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MRO 360°

The Future of Aircraft MRO Training

Leveraging AR and VR for immersive and efficient skill development

Company Spotlight
Pem-Air propelling the customer-first journey

Resource Management
Challenges in developing shift plans

Heavy Maintenance
Company interview with IBA Group Ltd

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Dear Industry Colleagues,

I am delighted to present this latest issue of our AviTrader MRO 360° magazine.

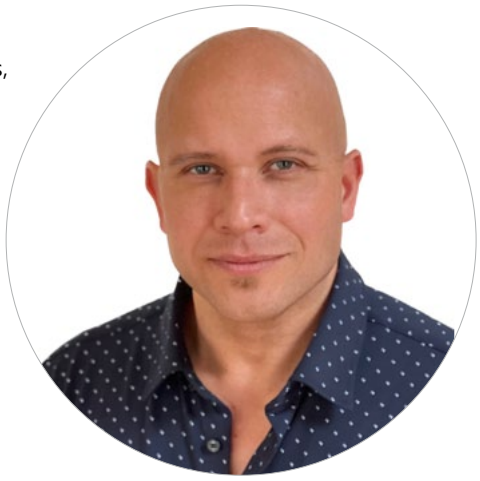
Those of you who are involved in shift planning for line maintenance are likely very familiar with the challenges. It is not just a matter of providing enough hands, but also successfully walking a tightrope created by such a heavily regulated and safety-conscious environment, which in such a fluid and dynamic environment makes shift planning a major challenge in itself. We have taken a closer look at this topic.

We also delved into the world of warehousing incoming parts, a key element of a system designed to root out potentially counterfeit spares, as well as where the future may lie for aircraft MRO training through the leveraging of AR and VR for skill development.

We have also been fortunate to have had the opportunity to talk to Nicolas Karagiannis, Aviation Analyst at IBA Group, about A350 and B787 heavy maintenance. What Nicolas has to say is fascinating.

Finally, this month our Company Spotlight is on Pem-Air, which introduces itself with its customer-first journey.

Enjoy Reading.



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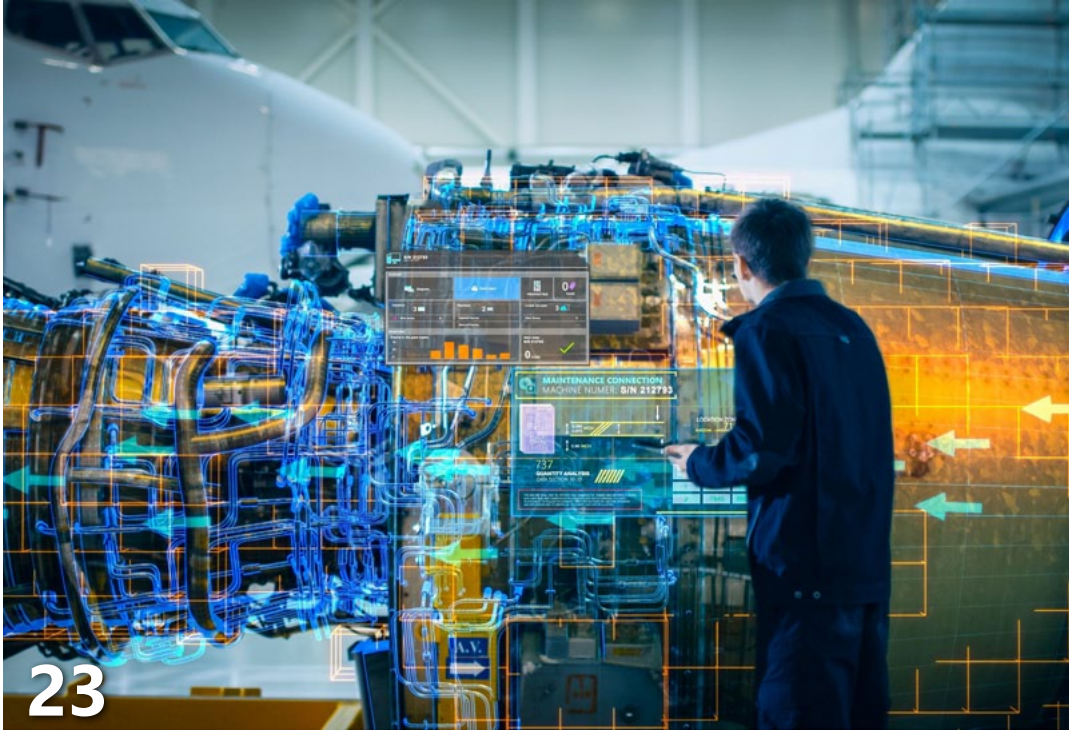

The Future of Aircraft MRO Training

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Jet2.com opens new multi-million-pound hangar at Manchester Airport

Jet2.com has officially opened its new maintenance hangar at Manchester Airport ©Jet2.com

Jet2.com has unveiled a new multi-million-pound hangar at Manchester Airport, a key development to support its operations and future growth. The facility replaces a previous hangar on the site, which was demolished and rebuilt in partnership with technical construction firm TSL, taking exactly one year to complete. The new hangar, located next to an existing Jet2.com facility, spans over 6,300 m². It enables the airline's engineering and maintenance teams to work on up to three aircraft simultaneously within the hangar, and six aircraft across both facilities. This expansion significantly strengthens Jet2.com's in-house maintenance capabilities, allowing for more efficient servicing and turnaround of its fleet. A dedicated Apprentice Training suite has also been included, with workshops and classrooms to support the development of Jet2.com's engineering apprentices. The company currently employs more than 30 apprentices, reflecting its commitment to nurturing talent within the aviation industry. In line with its sustainability strategy, the hangar has been fitted with solar panels on the roof, helping to meet energy requirements and reduce the environmental footprint of the facility.

