


# MRO

Aerospace Magazine



Europe:  
Renewed demand puts  
pressure on aircraft  
maintenance  
services

## Cargo Modifications

Building a case for  
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## Kellstrom Aerospace

Parts and materials  
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## In The Spotlight

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According to Alton Aviation's latest industry forecast, the European Maintenance, Repair, and Overhaul segment is expected to grow from \$25 billion in 2023 to \$27 billion in 2033. However, Europe is anticipated to experience the slowest growth rate among all regions, with a compound annual growth rate of only 0.8%, partly due to reduced short-haul demand driven by sustainability concerns.

The recovery of air traffic demand has led to increased aircraft utilization, boosting the demand for MRO services. Companies are adapting to market dynamics by offering more flexible solutions and addressing labor shortages. They are also keeping a close watch on inflation-driven uncertainties.

AFI KLM E&M emphasizes the impact of rising raw material prices on MRO costs. To mitigate material shortages and reduce environmental impact, they are exploring alternative sources and investing in repairs. They are also actively recruiting and training new-generation mechanics.

AJW Group sees sustained demand for MRO services in the face of inflationary pressures, with a focus on long-term contracts and innovative support solutions. They are expanding their presence in the EU to mitigate Brexit-related disruptions and investing in digital transformation for enhanced inventory management and logistics.

Brexit and the Ukraine conflict have introduced challenges in the movement of aftermarket materials, impacting labor mobility and customs procedures. MRO providers are adapting their operations and expanding their capabilities to navigate these changes effectively.

**Peter Jorssen**  
Publisher

Back on the growth path.  
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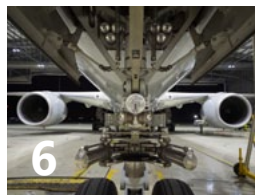
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## LTM becomes Europe's premier centre for wide body overhauls



Airbus A350 for C-check at

© Lufthansa Technik Malta

Lufthansa Technik Malta (LTM) has solidified its position as Europe's centre of excellence for wide-body aircraft overhaul, marking a significant milestone as it celebrates its 20th anniversary. The company is set to expand its services to include base maintenance for Boeing 787 aircraft. With a multimillion-euro investment in training, technical expertise, tooling and materials, LTM is gearing up for the arrival of the first Boeing 787 aircraft on its premises in Spring 2024. Maria Cilia, Head of Base Maintenance Services and CEO of Lufthansa Technik Malta, expressed her enthusiasm, stating, "As the new CEO of Lufthansa Technik Malta, it is a pleasure to kick off my tenure with such a pivotal investment in our company. With the expansion of our portfolio, we aim to not only establish ourselves

as Europe's centre of excellence for wide-body aircraft overhaul, serving Boeing 787 operators in the region, but also strengthen our ties with the Maltese community and create new opportunities for our employees." Alexander Feuersaenger, Vice President & COO Aircraft Maintenance Services at Lufthansa Technik, emphasized the company's commitment, saying, "Building on the significant role that Lufthansa Technik Malta has played within our base maintenance network over the past two decades, our investment in enhancing capabilities with a dedicated overhaul line for Boeing 787 aircraft will further solidify the company's standing as a centre of excellence for modern widebody aircraft. This development will allow us greater flexibility in meeting our customers' needs, leveraging LTM's

remarkable efficiency and reliability." Founded in 2002 as a joint venture between Lufthansa Technik and Air Malta, Lufthansa Technik Malta is based at Malta International Airport and offers a comprehensive range of line and base maintenance services. These services cover short-haul aircraft such as the Airbus A320 and A320neo, as well as long-haul aircraft including the Airbus A330, A340, and A350. With a team of approximately 500 aviation experts, LTM serves a diverse set of international customers. Over the years, the company's services have expanded to include extensive base maintenance services, and it was the first to host the Lufthansa Technik Innovation Bay, where cutting-edge technologies like drone-based inspections, mobile 3D scanners, and exoskeletons were tested for the aviation industry.



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## Fokker Services Group signs AlbaStar as launch customer of B737NG nose-to-tail programme



AlbaStar becomes the launch customer of FSG's Boeing 737NG nose-to-tail (NTT) programme © Fokker Services Group

Fokker Services Group (FSG) - a global leader in aircraft maintenance, modifications, completions, and conversions - and AlbaStar S.A. (AlbaStar), an on-demand flight services provider for tour operators based in Spain, have entered into a component support programme for the airline's fleet of five Boeing 737NG aircraft. With this programme, AlbaStar officially becomes the launching customer of

FSG's Boeing 737NG nose-to-tail (NTT) component maintenance and availability programme. FSG will service a wide range of components of the carrier's fleet of Boeing 737 NGs. This includes IDGs, engine accessories, hydraulic actuators, valves, cockpit controls, and instruments. Engaging in this NTT agreement represents a unique opportunity for the airline to focus on its core business, while ensuring

continued competitive operation, as they delegate the responsibilities of component availability and maintenance to FSG. FSG's track record in NTT programmes dates back to 1992, when the company developed the first component maintenance and availability programme to support Fokker operators. Over time, the programme expanded to include the Dash-8 and CRJ series. At the same time FSG has expanded its in-house repair capabilities with the ultimate goal to reach up to 70% for the Boeing B737NG platform. As a result, expanding such expertise to a full nose-to-tail programme is a natural evolution in the company's growth roadmap, ultimately maintaining outstanding control over costs, turnaround times and reliability.



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## Willis Lease Corporation selects Teesworks UK, to launch first PtL SAF refinery

Willis Lease Finance Corporation (WLFC), a leading lessor of commercial aircraft engines and global provider of aviation services, together with its subsidiary Willis Sustainable Fuels (UK) Limited, has selected Teesworks in Tees Valley, England, as the intended location for a ground-breaking sustainable aviation fuel (SAF) plant. This plant will be the first of its kind in the region focused on developing and producing power-to-liquid (PtL) SAF. Teesworks is the United Kingdom's largest industrial zone and an international hub for diverse, sustainable and low-carbon activity. Increased SAF production and utilisation is seen as a driving factor in reducing greenhouse gas emissions from the aviation industry. WLFC's planned PtL SAF refinery will be designed to convert feedstocks, sourced from industrial-waste carbon dioxide and green hydrogen (produced from water by electrolysis using renewable electricity) into aviation turbine fuel. WLFC's envisioned new refinery will harness abundant feedstocks, avoiding constraints that impede SAF production using traditional bio-based pathways. "Our pioneering SAF project at Teesworks will directly support the global aviation industry's ambitious goal of net-zero emissions by 2050," said Austin C. Willis, CEO of WLFC. "We are proud to be continuing



Rendering of the Teesworks plant, view from southeast

© WLFC

our legacy as a leader and innovator in aviation, being the first aviation leasing company to launch a SAF initiative of this type." WLFC and its subsidiary Willis Sustainable Fuels (UK) Limited, have been working closely with Tees Valley Combined Authority and partners with subject matter expertise in sustainable energy since proposals for the SAF refinery were announced in July 2023. WLFC expects to also have an option to lease additional land in Tees Valley for a potential second and larger refinery in the future.



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## Safran equips premium cabins for Japan Airlines' Airbus A350s



Euphony, Safran Seats' headset-free sound solution seat will be featured on Japan Airlines' new Airbus A350s © Safran Seats

Japan Airlines has revealed its new unique premium-economy, business-class, and first-class seats that are fully customised with Safran seats for 13 Airbus A350s. Japan Airlines will be the first airline to offer the latest technologies from Safran Seats for both first- and business-class suites such as Euphony, Safran Seats' headset-free sound solution developed in collaboration with Devialet, an expert company in acoustical engineering and Active Backrest, a new mechanism which provides more support at

the backrest level in all flight phases and is developed to suit all passenger profiles. The first-class cabin will be equipped with six luxurious suites. Each suite will have a wide, independent seat for the passenger, with a side seat for use when the primary seat is in bed position. The primary seat converts to an 80" bed with high shells and doors for utmost privacy. The suite can accommodate up to three people in flight with both the primary and side-seat paired with the adjacent ottoman. Multiple stowage provides plentiful space for belongings, such as a wardrobe, large under-ottoman space and an insulated drinks compartment. Passengers can enjoy an immersive cinematic experience with the 43" in-flight entertainment screen paired with Euphony, the headset free audio experience and an individual wireless suite control unit. Victoria Foy, CEO Safran Seats said: "Safran Seats and Japan Airlines have a close relationship for several decades and it is an honour to be a key part of the journey from co-creation with Japan Airlines for its brand new A350-1000s. It is also an important milestone for Safran Seats, and we're excited that passengers will experience our latest innovations with the launch of Euphony and Active Backrest, offering First- and Business-Class passengers a unique way of enjoying their flight."

