kellstrom, he served as Chief Financial Officer of the aviation segment of VSE Corporation. Before joining VSE, he held a variety of financial management positions at Boeing Distribution Services.

Joerg Speri has taken over as Chief Executive Officer of Lufthansa Technik Puerto Rico (LTPR) from **Pat Foley**. Speri has held various management positions in the Lufthansa Group, mainly outside Germany. His latest position was Senior Director of Network Sales & Customer Service at Aircraft Maintenance Services. He holds two master's degrees in Business and Aviation Management from Mid Sweden University (Sweden) and Massey University (New Zealand). Pat Foley is one of the founding fathers of LTPR and was in charge as CEO of LTPR for more than five years, steering the company through demanding times. He will take on the newly created position as Head of Business Development the Americas for Aircraft Maintenance Services.

StandardAero has appointed **Kim Ashmun** to serve as President of the company's Components & Accessories (C&A) division. In this role, she is responsible for all aspects of the commercial, operational, financial and technical performance of StandardAero's C&A business units and facilities located across the U.S., Canada, Europe and Asia. Ashmun formerly served as Vice President of Global Supply Chain Operations for Lockheed Martin's Rotary & Mission Systems Sikorsky line of business. In that role, she led a large team, managing a multi-billion-dollar portfolio of ~1,800 suppliers. Ashmun has more than twenty years of leadership experience in the aerospace industry, working at Lockheed Martin in a variety of technical, programme and executive leadership positions. She began her career as a manufacturing engineer for Lockheed Martin Aeronautics with roles in engineering and operations supporting the F-35 programme. Ashmun holds a Bachelor of Science degree in Engineering Technology from Texas A&M University and a Master of Science degree in Systems Engineering and MBA from Southern Methodist University. In addition, she has completed Lockheed Martin's Engineering Leadership Development Programme and multiple executive courses from Columbia Business School and UC Berkeley Executive Education.



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