Lufthansa Technik targets A330s for AeroSHARK rollout

AeroSHARK application © Lufthansa Technik

Lufthansa Technik has begun the process of certifying AeroSHARK for the Airbus A330ceo, marking the first time the drag-reducing riblet film will be applied to an Airbus model. Developed in partnership with BASF Coatings, AeroSHARK has already proved effective on Boeing 777 aircraft. For the A330-200 and A330-300, certification will be achieved through a Supplemental Type Certificate, covering the fuselage and engine nacelles. Andrew Muirhead, Vice President Original Equipment Innovation at Lufthansa Technik, said the A330ceo was selected because of its widespread use and strong potential to deliver global savings in fuel consumption and emissions. With around 1,000 A330s in service worldwide, the modification offers significant leverage for cost reduction and environmental benefit. The riblet technology imitates the surface of sharkskin, reducing aerodynamic drag, especially in cruise flight. This makes it particularly suited to long-haul operations where small efficiency gains accumulate over many hours. Lufthansa Technik expects the A330ceo certification to be completed in 2026 after detailed analysis, ground tests and flight trials. AeroSHARK can lower fuel burn and CO2 output by roughly 1% under normal operations. More savings could follow by extending the treated surface beyond the fuselage and nacelles. So far, large-scale AeroSHARK modifications have been installed on 28 Boeing 777s operated by various airlines and one Lufthansa Boeing 747 used as a testbed. Together, these aircraft have logged more than 232,000 flight hours, saved over 13,000 tonnes of jet fuel and cut CO2 emissions by more than 42,000 tonnes. The retrofit programme continues to expand, signalling growing acceptance of riblet technology as a practical route to sustainable airline operations.

ST Engineering and SF Airlines launch airframe MRO hub in Ezhou

The new facility in Ezhou, Hubei, China, has been purpose built to provide both line and heavy maintenance for cargo and passenger aircraft *© AirTeamImages*

ST Engineering's Commercial Aerospace business and SF Airlines have officially launched a new airframe maintenance, repair and overhaul (MRO) facility in Ezhou, Hubei, China, through their joint venture, ST Engineering Aerospace (HuBei) Aviation Services. Formed in 2023, the joint venture has focused on planning and designing the facility to deliver high-quality MRO services to SF Airlines as well as third-party operators worldwide. Located within Ezhou Huahu International Airport – China's first dedicated cargo airport with extensive domestic and international links – the facility has been purpose-built to provide both line and heavy maintenance for cargo and passenger aircraft. It initially comprises two hangars, with scope to add four more in response to rising market demand. The first hangar will welcome its inaugural aircraft on August 12, 2025, while the second is due for completion in the second half of 2027. Together, the initial two hangars will be capable of accommodating up to four wide-body or eight narrow-body aircraft at the same time. The new operation will play a vital role in supporting SF Airlines, China's largest freighter airline by fleet size, while also meeting the growing needs of regional and global carriers. Executives highlighted Ezhou's rapid emergence as a logistics and aviation hub, driven by China's leading role in global aviation growth and the broader recovery of air transport markets. The facility currently employs approximately 200 staff, with workforce numbers expected to rise to around 700 as both hangars reach full capacity. Recruitment will be paired with training for skilled technicians, and operations will be enhanced through the use of smart technologies such as robotics and digital systems to ensure efficiency and reliability in service delivery.

Werner Aero strengthens E-Jet market presence with 12-aircraft acquisition

Werner Aero has acquired 12 Embraer E190-100 airframes and twelve CF34-10E6 engines from JetBlue Airways, a move that reinforces its strategic position within the global aviation aftermarket. The deal marks a significant expansion of Werner Aero's capabilities in the high-demand Embraer E-Jet sector, enabling the company to better serve airlines operating this popular aircraft type. The aircraft and engines are being delivered to Werner Aero at Ascent Aviation's facility in Pinal Airpark, Marana, Arizona, deliveries having commenced in June this year and will continue through to February 2026. This steady schedule supports the company's continued commitment to enhancing its portfolio with reliable, high-quality assets. Werner Aero, LLC has established itself as a leader in aviation asset management and logistical support, with a strong global presence and a reputation for quality and customer service. The company is known for its innovative and tailored transportation solutions for commercial aircraft, particularly within the A320, B737NG, E-Jet and CRJ platforms. Its ISO 9001 certification and FAA AC0056B approval underscore its commitment to maintaining the highest industry standards.

Werner Aero has acquired 12 Embraer E190-100 aircraft from JetBlue Airways © *Werner Aero*