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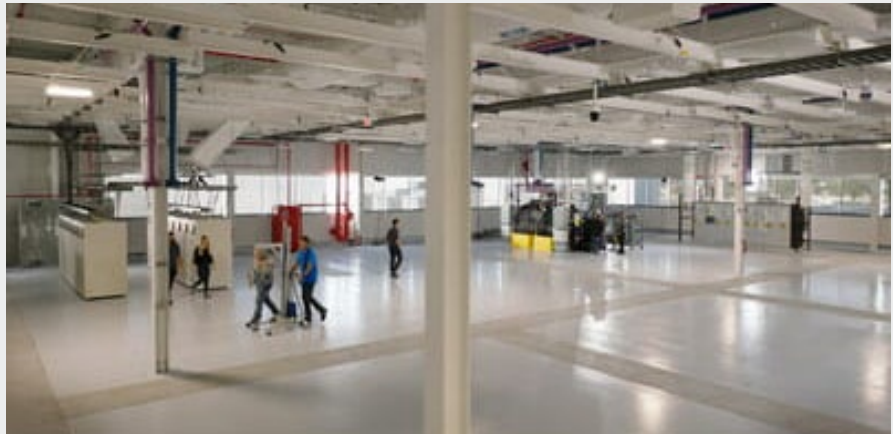
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## Collins Aerospace opens 'The Grid'

Collins Aerospace has announced the inauguration of 'The Grid,' a state-of-the-art electric power systems laboratory, representing an investment of US\$50 million (£41 million). This cutting-edge facility will serve as a hub for the development and rigorous testing of critical components essential for hybrid-electric propulsion and advanced electric systems. These innovations play an essential role in the aviation industry's concerted effort to attain net-zero carbon emissions by the year 2050. Henry Brooks, President of Power and Controls at Collins Aerospace, underscored the significance of this endeavour, stating, "Hybrid-electric aircraft will play a pivotal role in significantly reducing carbon emissions within our industry, and with the establishment of The Grid, an unparalleled laboratory of its kind, we are making substantial investments to bring these aircraft to fruition." He continued, "in the forthcoming years, The Grid will serve as our platform for pioneering developments in electric systems, aiming to create solutions that are not only more robust and efficient but also remarkably lighter than their predecessors. Through these advancements, we aim to foster a new generation of eco-friendly aircraft that operate in a sustainable manner, with minimal environmental impact." Spanning an impressive 25,000-ft<sup>2</sup>,



Collins Aerospace's next-gen electric power systems lab, The Grid, in Rockford, Illinois

© Collins Aerospace

with an initial testing capacity of eight-megawatts (MW), 'The Grid' will enable Collins Aerospace to design and manufacture cutting-edge electric motors, controllers, generators and distribution systems. Notably, 'The Grid' will facilitate the testing of Collins' 1-MW motor for the RTX hybrid-electric flight demonstrator and the European Union's Clean Aviation SWITCH programme, in addition to the 1-MW generator developed for the Air Force Research Laboratory. During the inauguration of 'The Grid', Collins Aerospace also showcased its existing 1-MW motor and introduced a 250-kilowatt motor for the very first time. As Collins leaders elucidated, the company's technology roadmap outlines the development of

an array of electric motors that can be seamlessly scaled up or down to cater to the specific requirements of various aircraft segments. Brooks emphasized the industry-wide drive toward electrification, saying, "Throughout the aviation sector, manufacturers are exploring electrification options for a diverse range of platforms, including unmanned aerial vehicles, business jets, helicopters, and single-aisle planes. Regardless of the application—whether for commercial or military purposes, hybrid-electric propulsion, or advanced electric systems—Collins is steadfast in its commitment to staying at the forefront of electric technology, ready to meet the evolving needs of our valued customers."



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AerFin has acquired three A320ceo aircraft to bolster its inventory

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**AerFin** has bolstered its A320 inventory with the acquisition of three Airbus A320ceo aircraft from Wings Capital Partners. All three aircraft are of manufacturer serial Number (MSN) 5000 and above, making them attractive airframes of their type and class to be parted out worldwide. Gwyn Scourfield of Wings Capital Partners states: "This transaction marks the sale of the last three aircraft that were off lease in the aircraft portfolio that has been managed by Wings Capital Partners. It has been a pleasure to transact with the team at AerFin who ensured a smooth transition in a timely manner." To date AerFin has acquired

over 80% of worldwide fleet of 2010/11 vintage airframes and remains dedicated to its mission in providing sustainable aftermarket solutions to its global partners. AerFin is a leading specialist in aircraft and engine component support services and MRO solutions, with an extensive inventory holding supporting airlines and MRO customers world-wide with quality used serviceable inventory to reduce maintenance costs. With a particular focus on narrow-body and regional E-Jet aircraft AerFin provides a portfolio of services under power-by-the-hour (PBH) support packages for airlines, as well as engine and APU leasing and innovative material supply programmes for MROs and operators alike. The company also provides engine disassembly and MRO services for CF34, CFM and RR engines from its UK-based technical facility.

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## Ontic acquires manufacture and support of Honeywell's TRAS product line



Ontic has acquired Honeywell's Thrust Reverser Actuation System (TRAS) product line

© Ontic

Ontic, a leading licensor and manufacturer of complex engineered parts for the global aerospace and defence industries, has signed an exclusive license agreement with Honeywell to take over production and repair of its flight critical Thrust Reverser Actuation System (TRAS) product line. Used primarily upon landing to slow aircraft by reversing the direction of the engine thrust, the system supports both the CF6 and CF34 engines (GE) and is installed on over 3,000 aircraft with long in-service lifespans ahead. This system is a strong fit for the Ontic portfolio, enabling them to leverage existing skilled technicians and technical engineering competence from their UK facility in Staverton, near Cheltenham. Crucially, this license addition builds on Ontic's complex

hydraulic systems knowledge, adding a new pneumatic product competence in its UK operations. Bringing the TRAS system to its Staverton site will create exciting new opportunities to join Ontic's growing team and they are actively recruiting to support the expansion of this facility. Gareth Blackbird, Vice President and Chief Commercial Officer at Ontic, commented: "This represents a significant license investment for Ontic – our biggest to date - and we are excited to expand the experienced team capabilities and specialised equipment at our Staverton site. The addition of this pneumatic and actuation product is well suited to the highly skilled technicians and engineers that form our Ontic team in the UK and will continue to create career opportunities in the local area."

## BOC Aviation secures US\$1.375 billion club term loan with 16 global banks

BOC Aviation, a prominent global aircraft operating leasing company, has successfully closed a substantial club term loan transaction, amounting to US\$1.375 billion (£1.127 billion). This significant milestone marks the largest unsecured term loan signed by the company since its establishment in 1993. The transaction involves the collaboration of 16 leading banks hailing from various regions, including Asia, Europe, North America and the Middle East. Citigroup

Global Markets Singapore played a pivotal role as the Global Coordinator and Documentation Agent for this endeavour, while The Hongkong and Shanghai Banking Corporation Limited, Singapore branch, assumed the role of facility agent for all three facilities involved. The loan's proceeds are earmarked for general working capital requirements and the refinancing of existing debts. BOC Aviation boasts a robust fleet of 652 aircraft, comprising

owned, managed and ordered units. As of June 30, 2023, its aircraft fleet is leased to 91 airlines across 42 countries and regions worldwide. The company, headquartered in Singapore, also maintains offices in Dublin, London, New York, and Tianjin, solidifying its global presence in the aviation leasing industry.