Spirit AeroSystems to sell Malaysian facility to CTRM

Spirit AeroSystems Holdings, Inc. has announced an agreement to sell its Subang, Malaysia facility and associated businesses to Composites Technology Research Malaysia (CTRM) for US$95.2 million, subject to standard adjustments. The transaction follows Spirit's earlier merger agreement with Boeing and a subsequent definitive agreement with Airbus, and is expected to conclude in the fourth quarter of 2025, pending regulatory approvals and the fulfilment of closing conditions. The Subang operation is regarded as a leading engineering and manufacturing site, occupying 45 acres within the Malaysian International Aerospace Centre and offering a 400,000 ft^2 production footprint. It employs more than 1,000 people and provides aero structures assembly, support services and an integrated supply chain. The facility benefits from strategic access to regional material sourcing, competitively priced skilled labour, and scalable production capabilities. Once the deal is completed, CTRM will become a key supplier to Airbus for the A220, A320, and A350 programmes, as well as to Boeing for the 737 and 787 models. This will further strengthen Malaysia's role in the global aerospace supply chain, bolstering its reputation as a competitive manufacturing hub for major aircraft programmes. Commenting on the agreement, Irene Esteves, Spirit AeroSystems' Executive Vice President and Chief financial officer, said: "Our agreement with CTRM for the acquisition of this important manufacturing facility ensures a strong future for this business as well as the regional stakeholders in Malaysia. This also marks a milestone in the ongoing acquisition of Spirit by Boeing." The sale is seen as part of Spirit AeroSystems' broader strategic realignment amid its transition into Boeing's ownership, while ensuring that the Subang facility continues to thrive under CTRM's stewardship and maintain its role as a critical contributor to both Airbus and Boeing aircraft production.

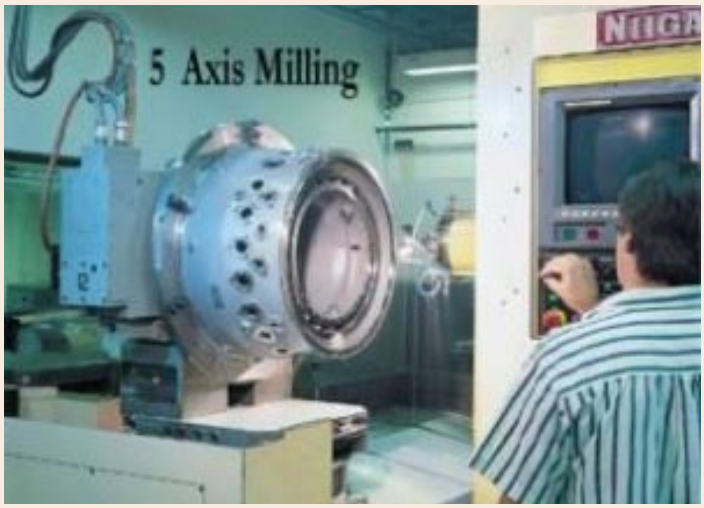
Magnetic MRO integrates AMOS with SkySelect to streamline procurement

Magnetic MRO has finalised a full two-way integration between SkySelect's aviation parts procurement platform and AMOS, the maintenance management system developed by Swiss Aviation Software (Swiss-AS). The integration is designed to modernise and streamline the company's parts procurement workflow, enhancing efficiency across its maintenance operations. By enabling seamless, live data exchange between AMOS and SkySelect, the system supports a fully digitalised process covering every stage of procurement—from the initial request to delivery. This connectivity allows Magnetic MRO to benefit from SkySelect's network of verified suppliers, ensuring continuous access to real-time market availability and regularly updated information. The project strengthens Magnetic MRO's supply chain infrastructure, providing a foundation for faster decision-making, greater transparency and tangible cost savings. The integration also helps to shorten delivery times for critical components, which is essential for maintaining aircraft availability and minimising downtime. By combining AMOS's established maintenance management capabilities with SkySelect's data-driven marketplace, Magnetic MRO can now operate a procurement model that is both responsive and informed by live market intelligence. This approach not only improves operational agility but also enhances competitiveness in the highly demanding MRO sector, where speed and accuracy are vital. The successful deployment of the integration highlights the value of long-term partnerships, with Magnetic MRO working closely with both Swiss-AS and SkySelect to deliver the project. The collaboration reflects a broader industry trend towards digitisation, where advanced connectivity and automated workflows are becoming central to operational strategies.

AAR acquires Aerostrat to boost maintenance planning software

AAR CORP., a major provider of aviation services to commercial and government operators, MROs and OEMs, has acquired Aerostrat. The deal is worth US$15 million plus up to US$5 million in contingent consideration. The move strengthens AAR's software portfolio and enhances the enterprise resource planning capabilities of its Trax subsidiary. Aerostrat is a respected provider of long-range aviation maintenance planning software. Its tools are used by airlines, MROs, and cargo companies. They help automate complex scheduling, ensure production capacity and simplify aircraft allocation. The company's flagship product, Aerros, is designed for long-range heavy maintenance planning. It works with operators and MROs regardless of the ERP system in place. Aerros currently supports more than 5,000 aircraft worldwide. The software is a strong complement to Trax's ERP and line maintenance-focused planning systems. Aerros will now be part of the Trax suite but will also remain available separately. This means it can still operate with any ERP platform, offering flexibility to customers. The acquisition expands AAR's position in the aviation software sector. It adds proven long-range planning tools to its capabilities, offering greater efficiency and flexibility to operators, MROs, and cargo companies around the world.

Barnes Aerospace concludes acquisition of EHO



© ATI East Hartford Operations

Barnes Aerospace has finalised its acquisition of the East Hartford Operations (EHO) division of ATI Forged Products, part of ATI Inc. This move is aimed at strengthening Barnes Aerospace's position across both commercial and defence aerospace markets and broadening the scope of products and services it can offer to customers globally. The EHO facility, based in East Hartford, Connecticut, is strategically located near Barnes Aerospace's East Granby operations and key long-standing clients. EHO has over 75 years of expertise in the machining of flight-safety-critical rotating components such as rotor hubs, rotorcraft elements and jet engine discs. It employs more than 80 highly skilled personnel, bringing valuable experience and capacity to Barnes Aerospace's growing portfolio. According to the company, the integration of EHO aligns with Barnes Aerospace's growth priorities and will enhance its position in essential aerospace sectors while expanding its footprint within the defence industry. The acquisition is expected to boost capabilities in rotorcraft components, increase customer reach and deepen existing relationships with leading aerospace companies. Barnes Aerospace highlighted that this acquisition reflects its strategy of investing in talent, technology and operational systems to meet evolving customer requirements and to position itself as a stronger player in aerospace and defence supply chains. By incorporating EHO's expertise and established customer relationships, the company aims to improve its service offerings and scale its operations. The transaction also demonstrates Barnes Aerospace's focus on long-term growth and innovation in a rapidly changing aerospace landscape. With the addition of EHO, Barnes Aerospace intends to enhance its manufacturing capabilities, expand its product portfolio and reinforce its commitment to providing high-quality solutions to its global aerospace customer base.