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## China Airlines inducts first Pratt & Whitney GTF engine



China Airlines A321neo aircraft

© Airbus

Pratt & Whitney has released that China Airlines has inducted its first Pratt & Whitney GTF™ engine. China Airlines joined the GTF MRO network in 2020, with its Engineering and Maintenance organisation providing disassembly, assembly and test capability for the PW1100G-JM engine, the GTF model that powers Airbus A320neo-family aircraft. In 2019, China Airlines selected the GTF engine to power 25 Airbus A321neo aircraft, along with an EngineWise® Maintenance long-term agreement for engine maintenance, repair and overhaul (MRO). The airline currently operates ten of these aircraft, with up to an additional 15 on order. "With the induction of our first GTF engine, we continue to build upon our longstanding relationship with Pratt & Whitney," said Jung-Hui Lee, vice president at China Airlines, at the celebratory ceremony at its Taiwan-based facility today. "The GTF engine is one of the industry's most fuel-efficient engines and we're confident that it will pave the way towards a more sustainable future. We look forward to growing our capabilities with today's most advanced technology to be ready to meet the needs of current and future operators, many of them here in Asia." In 2023, Pratt & Whitney announced three facility expansions and three shop activations across the GTF MRO network, which has more than doubled in size in four years. By 2025, the company expects to have 19 GTF MRO shops online. China Airlines marks the 14th active location and sixth in Asia-Pacific for PW1100G-JM overhaul, alongside Eagle Services Asia (ESA) in Singapore, IHI and MHI in Japan, and MTU Maintenance Zhuhai and Ameco Beijing in China. The network is part of Pratt & Whitney EngineWise® solutions, which provide operators with a variety of aftermarket services resulting in long-term, sustainable value.



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## Acro Aircraft Seating to retrofit Electra Airways' Airbus aircraft

Acro Aircraft Seating (Acro) has been awarded a retrofit contract to provide its elegantly versatile Series 9 Fixed Back seats to Electra Airways, the European charter and AMCI airline, part of the Vector Group. The seating for up to fifteen Airbus A320 and A321 aircraft will feature custom trim and finish, reflecting the airline's distinctive rich red corporate colour palette. The first shipset will be delivered at the end of 2023, for installation on the first A320 in early 2024. Announcing the contract, Neil Cairns, CEO of Acro, said, "We are delighted to have secured this latest award with Electra Airways, and look forward to starting work on its bespoke version of our Series 9 FB, the aircraft seat which breaks the mould when it comes to comfort and space creation, delivering exceptional living space even in high density cabins. Class-leading pax width has been achieved without compromise to either armrest or aisle width, providing passengers with outstanding stretch-out legroom even at a reduced pitch and giving crew ample working space. Importantly, the clean lines and reduced part count support low maintenance and fast turnaround. Electra Airways' version of the seat looks tremendous and really plays into its stylish, yet classic livery and we look forward to seeing it take to the air early next year." Commenting on the new onboard look for Electra's A320 family, Stefan Trifonov, CEO of the airline said, "As a leading provider of charter flights in Europe, North Africa and the Middle East, we understand the importance of providing a high level of comfort to our passengers and making a lasting impression on them. The appearance and comfort of our aircraft, play a very important role in achieving this. Our collaboration has resulted in bespoke seating that not only aligns with our brand values but also meets our high standards and those of our esteemed passengers for years to come." Trifonov emphasized Acro seats' sustainability edge, boasting a remarkable 99% recyclability of seat components, a pivotal factor behind their selection as the airline's seating partner.



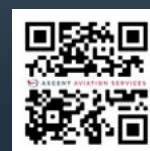
Acro will retrofit up to 15 A320-family aircraft for Electra Airways with Series 9 seats © Acro



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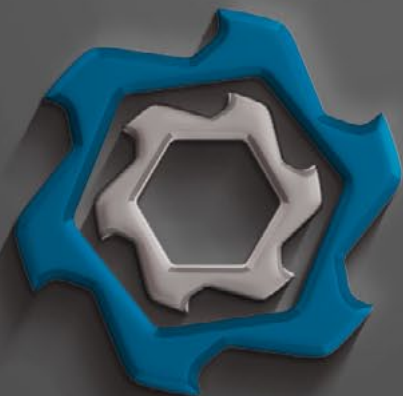
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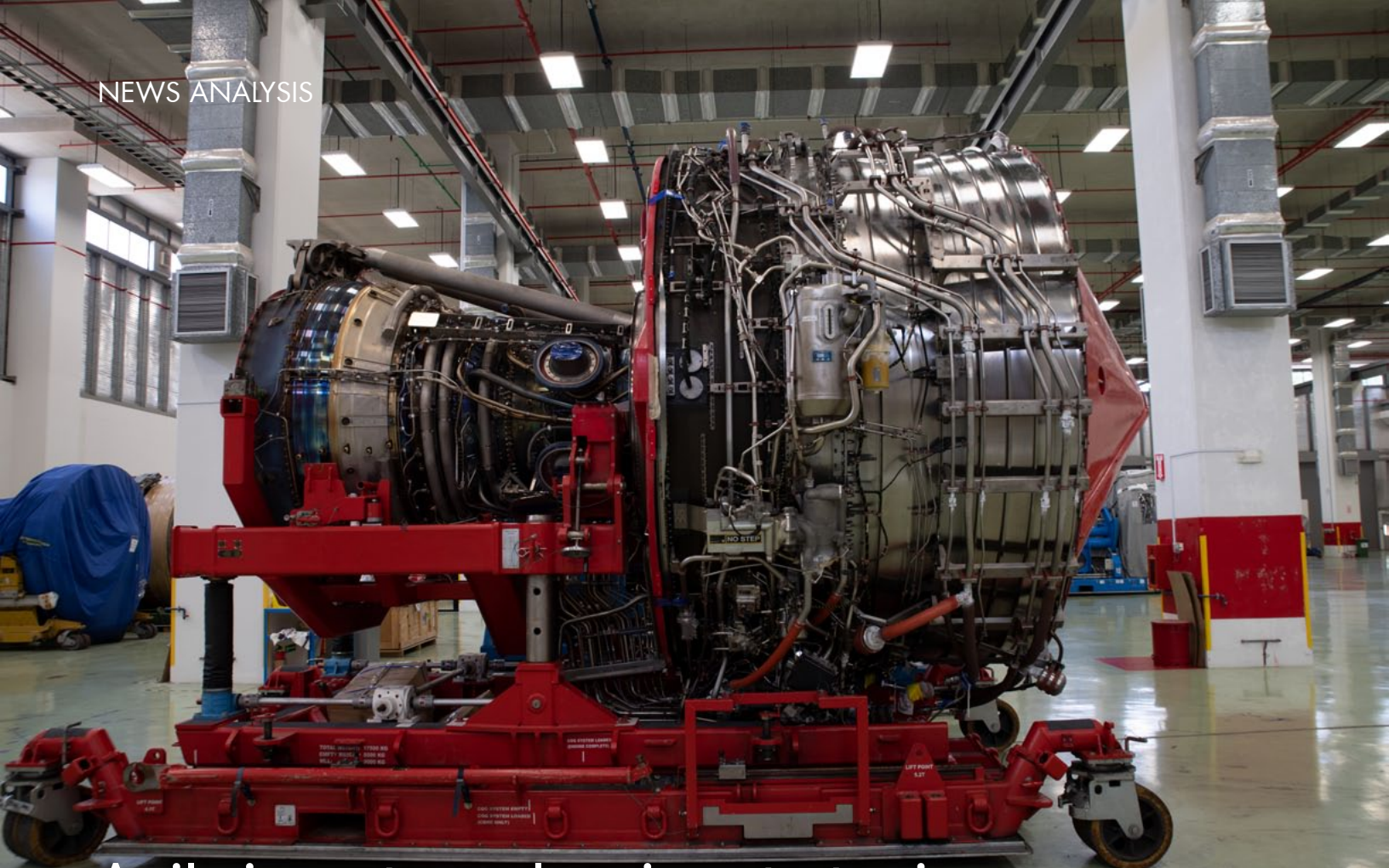
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## Agile inventory planning strategies are paramount at Kellstrom

Data indicates that OEM pricing is expected to normalise around 2024.  
© Kellstrom Aerospace

With the recovery now in full swing, *Keith Mwanalushi* sits with Michael Garcia, Vice President of Commercial at Kellstrom Aerospace to discuss parts and material services and the unfolding changes in the market.