Caerdav to provide tailored aircraft maintenance for AerCap

Caerdav has entered into a general terms agreement with AerCap to provide a range of maintenance services across AerCap's aircraft portfolio. The partnership highlights Caerdav's flexible approach and in-house engineering capabilities, which were key factors in securing the deal. The work will primarily focus on Boeing 737 and Airbus A320 aircraft, where Caerdav will carry out end-of-lease and transition checks, entry-into-service tasks and redelivery maintenance. The St Athan-based MRO will leverage its skilled engineering teams and ability to quickly adapt to changing project requirements to deliver customised support for AerCap's fleet. The agreement reflects Caerdav's significant investment in back-shop capabilities, enabling it to provide a wide range of additional services, including non-destructive testing, paint repairs, restoration and heat treatments. This expanded capability allows the company to operate as a comprehensive one-stop shop, streamlining the maintenance process for leasing customers. With a robust growth strategy underway and increasing capacity, Caerdav aims to expand its support for the leasing sector further in the future. AerCap, a global leader in aircraft, engine and helicopter leasing, will benefit from Caerdav's expertise and its strategically located St Athan facility. Situated within the Cardiff Airport Aerospace Enterprise Zone, Caerdav operates from a former RAF maintenance base featuring a 6,000ft ILS runway and parking for up to 20 narrow-bodied airliners, reinforcing its specialisation in Airbus A320 and Boeing 737 maintenance.

© Caerdav

Willis Lease Finance revenue up 29.4% in Q2 2025

Willis Lease Finance Corporation (WLFC) has announced financial results for the second quarter (Q2 2025) ended June 30, 2025, posting total revenue of US$195.5 million, an increase of 29.4% compared with US$151.1 million for the same period in 2024. The company highlighted that this was its strongest quarter ever, reflecting robust leasing demand, strong utilisation and increased recurring revenues. Core lease rent and maintenance reserve revenues reached US$123.0 million, up 4% from US$118.8 million in Q2 2024. This growth was driven by continued strength in the aviation market as airlines sought cost-efficient leasing and maintenance solutions to reduce expensive engine shop visits. Short-term maintenance revenues generated by engines on lease with "non-reimbursable" usage fees rose to US$50.2 million, up 9.5% from US$45.9 million in the prior year. The increase was attributed to a higher number of engines under short-term leasing and systematic increases in contractual usage rates. Sales of spare parts and equipment surged to US$30.4 million from US$6.2 million a year earlier, including US$21.1 million from the sale of one engine. Spare parts sales alone increased 49.3%, reflecting rising demand for surplus material as operators extend the service life of their current-generation engine fleets. The quarter also saw a gain of US$27.6 million from the sale of leased equipment, including 14 engines, two airframes and additional components, compared to a US$14.4 million gain from seven engines and eight airframes sold in Q2 2024. In addition, WLFC completed the sale of its UK aviation consultancy, Bridgend Asset Management Limited, to its WMES joint venture, recording a gain of approximately US$43.0 million. As of June 30, 2025, the book value of lease assets, including equipment for operating lease, maintenance rights, notes receivable and investments in sales-type leases, stood at US$3.25 billion.

ATI extends and expands titanium supply deal with Boeing

ATI Inc. has announced the extension and expansion of its long-term agreement with Boeing for the supply of high-performance titanium products. The enhanced deal strengthens ATI's standing as a key supplier of advanced titanium materials across Boeing's full range of commercial aircraft programmes, spanning both narrow-body and wide-body platforms, and opens additional opportunities to support Boeing's third-party subsidiaries. The agreement covers a comprehensive portfolio of titanium products, including long forms such as ingots, billets, rectangles and bars, as well as flat-rolled items including plate, sheet and coil. It also secures Boeing's access to ATI's advanced titanium alloy sheet products produced at its new Pageland, South Carolina, facility, showcasing the company's investment in expanding titanium processing capabilities. The move reflects growing aerospace production levels and increasing demand for specialised, high-strength titanium alloys used in modern aircraft design. By leveraging the expertise of both its Specialty Materials and Specialty Rolled Products divisions, ATI is well-positioned to deliver high-quality materials on a large scale to support next-generation commercial aircraft. This extended partnership builds on ATI's decades-long collaboration with Boeing and further cements its leadership position in aerospace titanium supply. The company's continued focus on strategic investment in manufacturing capacity and advanced material technology is intended to meet the rising demand for differentiated solutions in aerospace applications. ATI's materials and components are already present on nearly every commercial aircraft platform in operation today, and the new agreement ensures continued support for Boeing's ambitious production schedules.

Safran to build €450 million aircraft carbon brake facility in France

Safran has announced it will build a new aircraft carbon brake production facility at the Plaine de l'Ain Industrial Park (PIPA) near Lyon, in the Auvergne-Rhône-Alpes region of France. The plant, scheduled to begin operations in 2030, is expected to boost Safran's carbon brake production capacity by 25% by 2037. The new 30,000 m^2 (323,000 ft^2) facility represents an investment of over €450 million (US$522 million) and will operate alongside Safran Landing Systems' existing carbon brake sites in Villeurbanne (France), Walton (USA) and Sendayan (Malaysia). Initially employing around 100 highly skilled staff, the workforce is set to double as the plant reaches full capacity. The facility will feature state-of-the-art automated manufacturing systems and was strategically located to ensure long-term access to competitively priced, low-carbon electricity — a critical factor given that energy costs represent up to 30% of carbon brake production expenses. Designed with environmental sustainability in mind, the plant will aim for zero emissions, utilising biomethane and low-carbon electricity while cutting energy and gas consumption by 30% and water use by 80%. Heat generated from the production process will be recovered and fed into a local heating network. Some of these advanced technologies will also be applied across Safran's other facilities to enhance sustainability and competitiveness globally.

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FL Technics named Honeywell Aerospace channel partner

FL Technics has been appointed as an official channel partner for Honeywell Aerospace Technologies within the business and general aviation sector. The agreement enables FL Technics to supply Honeywell engines and auxiliary power units (APUs) as well as provide certified installation and support services directly from its MRO facilities under an original equipment manufacturer (OEM)-approved framework. The partnership enhances FL Technics' capability to offer customers a streamlined solution covering both product supply and certified maintenance. This approach is expected to reduce turnaround times and eliminate multiple handovers, ensuring aircraft operators benefit from faster, more efficient servicing supported by Honeywell's official documentation and training standards. For Honeywell Aerospace Technologies, the appointment of FL Technics underscores its strategy to expand regional support for its business and general aviation customers. Honeywell is a leading global manufacturer of aircraft engines, avionics, connectivity and data systems, mechanical components and power solutions. Its products and software are found on nearly every commercial, defence and space aircraft as well as many terrestrial systems, contributing to improved fuel efficiency, reduced delays and enhanced flight safety. The collaboration with FL Technics reflects Honeywell's commitment to ensuring operators have access to reliable, high-quality services aligned with its stringent standards, while giving FL Technics customers increased confidence in the OEM-backed support they receive.

FL Technics has officially been named a Honeywell Aerospace channel partner © *FL Technics*

Jordan Airmotive collaborates with AJW Group for engine MRO services

Jordan Airmotive expands collaboration with AJW Group on CFM56-7B engine maintenance
© *Jordan Airmotive*

Jordan Airmotive has announced the continued growth of its collaboration with AJW Group, a prominent provider of aviation component parts, repair, and supply chain solutions. The partnership focuses on delivering expert maintenance, repair and overhaul (MRO) services for CFM56-7B engines, widely used in commercial aviation. This alliance builds on a shared commitment to operational reliability and technical expertise. By supporting AJW Group's engine programmes, Jordan Airmotive is contributing to maintaining high performance standards for its partner's global operations. The cooperation is designed to enhance efficiency, extend engine life cycles, and ensure consistent performance across AJW Group's extensive aviation network. Jordan Airmotive emphasised the value of trust and shared goals as central to the partnership, reflecting a focus on delivering tailored solutions that support both present and future operational needs. The company, which holds certifications from major regulatory authorities including EASA and the FAA, continues to demonstrate its capability as a leading MRO provider in the aviation sector. With expertise across multiple engine platforms, Jordan Airmotive offers comprehensive repair and overhaul solutions backed by skilled teams and advanced facilities. This collaboration reinforces its position as a trusted partner for global aviation companies seeking reliable and efficient MRO services. The strengthened partnership between Jordan Airmotive and AJW Group highlights the importance of collaborative strategies in sustaining aircraft engine performance and optimising airline operations worldwide. It also underscores Jordan Airmotive's ongoing commitment to delivering technical excellence and supporting the evolving needs of the aviation industry.

FL Technics opens new Bergamo wheels and brakes facility

FL Technics is strengthening its European presence by opening a new wheels and brakes facility in Bergamo, Italy. Located near Milan Bergamo Airport, the 2,041m² site has commenced operations and is expected to provide convenient access and high-quality landing gear component services for airlines in Southern and Western Europe. It becomes the company's fourth dedicated wheels and brakes site, complementing existing facilities in Vilnius, Budapest and Hanover. The new facility forms part of FL Technics' strategy to create a widespread European MRO network that delivers reliable and regionally accessible services. By positioning itself close to major aviation hubs, the company aims to reduce turnaround times, improve logistics efficiency, and provide rapid support during both routine maintenance and urgent aircraft on ground (AOG) scenarios. Proximity to customers is also expected to contribute to lower emissions and improved sustainability through reduced transport distances.

FL Technics wheels and brakes facility © *FL Technics*

According to Chief Executive Officer Zilvinas Lapinskas, this latest investment responds to growing airline demand in Southern and Western Europe and supports the company's ambition of building the continent's largest MRO network. The facility will eventually employ around 160 highly skilled professionals, expanding the firm's global workforce of over 3,000. The Bergamo site is anticipated to serve as a strategic hub, offering efficient, reliable, and cost-effective wheels and brakes support tailored to the needs of European carriers. This development represents another step in FL Technics' long-term growth plan, reflecting its commitment to providing comprehensive and easily accessible aircraft component support solutions for operators worldwide.

Ethiopian Airlines expands MRO capabilities with new facilities

Official inauguration of Ethiopian Airlines' expanded MRO facilities © *Ethiopian Airlines*

Ethiopian Airlines Group, Africa's largest aviation group, has announced a major boost to its maintenance, repair and overhaul (MRO) capabilities with the opening of three advanced facilities: a component maintenance workshop, a central warehouse and a two-bay general maintenance hangar. The development, completed at a cost of more than US$150 million over three years, is expected to significantly enhance operational efficiency and strengthen Ethiopian's standing as the leading MRO provider in Africa.