The pandemic seems to have turned things around for aircraft parts transactions but ultimately there is a huge appetite for parts and amidst the thriving aviation recovery, part services are evolving notably, with aircraft teardowns and part-outs emerging as crucial sources for efficient spare parts. "This approach caters to surging demand, especially for older aircraft, while also promoting sustainability by reducing new manufacturing needs," states Michael Garcia, Kellstrom's commercial expert.

Garcia explains that the focus at Kellstrom is on salvaging high-value components, like engines, avionics, and landing gear, from retired aircraft. However, he reminds that supply chain challenges persist, impacting essential

materials for aircraft operations. This particularly affects widebody aircraft, straining MROs' ability to meet turnaround times. As a result, he says demand has surged for widebody engine spare parts like CF6-80C2 and PW4000-94 engines, vital for short-term leasing support.

Several MROs and parts traders and suppliers are reporting changes to inventory planning in response to shifts in supply and demand, and Garcia says agile inventory planning strategies are paramount to maintaining operational efficiency. "The aviation industry is closely monitoring passenger traffic trends and supply chain pressures to anticipate changes in demand. Given the positive outlook for a strong aftermarket,

especially if passenger traffic remains robust, effective inventory planning remains crucial," he stresses.

According to Kellstrom, the data indicates that OEM pricing is expected to normalise around 2024, signalling the need for proactive adjustment. "Additionally, as supply chains gradually normalise and MRO turnaround times improve, airlines are likely to optimise their inventory levels. Notably, the current outlook for parts purchasing lags behind MRO sales by more than 400 basis points, a notable shift since the pandemic period. This underscores the importance of staying aligned with market dynamics and rapidly adjusting inventory to match emerging trends," Garcia explains.



Technology is also becoming increasingly influential, and the integration of AI technology, historical data, and advanced forecasting tools is a key enabler in responding swiftly to changing demand. Gracia says close collaboration with partners, just-in-time part supply, and the exploration of consignment opportunities offer airlines flexibility in managing inventory while mitigating costs – “Forward-purchasing strategies continue to be valuable in maintaining a buffer against potential shortages, ensuring uninterrupted operations despite fluctuations in demand,” he adds.

With the backdrop of supply chain disruptions in the aftermarket, industry players are being tested to push the boundaries and create or manage leaner surplus inventory strategies. To address challenges posed by these disruptions, Garcia notes that repair specialists are actively redefining inventory management practices to optimise cost efficiency and material availability.

Considering the anticipated normalisation of OEM pricing in 2024 and the expectation that supply chains will gradually stabilise, he says airlines are revisiting their surplus inventory strategy. “The insight that MRO sales are outpacing parts purchasing by more than 400 basis points over the next six months highlights the need for fine-tuned inventory management.”

Garcia also feels the adoption of aircraft teardown and part-out processes aligns with this strategy, salvaging high-quality components from retired aircraft. “This practice, along with the prospect of improving MRO turnaround times, paves the way for airlines to manage inventory more efficiently. Collaborative partnerships, such as consignment agreements, further contribute to



Michael Garcia, Vice President of Commercial at Kellstrom Aerospace

streamlining operations and reducing holding costs.”

Garcia reckons by incorporating the data-driven approach described above, airlines are poised to navigate the challenging aftermarket landscape more adeptly, ensuring a leaner surplus inventory strategy that optimises financial performance and supports sustainable practices.

Selling surplus material on a consignment basis seems on trend currently and Garcia acknowledges that it offers benefits in terms of liquidity and reduced holding costs. “However, challenges exist, particularly

in managing stocking costs associated with holding inventory that is not owned by the company but is available for sale. Effective negotiation and collaboration with consignment partners are essential to address these challenges and optimise the consignment strategy.”

Garcia adds that consignment offers a solution to mitigate stocking costs by allowing materials to be stored and managed by external partners until they are sold, reducing the direct financial burden on the company. However, again, he stresses that careful management of consignment agreements, inventory tracking, and clear communication with partners are necessary to strike a balance between material availability, holding costs, and overall financial efficiency.

A report by RBC Capital Markets, suggests the average spare part and material pricing environment in Q2 2023 was just below 9%, down slightly from the Q1 peak of more than 9%.

“Given the positive outlook for a strong aftermarket, especially if passenger traffic remains robust, effective inventory planning remains crucial.”

*Michael Garcia, Kellstrom Aerospace*



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# ENGINEWISE





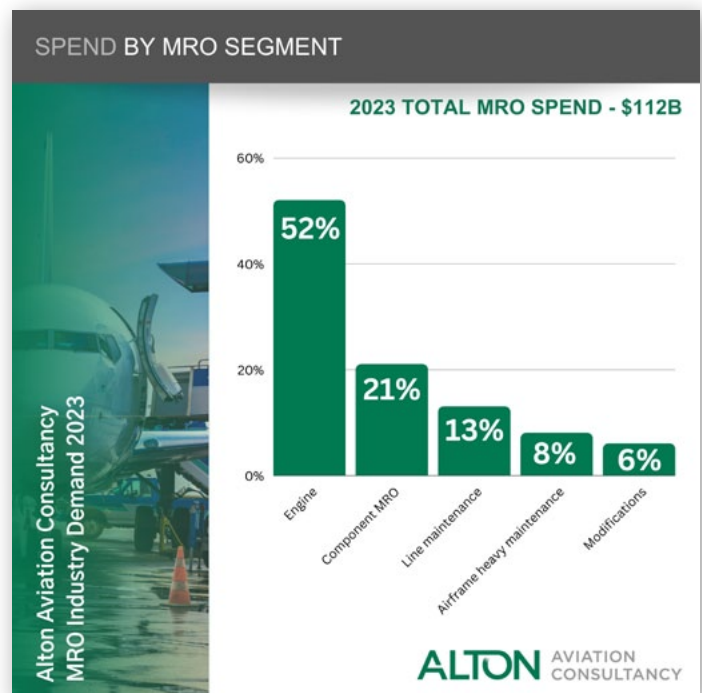
Aircraft maintenance.  
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## Significant year-over-year MRO demand growth up to 2033

Forecast by Alton Aviation Consultancy

A recent report from Alton Aviation Consultancy suggests that the global Maintenance, Repair, and Overhaul (MRO) expenditure in the aviation industry is poised for an annual growth rate of 2.2% over the next decade. This growth is anticipated to take MRO spending from its current level of \$112 billion to \$138 billion per annum. Multiple factors are currently contributing to this increase in spending, including a faster-than-expected recovery in the volume of air traffic and a decrease in the number of aircraft retirements.

Alton Aviation Consultancy is a leading global aviation advisory firm which has unveiled its independent annual Global MRO Demand Forecast. This comprehensive report delves deeper into those factors and trends which are fueling the increase in MRO spending within the industry. Of particular interest, the report highlights the impact of rising material and labour costs, as well as the connection between traffic recovery and retirement trends. These factors are expected to result in significant year-over-year growth in MRO demand when compared to previous years.



© Alton Aviation Consultancy

“MRO growth is being driven by strong demand in Asia Pacific.”

According to Adam Guthorn, one of the co-authors of the report and the managing director of Alton's New York office, “Supply chain challenges and a lack of skilled workers are causing airlines to delay aircraft retirements, which in turn is boosting MRO spend, with older aircraft requiring more maintenance intensive overhauls. Likewise, the rapid recovery of air traffic has resulted in greater demand for MRO because airlines are increasing aircraft utilization to better meet passenger demand.