The inauguration ceremony took place on July 22, 2025, at Ethiopian MRO Services in Addis Ababa and was attended by senior figures, including Ethiopian Airlines management board chairman His Excellency Let. Gen. Yilma Merdasa and Ethiopian Airlines Group CEO Mesfin Tasew, along with project partners and executives. The project was delivered in collaboration with China National Aero-Technology International Engineering Corporation (CAIEC), China Communications Construction Company (CCCC), and DAR Al-Handasah Consultants (Shair and Partners). Ethiopian MRO Services already maintains over 1,200 FAA-approved components. The new component maintenance workshop alone adds over 170 specialised capabilities, including facilities for B737 and Q400 landing gear, ATE, IDG, ACM, and ATS components, reinforcing the airline's fleet support and extending services to third-party operators across Africa and beyond.

EPCOR and Riyadh Air sign long-term APU maintenance deal

EPCOR, a wholly owned subsidiary of Air France Industries KLM Engineering & Maintenance (AFI KLM E&M), has entered into a long-term agreement with Saudi Arabia's new national carrier, Riyadh Air, to provide full maintenance and support for APS5000 auxiliary power units (APUs) fitted to the airline's Boeing 787 Dreamliner fleet. The agreement is designed to ensure high levels of fleet availability and operational efficiency for Riyadh Air as it pursues ambitious growth plans. EPCOR will deliver a comprehensive maintenance package covering maintenance, repair, overhaul and modification (MROM) services, as well as APS5000 availability solutions, on-wing support, line-replaceable unit (LRU) coverage and advanced predictive maintenance through its Prognos® for APU platform. The support programme was developed through close collaboration between engineering and commercial teams at both companies, resulting in a tailored, end-to-end maintenance solution. Riyadh Air aims to build a world-class operation with high reliability, and the agreement provides long-term technical assurance to support this objective.

Riyadh Air Boeing 787 © *AirTeamImages*

MTU launches PW800 engine MRO services at Berlin-Brandenburg facility

MTU Aero Engines has introduced MRO and testing capability for Pratt & Whitney Canada's PW800 turbofan engines at its MTU Maintenance Berlin-Brandenburg facility in Ludwigsfelde, Germany. MTU welcomed representatives from Pratt & Whitney Canada at its facility in Ludwigsfelde to mark the PW800 MRO introduction and to highlight the 40-year partnership between the two companies. Officials from the Canadian Embassy in Berlin also attended. According to MTU Chief Program Officer Michael Schreyögg, the addition of the PW800 capability aligns with MTU's strategy of supporting key business jet engine families. With this development, MTU can now offer maintenance services for over 30 engine types, the largest MRO portfolio worldwide. Following European Aviation Safety Agency (EASA) certification, MTU becomes only the second global facility capable of full PW800 engine overhauls.

MTU has welcomed representatives from Pratt & Whitney Canada and the Canadian Embassy in Berlin, to celebrate both the start of PW800 MRO operations and the 40-year partnership between the companies *© MTU/ Oliver Lang*

Ramco Aviation Software goes live at Indamer Technics

Ramco Systems (Ramco), a global aviation software provider, has successfully implemented its advanced Aviation Software platform at Indamer Technics Private Limited (Indamer Technics), one of India's leading aviation services companies. Indamer Technics, known for designing and delivering technical, operational and financial solutions to enhance efficiency in both commercial aviation and government sectors, has replaced its legacy IT systems with Ramco's integrated digital solution. The deployment, which includes modules for Maintenance, Engineering, Supply Chain Management, Quality, Contract and Quote Management, Customer Billing and Finance, was completed in just 45 days, enabling a swift transition and rapid adoption across the organisation. Since going live, Indamer Technics has reported significant operational benefits, including improved inventory accuracy and visibility, more efficient tracking of open orders and project progress, faster and more accurate billing turnaround times, and optimised material planning and consumption processes. Indamer Technics is a prominent player in India's MRO industry, with particular expertise in servicing the Airbus A320 family of aircraft. Strategically based in Nagpur, the company provides a comprehensive range of services, including lease return checks, heavy C-checks, structural repairs and aircraft painting. Its operations are backed by a wide range of certifications, including approvals from India's Directorate General of Civil Aviation (DGCA), the United States Federal Aviation Administration (FAA), the Civil Aviation Authority of the Philippines (CAAP), the Civil Aviation Authority of the Cayman Islands (CAACI) and the Bailiwick of Guernsey.

TRIUMPH goes private with Warburg Pincus and Berkshire Partners acquisition

Triumph Group (TRIUMPH) has reported the completion of its acquisition by private equity firms Warburg Pincus and Berkshire Partners, transforming the aerospace and defence supplier into an independent, privately held company. The move is intended to accelerate the company's growth and strengthen its position as a leading provider of mission-critical engineered systems and proprietary components for both OEM and aftermarket customers. As part of the transition, Jorge L. Valladares III has been appointed Chief Executive Officer, succeeding Daniel J. Crowley, who led the company since 2016. Valladares brings decades of aerospace leadership experience, most recently serving as Chief Operating Officer at TransDigm, a global supplier of engineered aircraft components. His appointment is expected to support TRIUMPH's strategic growth as a private company. Warburg Pincus and Berkshire Partners both have extensive experience investing in aerospace, defence, and industrial sectors, with portfolios that have included TransDigm, Consolidated Precision Products, CAMP Systems, Wencor Group, Hexcel, and Amsafe, among others. Their expertise is expected to guide Triumph through its next phase of innovation and expansion.

HAECO and Liebherr-Aerospace partner for COMAC aircraft maintenance in China

Representatives from HAECO and Liebherr-Aerospace © *HAECO*

HAECO has entered into a strategic partnership with Liebherr-Aerospace, a well-established aviation systems supplier, to deliver advanced maintenance solutions for COMAC's C909 and C919 aircraft. The agreement focuses on providing comprehensive hydraulic component repair and overhaul services for these aircraft models, ensuring optimised safety and operational performance as COMAC expands its fleet. Both companies aim to combine their expertise to enhance efficiency and reliability for airlines operating these Chinese-manufactured aircraft. The collaboration draws upon HAECO's proven experience in component MRO services and Liebherr-Aerospace's original equipment manufacturer (OEM) capabilities within China. This synergy is designed to strengthen localised support for the aviation sector, delivering high-quality solutions that meet growing maintenance demands. In addition to hydraulic component support, HAECO and Liebherr-Aerospace have an existing landing gear service agreement for the C909 fleet, further showcasing their established partnership in the Chinese Mainland. This extended cooperation highlights their shared commitment to advancing local MRO services while supporting COMAC's commercial aviation development goals. As the COMAC C909 and C919 aircraft gain traction in domestic and international markets, the agreement positions both HAECO and Liebherr-Aerospace as key players in supporting the future growth of China's aviation industry.

Godrej lands Pratt & Whitney contract, boosting India's aerospace manufacturing ambitions

Godrej Enterprises Group (Godrej) has secured a contract from Pratt & Whitney, an RTX business, to produce complex aerospace parts for engine applications. This development aligns with Godrej's strategy to become a key supplier to global aircraft engine original equipment manufacturers (OEMs) and significantly expands its technological capabilities and production volumes. Godrej currently operates around 35,000 m^2 of aerospace manufacturing space across India, with an additional 48,500 m^2 under development. This investment in infrastructure reflects the company's vision of elevating India's aerospace manufacturing capabilities to a global level while increasing its participation in the worldwide supply chain for complex aviation technologies. The collaboration with Pratt & Whitney is expected to accelerate this vision and open new opportunities for innovation and growth.

PALex signs component support deal with Lufthansa Technik

PALex Airbus A320 © *PALex*

Lufthansa Technik (LHT) and Air Philippines Corporation, operating as PAL Express (PALex), have signed a long-term agreement covering component support for the airline's entire Airbus A320 fleet. The deal, concluded in Manila, will see Lufthansa Technik deliver a comprehensive package of maintenance, repair and overhaul (MRO) services, alongside access to its extensive global spare parts pool and the establishment of a home base stock of components at PALex facilities in the Philippines. The arrangement is aimed at enhancing fleet reliability and operational efficiency, key priorities for PALex as it continues to expand its domestic and short-haul international services. The airline will benefit from immediate access to spare parts and technical support through Lufthansa Technik's pool facilities located in Hong Kong, Singapore, Hamburg and Frankfurt, ensuring rapid response times and reduced aircraft downtime. The deal follows a separate agreement signed just days earlier between PALex and Lufthansa Technik AERO Alzey for the provision of MRO services on PW150 engines powering the airline's De Havilland Canada Dash aircraft, which serve regional routes across the Philippines.

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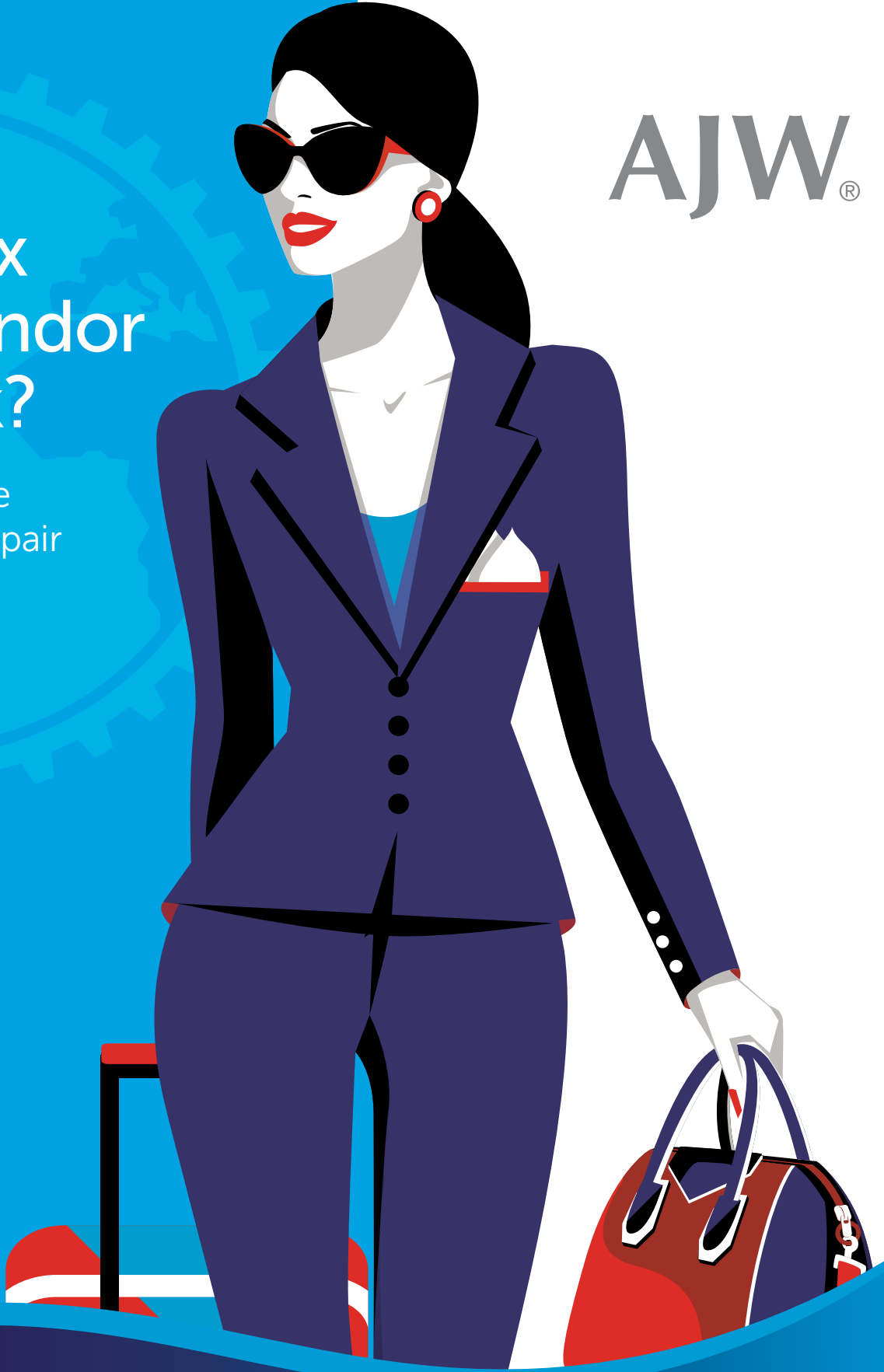