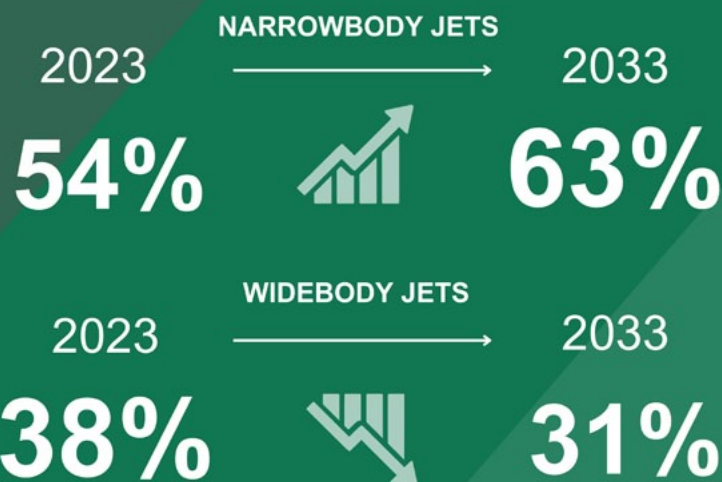
“MRO growth is being driven by strong demand in Asia Pacific in particular, which accounts for 35% of global MRO demand globally, with North America and Europe each representing around 20% of global demand.

“There’s also uneven demand in terms of MRO segments – with engines the largest contributor, accounting for 52% of spend in 2022. With new-generation engines gradually replacing mature generation engines, we can anticipate that

overhaul events of new generation engines will increase from 25% of total events in 2023 to 69% by 2033. Poor reliability of new-generation engines are also impacting the MRO market, with many new generation engines having shop visits at intervals much sooner than their predecessor engines.”

#### NARROWBODY VS WIDEBODY

2023 TOTAL MRO SPEND - \$112B    2033 TOTAL MRO SPEND - \$139B



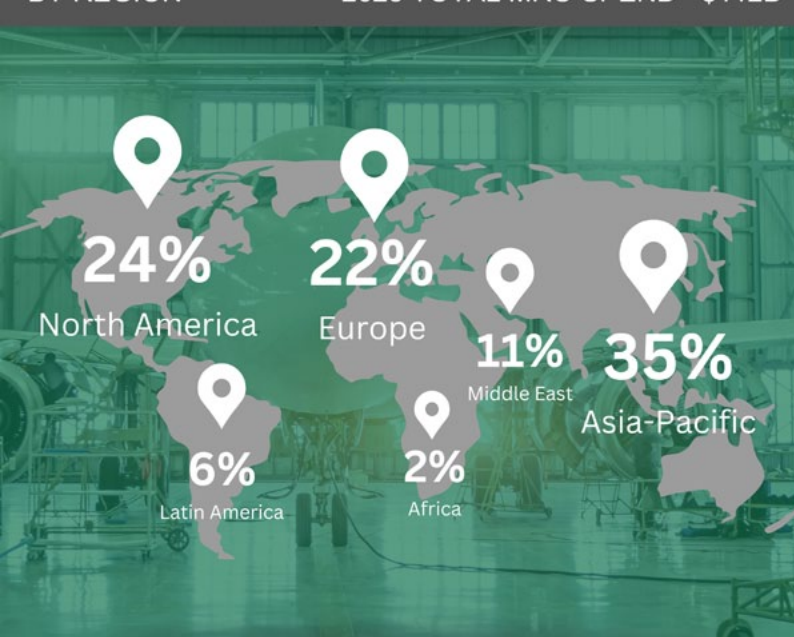
Alton Aviation Consultancy  
MRO Demand Forecast 2023

**ALTON** AVIATION  
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#### BY REGION

2023 TOTAL MRO SPEND - \$112B



Alton Aviation Consultancy  
MRO Demand Forecast 2023

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Joshua Ng, the director of Alton's Singapore office and co-author of the report notes that: “An additional contributor to MRO growth will be the modifications sector, which continues to grow faster than the overall rate of the industry. Airlines are seeking to optimize their aircraft configurations to improve profitability, which means implementing cabin modifications more frequently as they compete on product quality.”

The report also acknowledges the continual air of uncertainty within the airline industry, and which extends to the ongoing recovery of passenger demand. It further explores potential challenges stemming from workforce shortages, disruptions in the supply chain, and macroeconomic factors such as inflation, interest rates, and the Russia-Ukraine conflict. These elements collectively contribute to heightened levels of uncertainty in the aviation MRO landscape.

Please [click here](#) to download a copy of Alton's '2023 Global MRO Demand Forecast'.



A stylized illustration of a woman with dark hair in a ponytail, wearing large black sunglasses, a red earring, and a dark blue business suit with a red pocket square. She is holding a red and blue duffel bag. The background features a large blue gear with a world map inside, and a red and white striped object at the bottom.

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A low-angle, front-facing view of a KLM Boeing 747-400 aircraft on a tarmac. The aircraft's four engines and landing gear are visible. The sky is a vibrant orange and yellow, reflecting off the polished fuselage and the vertical stabilizer. The KLM logo is visible on the tail.

## **Europe** reports strong demand for MRO amid lingering supply chain woes

This rise in utilisation has led to an increased demand for MRO services.  
© AFI KLM

With demand for MRO services surging across Europe, maintenance providers are being more flexible with their capacity coupled with new ways of dealing with aftermarket problems.

By Keith Mwanalushi





Glenford Marston, Senior Vice President – Sales at Aero Norway

**T**he latest industry forecast from Alton Aviation suggests the European MRO segment will grow from \$25 billion in 2023 to \$27 billion in 2033. The analysts predict that Europe will experience the slowest growth among all the regions over the next decade, with a CAGR of only 0.8% and the region will also see reduced

short-haul demand due to sustainability considerations.

As Alton indicate, the quicker recovery of air traffic demand has encouraged airlines to fly aircraft more intensively to meet this demand and bring back inactive aircraft at a faster pace. This rise in utilisation has led to an increased demand for MRO services.

MROs in the region are also keeping a close eye on the current recessionary and inflation driven environment. Glenford Marston, Senior Vice President – Sales at Aero Norway, admits that most businesses are feeling the effect of uncertainty driven by inflation and at Aero Norway, they too have not escaped that – “our customers tend to move for more fixed price deals, and we are called upon to shoulder more of the risk burden.”

Even though Aero Norway’s CFM56 shop visits have levelled to pre-pandemic, margins have not, reports Marston, which he says is a direct effect of the current environment.

Julian Lopez Lorite the MRO Commercial Director at Iberia Maintenance feels the recession has a minimal impact on the cost base but it’s affecting the behaviour of the customer. “They need a different solution, and this is where we must be flexible, like doing partial repairs, modular exchanges,

**“Our customers tend to move for more fixed price deals, and we are called upon to shoulder more of the risk burden.”**

*Glenford Marston, Aero Norway*

and something that will allow them to maintain the budget in this recession period and deferring the big cost for the future,” he observes.

All the MROs are still dealing with supply chain problems, and Lopez Lorite reminds that the supply chain today is not only material, but it’s also having technicians with the right skills to provide the service. Iberia Maintenance kept all its employees during the pandemic, and he feels that was fundamental in readiness for growth. “When you plan to grow, you need to be ready and we also we plan to continue with our apprentice programme.”

However, Lopez Lorite notes that labour shortages have affected some suppliers especially on the material side and hence Iberia Maintenance has increased its own repair capabilities – “The more you can do, the better, and you can control the process. However, you cannot have 100% capability for everything, and we still need to rely on



Apprentice schemes will be key to address incoming labour shortfalls.  
© Aero Norway



Julian Lopez Lorite, MRO Commercial Director at Iberia Maintenance

vendors and suppliers, but we are trying to mitigate those shortages.”

Lopez Lorite adds that material consignment agreements with suppliers are helpful and beneficial – “consignment is the best solution, I think, for both.”

Iberia Maintenance is currently in the process of qualification for the overhaul and repair of a new engine model: the GTF™ PW1100G-JM engines that power the new generation aircraft of Airbus A230neo. Iberia has already obtained the capability to carry out this work and is in the process of training its workforce. The first induction of this engine type is expected to happen in the last quarter of this year.

Derk Nieuwenhuijze, Vice President, Strategy, Marketing and Communication at AFI KLM E&M speaks of materials and parts as being a major element in MRO costs. “A significant increase in raw-material prices is trickling down into part cost too, ultimately increasing the cost of MRO services,” he says.

For materials, AFI KLM E&M are looking at several solutions, as Nieuwenhuijze explains: “First of all, we are actively working with the OEMs to ensure the supply chains recover and that we find mitigating actions. Secondly, we continuously look for alternative

sources of parts where that makes sense and finally, and perhaps most important of all, developing more repairs can be a strong lever to avoid material shortages, as well as reducing the environmental footprint.”

Nieuwenhuijze says AFI KLM E&M is placing strong emphasis on finding new generation mechanics. “We expect to hire over 500 apprentices this year and are putting a lot of effort in getting them trained.”

Meanwhile, despite the current inflation driven environment in the EU and UK, the folks at AJW Group don’t see the situation affecting the demand for MRO services; it remains high due to increased airline capacity demand, meaning older aircraft are staying in service longer than they normally would, indicates Scott Symington, Chief Commercial Officer.

Symington states: “What we can see is that despite the inflationary pressures in the industry, and in terms of the cost of equity, capital costs, manpower, supply chain disruption, and material inflation, AJW is committed to long term contracts with our suppliers, OEMs, and third-party MRO vendors, which is mitigating our MRO cost increase as much as possible.”

AJW is seeing significant interest in



Scott Symington, Chief Commercial Officer, AJW

its Power-by-the-Hour (PBH) support solutions from European airlines who are looking to commit to longer flight hour support agreements to secure access to inventory. According to Symington, this offers several advantages, including cost predictability, optimisation of cash flow, excellent service levels, real-time order tracking, and the operational insurance coverage provided by AJW’s substantial investment in a rotatable pool.

“These agreements allow operators to outsource responsibilities to AJW without having to manage additional headcount, negating supply chain disruptions and labour shortages affecting the region. The agreements then pass the risk, both in terms of holding inventory and capital cost to the airline, onto AJW Group,” adds Symington.

“A significant increase in raw-material prices is trickling down into part cost too, ultimately increasing the cost of MRO services.”

*Derk Nieuwenhuijze*  
AFI KLM E&M



Derk Nieuwenhuijze, VP AFI KLM E&M Strategy, Marketing & Communication





Brexit has brought about its own complexities.

© Keith Mwanalushi

On the labour front, AJW is actively partnering with training institutions to provide entry level aviation training and familiarisation, and to develop advanced programmes covering traditional maintenance skills and emerging areas like digital maintenance technologies for technicians. Educational outreach is at the forefront of the Group's plans to employ more technicians. "When you start by looking at promoting STEM [Science, Technology, Education, Mathematics] focused learning, you encourage skill development in the younger talent pool and spark their interest in aerospace."

AJW is acutely aware that operations must appeal to the Gen-Z mindset and by focusing on AR and AI (Augmented Reality and Artificial intelligence) digitisation as potential training methods, they offer a strong employer value proposition and an innovative mindset culture with digital enablement at the core of the business.

Aircraft and engine parts are seemingly in tariff-free circulation within the Eurozone but perhaps geopolitical issues like Brexit and the war in Ukraine have shifted the landscape for the movement of aftermarket materials somewhat.

Marston from Aero Norway reckons the full effect of Brexit and the Ukraine conflict has not been felt fully just yet however at Aero Norway has some

concerns going forward, especially the effect on new material (Ukraine war) and movement of people (Brexit). "Over the years the UK has supplied many contractors who could freely move around and work anywhere in Europe. This is not so easy now and is compounding some of the labour shortage being felt in the industry," he states.

Importantly, Aero Norway has focused on finding ways to maintain the labour force and flexibility throughout the downturn – "our facility is managing well, and we positioned ourselves strategically to manage this uptake," Marston adds.

In response to complications caused by Brexit, Iberia Maintenance has responded by modifying the schedules and doing things more in advance especially for UK based customers. "This especially true with our logistics and customs teams that does a really good job working together with the customer," reports Lopez Lorite.

At AJW, Symington notes that Brexit introduced increased customs checks and regulatory changes, affecting the seamless flow of aviation parts between the UK and EU. He says this has necessitated increased paperwork and administrative burdens for MRO service providers and airlines operating in the region.

The AJW headquarters, based in the

UK, supports a vast and diverse global customer base and Symington reveals that it will be expanding EU based warehousing facilities and footprint in the Eurozone to support EU customers more efficiently, mitigating the effects of Brexit.

In addition to AJW's established support hub in Malpensa, Italy, and the expansion of its EU warehousing, it has identified the need to further expand other EU based capabilities across the group. "We have increased our European sales team and now have an established office in Istanbul, Turkey to support the region and the Middle East. We are also expanding our European MRO facility, AJW Technique Europe, to offer our customers reduced TATs and improved efficiency post Brexit."

Symington adds that AJW is also committed to digital transformation to enhance its inventory management and logistics solutions. "We have invested in cutting-edge tracking systems and data analytics tools, including dynamic pricing models, procurement forecasting, blockchain, and RFID tracking. This has allowed us to streamline our procurement processes and significantly enhance operational efficiency combined with a highly proactive inventory investment strategy to mitigate supply chain disruption."

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# Post-pandemic environment brings shifts in **conversion** solutions

Modifications are the fastest growing MRO segment.  
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The aviation industry has witnessed a remarkable transformation as airlines and operators pivot towards cargo reconfigurations to capitalise on the burgeoning freighter market. *Keith Mwanalushi* checks how the modifications are faring.

**T**he latest industry forecasts suggest that modifications are the fastest growing MRO segment, with 3.9% CAGR over the next decade with significant spend expected in passenger-to-freighter (P2F) conversions.

In the P2F segment, analysts at Alton Aviation say conversion demand will remain steady over the next 10 years, despite the near-term decline in cargo demand. Current fleets of popular widebodies like the MD-11, DC-10 and 747s and narrowbody aircraft like the 737 Classic and 757, will be replaced in large numbers over the next 10 years by others like the A330, 777 and the 737NG and A320neos.

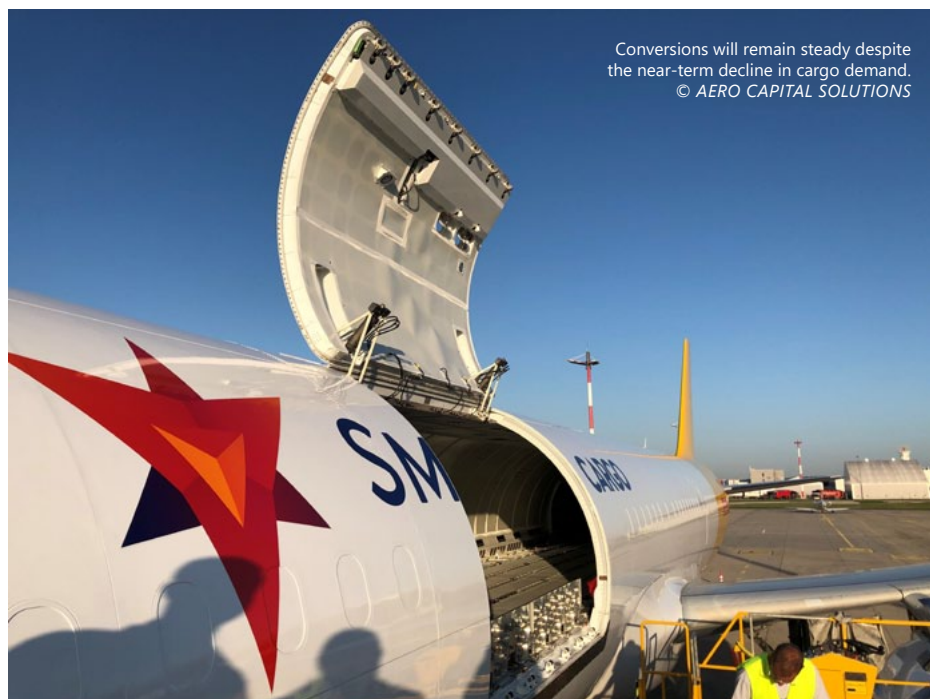
"Cargo aircraft modification solutions



Waleed Sirrag, Director of Technical Services  
at The Aircraft Group

are essential for optimising the performance and versatility of freighter planes in the ever-expanding logistics industry," remarks Waleed Sirrag, Director of Technical Services at The Aircraft Group. He says these solutions encompass a wide range of upgrades and adaptations that enhance the aircraft's capabilities.

Sirrag points to interior reconfiguration as a key focus, where cargo compartments are customised to maximise space utilisation, improve loading and unloading efficiency, and accommodate various types of cargo, from standard pallets to oversize freight. "Moreover, the integration of advanced cargo handling systems, such



as automated loading and unloading equipment, streamlines operations and reduces turnaround times. Aircraft modification also encompasses improvements in fuel efficiency and range, enabling freighters to reach more destinations with reduced operation costs."

Additionally, advancements in avionics and navigation systems enhance the safety and reliability of cargo aircraft, allowing them to operate in diverse and challenging environments. "These modification solutions ensure that cargo planes remain adaptable and competitive in the dynamic and growing airfreight sector, facilitating the efficient movement of goods around the world," Sirrag continues.

The Aircraft Group assists airlines and leasing companies in managing cargo modifications and offering solutions

to streamline the cargo conversion process. "With a deep understanding of the intricacies involved, our team excels in guiding airlines and leasing companies through the complexities of cargo modifications, ensuring a seamless and efficient conversion process," Sirrag notes.

At Avensis Aviation, they are using scalable solutions in response to demands in the conversion market. The portfolio comprises LEVIS XERO, MEDIUS, MEDIUS COMBI, MEDIUS ELEV and NAVIS. "It is the only aviation conversion house providing PTF conversion solutions that cover the full spectrum of freighter market requirements," informs Cristian Sutter, CEO of Avensis.

Sutter explains that LEVIS XERO allows for belly hold cargo with a "0 PAX" configuration, useful for carrying belly freight even on ferry flights. MEDIUS

offers fully reversible PTF conversions that feature a Class E compartment without a main cargo door. It includes manual cargo loading into the main deck for MEDIUS, part passenger and part cargo cabin for MEDIUS COMBI and the possibility of belly loading pallets and containers onto the main cargo deck via forward and aft lifts in MEDIUS ELEV.

All MEDIUS family conversions are fully scalable to the NAVIS conversion, should operators require an upgrade in their freighter fleet to include the main deck cargo door. NAVIS features an innovative "plug-type" cargo door, which is lighter, fully electrically-operated and compliant with future regulatory changes.

### Certification challenges

Sutter indicates that every conversion requires a new freighter-type STC (supplemental type certificate) certification. "The certification process and requirements vary depending on the level of modification required. For complex conversions like MEDIUS ELEV and NAVIS, a full flight test programme is required. To date, our biggest challenge has been the time it takes certification agencies to review and approve all the substantiation data required to approve the STC."

However, Sutter notes that the aviation industry is facing record levels of new developments which are not all

**“Our biggest challenge has been the time it takes certification agencies to review and approve all the substantiation data required to approve the STC.”**

*Cristian Sutter, Avensis*



Cristian Sutter, CEO of Avensis



cargo related and so he understands the often-lengthy waits. "All products must go through both EASA and FAA for approvals at either TC [type certificate] or STC levels. Consequently, there is finite bandwidth to cater to and cope with such a high demand for certification of new projects at the regulatory level."

With regards to future regulatory changes, Sutter highlights new regulations around main deck cargo doors that will be required to comply with in the near future. However, at Avensis, they have anticipated and addressed these updates with a unique "plug-type" main deck cargo door design, featured in the NAVIS PTF conversion product.

Sirrag at The Aircraft Group says navigating the certification process for cargo aircraft modification presents a multifaceted array of challenges. Foremost among these is the imperative of regulatory compliance, with the FAA and EASA setting stringent standards. "Ensuring that modifications align with these regulations is paramount to guarantee the safety and airworthiness of adapted cargo aircraft. Safety and reliability further underscore the complexity of the process, demanding exhaustive testing, engineering analysis, and stress tests to safeguard the aircraft's performance."

Meanwhile, meticulous documentation is indispensable to substantiate compliance, a task made daunting by the intricacies of complex modifications, according to Sirrag. "Securing a team boasting technical expertise presents a formidable challenge due to a scarcity of skilled professionals in the aviation sector."

The Aircraft Group has gained profound understanding of the challenges related to obtaining certification for freighter operation modifications. "Our extensive knowledge and experience empower us to navigate the intricacies of certification process adeptly. With keen understanding of the detailed requirements and regulations, our team diligently works to ensure that modifications adhere to the essential standards for freighter operations," Sirrag tells.



There is a large demand for replacing popular freighters like the 747.

© Ascent Aviation Services

Moreover, effective cost management, navigating protected certification timelines, seamless integration with existing systems, rigorous testing, and supplier coordination are all critical facets of the intricate journey. Lastly, Sirrag says staying abreast of evolving aviation regulations adds a layer of complexity, necessitating potential adaptations to modifications even post-certification.

Meanwhile, in Arizona, Ascent Aviation Services is a full-service MRO offering Part145 services and implementation of P2F solutions and was selected as the

A321 installer for Sine-Draco and more recently, the 777 P2F partner for IAI in North America.

Speaking on industry challenges, Scott Butler, the Chief Commercial Officer says resources are going to present the most challenges worldwide. "There are several new certification programmes ongoing and the OEMs, as well as the certifying bodies like the FAA and EASA, will be busy trying to keep up. In addition, many of the new platforms are more digital and will require different skill sets of engineers and mechanics to perform the modifications," he suggests.

“Many of the new platforms are more digital and will require different skill sets of engineers and mechanics to perform the modifications.”

*Scott Butler, Ascent Aviation Services*



Scott Butler, Chief Commercial Officer, Ascent Aviation Services



Modification presents a multifaceted array of challenges.

© Ascent Aviation Services

## Post-pandemic trends

Over the last three years the market has seen a wave of conversions from light cargo modifications to full cargo configuration to meet fluctuations in demand for air freight. Going forward, Butler observes plenty of next-generation aircraft heading to the conversion market. “There is a large demand for replacements of the MD11, 747, 757 and A300 worldwide. This is why we are bullish on the newer generation types like the 777, A321 and other narrow body platforms which will offer valuable replacement stock. The feedstock is very large for these types and will provide years’ worth of conversion aircraft,” he states.

Faced with a drastic reduction in passenger flights and corresponding surge in demand for air freight, airlines have adapted by repurposing their passenger aircraft to accommodate cargo. “This strategic shift enables carriers to meet the escalating demand for air cargo services,” feels Sirrag.

As the industry navigates through a post-pandemics landscape, Sirrag indicates that this innovative approach not only bolsters revenue streams for airlines but also plays a crucial role in supporting global supply chains and ensuring the timely transportation of essential goods. “This adaptation highlights the resilience and adaptability of the aviation sector in the face of unprecedented challenges, underscoring its commitment to serving a changing world,” he comments.

The air freight market’s demands relating to P2F products has been shifting from light cargo conversions to long-term

demand-oriented, featuring full or main deck cargo door conversions. Today, we are witnessing the air cargo market’s return to pre-COVID economic levels, demonstrating the long-term instability of the pandemic market hype, according to Sutter.

Sutter also points to the replacement of ageing cargo fleets like the MD-11s and vintage B767 and the growth of e-commerce as driving express cargo demand where turn-around speed is critical. “In turn, this environment creates stable and longer-term demand for conversions with a main deck cargo door, or so-called full conversion.”

At Avensis, they anticipated this post-COVID market shift and created a portfolio of conversion products in response. “Our range of products allows our customers to scale up their existing fleet from our intermediate MEDIUS PTF to a NAVIS PTF conversion with a main deck cargo door, building on the initial conversion investment,” Sutter concludes.





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# Q & A

## In the hot seat...

Lloyd Barker  
SVP, LEAP Programme  
Industrialisation &  
Executive Site Leader

Lloyd Barker, SVP, LEAP Programme Industrialisation  
& Executive Site Leader at StandardAero

### What does a typical day involve in your role?

The key priorities of a typical day entail actively engaging with my LEAP Industrialisation leadership team to operationalise elements of our New Production Introduction (NPI) operational framework, monitoring execution of LEAP PMO plans for reconfiguration of the San Antonio

site to create operational space for the LEAP MRO manufacturing flowpath, interacting with team members across the across our site operations on a diverse array of agenda items and collaborating with the military and commercial programme business leaders to develop solutions to everyday challenges that affect the fulfilment of our collective business objectives.

### Tell us about the key capabilities at StandardAero?

StandardAero is one of the world's largest independent providers of services including engine and airframe maintenance, repair and overhaul, engine component repair, engineering services and interior completions. We serve a diverse array of customers in the airline,



business and general aviation, government and military and energy markets. We support over 40 aeroengine, APU and aeroengine derivative families, from the M250, PT6A and TFE731 to the CFM56, LEAP and RB211.

### **How is the high-cost environment affecting MRO services?**

The MRO market has been subject to a number of cost drivers in recent years, including raw material pricing pressures, parts shortages (stemming from supply chain disruptions and a ramp-up in new engine deliveries) and labour shortages. While these pressures now seem to be abating to some degree, any cost increase is obviously a concern to our customers and – as a consequence – to ourselves. We have not seen any reduction in MRO demand in response to these cost concerns, with our MRO facilities around the globe currently seeing strong demand thanks to the recovery in air travel and the robustness of the business aviation market. We continue to work hard to ease the cost burden on operators. StandardAero has long held a philosophy of “repair rather than replace,” with our extensive in-house component repair capabilities helping us to drive down costs (and TATs). We have also long been active in the engine parts trading market, providing customers with high quality used serviceable material (USM) on several engine platforms. Our USM capabilities were further extended in December 2021 through our acquisition of PTS Aviation, which provides operators and owners with USM, spare modules and serviceable engines for the CFM56-3B/C, -5A/B, and -7B turbofans, thereby complementing our MRO and component repair capabilities on the CFM56 family.

### **What key trend are you seeing on material supply on legacy engines?**

As already noted, the engine OEMs and their suppliers are facing strong demand associated with both new engine production and MRO for the existing fleet. In dealing with this issue, our central strategy is to be as proactive as possible in predicting our parts requirements, carefully forecasting induction schedules and working side by side with our customers to anticipate and plan for their MRO needs.

### **What are your projections for MRO services on the new LEAP platform?**

Our signing in March of a long-term CFM Branded Service Agreement (CBSA) to support the CFM International LEAP-1A and LEAP-1B was a monumental milestone for StandardAero. This agreement marked the largest, single potential growth opportunity in our company's history, representing a long-term partnership which will last for decades to come. With over 5,600 LEAP-1A and LEAP-1B engines already in service according to Cirium, and with CFM holding a backlog of around 9,600 engines as of July, the LEAP has already amassed more than 33 million engine flight hours and 15 million flight cycles. Aviation Week estimates that the LEAP family will generate over \$106 billion in MRO spending over the next decade, including over 4,300 performance restoration shop visits (PRSVs).

### **What investments have you made to support LEAP services?**

In response to this anticipated level of demand, StandardAero is in the process of establishing a new LEAP-1A and LEAP-1B MRO line at

our 810,000 sq. ft. facility in San Antonio, TX. We will be commencing quick turn (QT) engine shop visits early next year, with PRSVs to follow in early 2025 once we have correlated our San Antonio engine test cell capabilities. As we prepare the new line to go live in 2024, we have been investing in tooling, IT and component repair capabilities, supported by a significant recruitment and training effort. By the end of 2024 we will have added at least 50 additional employees, with another 100 to be added by the end of 2024. By 2027, when we expect to be fully operationalised in terms of volume and scale, we'll will have added 400 team members, supported by our dedicated San Antonio training centre.

### **What's next in the pipeline at StandardAero?**

The LEAP programme will clearly be a major focus for years to come, as we stand up our new San Antonio MRO line and training centre, along with our new repair development centre of excellence which will support component and accessories repairs and requirements relating to the LEAP line. Aside from our investment in the LEAP, we are also expanding our capabilities on the CFM56-7B through the establishment of a new service centre at our Dallas/Fort Worth International Airport facility, which will shortly include on-site engine test capabilities. And looking further out, we have teamed with Boom Supersonic to support development of the Symphony propulsion system which will power the Overture supersonic airliner, expected to receive type certification by 2029. StandardAero will ensure that Symphony is designed for maintainability, delivering reliable and economical operations for customers of the aircraft.

## »»»»→ *on the move*



Daniel Hoffmann

Etihad Engineering has appointed **Daniel Hoffmann** as its new Chief Executive Officer (CEO). Hoffmann brings to Etihad Engineering more than 20 years of hands-on experience in the global aviation industry, having led Lufthansa Technik Sofia in Bulgaria as its CEO, and served in executive roles at Lufthansa Technik Base Maintenance facilities in Germany and the Philippines. His expertise ranges from organisational

leadership and change management to standardisation of core business functions and business efficiency through optimum resource utilisation, as well as a successful track record of leading growth projects and negotiating joint venture partnerships. Etihad Engineering has delivered comprehensive MRO solutions to hundreds of airlines including flag carriers, OEMs, aircraft operators and leasing companies in the Middle East, Asia, Africa, Europe, Latin America and Australia over three decades. The company recently expanded its site area, adding more parking and hangar space to meet its growing business, and covers a total area of 545,000-m<sup>2</sup>. Two new hangars are being built with three bays to carry out freighter conversions, expand the existing hangar capacity and serve more aircraft and customers from around the world.

Spirit AeroSystems has released that **Patrick M. Shanahan**, a member of the company's Board of Directors, has been appointed interim President and Chief Executive Officer (CEO), effective immediately. Shanahan succeeds **Thomas C. Gentile III** as President and Chief Executive Officer. Gentile has resigned as a member of the Board, effective September 30, 2023. The company's Board will conduct a search to identify a new Chief Executive Officer. Shanahan's career spans both commercial and military programmes, including 31 years with The Boeing Company and service as Deputy Secretary of Defence and Acting Secretary of Defence. As the 33<sup>rd</sup> Deputy Secretary of Defence, Shanahan helped lead the development



Patrick M. Shanahan

of key Department of Defence policies and strategies. He has served on the Spirit AeroSystems Board since November 2021. Shanahan currently serves on the boards of Leidos Holdings and CAE Inc. He holds a bachelor's degree in Mechanical Engineering from the University of Washington, a master's degree in Mechanical Engineering from the Massachusetts Institute of Technology (MIT), and an MBA from the MIT Sloan School of Management. Gentile will serve as a consultant to the company for a period of three months to ensure a smooth transition.



Nicolai Hertz

TP Aerospace has appointed **Nicolai Hertz** as new Chief Commercial Officer (CCO) of TP Aerospace as of October 2<sup>nd</sup>, 2023. Hertz brings almost 30 years of experience from the aviation industry from both Satair, SAS Component Group and ST Aerospace. Most recently, he was with Satair for 15 years, latest in the role as Head of Used Serviceable Material & Senior Vice President Business Development & Strategy. As Hertz steps into this new role as CCO, Co-founder **Thomas Ibsø** will step down as President of TP Aerospace by the end of the year. This is part of the planned succession of the company. With a strong candidate in place, Ibsø, the Board of Directors and the rest of the Executive Management team are confident that the timing is now right to carry out this transition. "Nicolai brings extensive commercial experience and knowledge from the MRO aftermarket and will play a pivotal role in delivering our strategy", said CEO **Nikolaj Jacobsen**.





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