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COMPANY SPOTLIGHT - Pem-Air

The jet engine MRO propelling the customer-first journey

Pem-Air is a maintenance, repair, and overhaul (MRO) service provider located in Florida. With two facilities in Brooksville and Davies, Pem-Air has evolved from providing component and accessory maintenance services 35 years ago to specializing in comprehensive engine repair, maintenance, and restoration solutions supporting commercial and government aircraft operators and lessors.

Pem-Air is a one-stop shop for current-generation and legacy jet turbine engines. Certified by the FAA and EASA, we meet the highest quality and compliance standards in the aviation industry, providing customers with confidence in the safety and reliability of their engines.

In addition to our experienced team of commercial and former military personnel, Pem-Air has an aircraft on ground (AOG) team and trusted lessor partnerships that add to our well-rounded, customized approach to a wide variety of MRO needs across the world. This experience lends itself to an esteemed reputation that reflects our four company values: dedication, quality, experience, and integrity.

Among our wide breadth of capabilities and supplemental services, Pem-Air prides itself on its ongoing commitment to aircraft engine maintenance and repair for airlines and leasing communities. This specialty in MRO and performance restoration extends to a number of current-gen and legacy engines – including the GE Aerospace CF34, CF6, GE90: Rolls-Royce BR211, Trent; CFM International CFM56; International Aero Engines V2500; Pratt Whitney PW2000, PW4000, JT9D; Engine Alliance GP7200 – making our services accessible to a wide range of fleets.

Our services for these engine types include Light Maintenance, Hospital Visits, Performance Restoration, and Overhaul with FAA/EASA dual-release capability. Additionally, our customers can count on support services such as engine management, leasing, as well as field and AOG support.

What sets Pem-Air apart?

A notable characteristic that differentiates Pem-Air from other jet engine MRO service providers is its independence from OEM and airline operators, which allows for true, unequivocal dedication to each individual customer's needs. Whether you're dealing with a limited budget, schedule restrictions, or custom operational needs, Pem-Air can provide a personalized solution for individual aircraft or fleets with unique needs. Pem-Air also has an extensive inventory of parts and partnerships with suppliers that combat current supply chain shortages, ensuring quick turnaround times.

What does that mean?

We pride ourselves on being truly independent from OEM and airline operator

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interests, which allows us to be nimble and provide genuinely customer-focused services. When we say the customer is at the center of our focus, we mean it – there's no hidden agenda. We align our priorities with our customers' operational, scheduling, and budgetary needs.

Our flexible, customer-first approach allows us to focus on smaller to mid-sized operators with fleet sizes of around 50 engines. We can complement their maintenance organization with engine-specific engineering support. We can also provide the necessary flexibility in work scope management or induction slots and turnaround times that may not be offered by large OEM or airline-affiliated MROs without long-term contracts.

Likewise, Pem-Air can support smaller lessors with a partnership program that levels the playing field in terms of fleet maintenance. Partnering with Pem-Air bypasses the lessor's need to build or maintain their own costly MRO infrastructure. For instance, when an engine requires urgent repair, Pem-Air's priority service minimizes downtime, keeping leases on schedule and reducing operational disruptions. Moreover, predictable pricing for maintenance allows smaller lessors to budget accurately and safeguard thin profit margins. By leveraging the "three Ps" — priority, competitive pricing, and product reliability — they gain access to comprehensive services, from routine inspections to major overhauls. This helps preserve engine residual values and build more robust lease agreements. These types of partnerships turn potentially unpredictable maintenance challenges into structured, cost-efficient solutions.

Among our recent accomplishments is our new, cutting-edge facility located near Tampa International Airport. This new facility spans over 80,000 sq. ft. (7,200m), increasing our previous capacity by eight times. It contains over 20 engine bays, with the capacity to accommodate up to 35 engines, depending on the type and configuration. It allows us to service a wider range of aircraft engines, particularly the larger GE-90 and Trent turbofans, helping us meet a wider array of customer needs.

Beyond jet engine MRO, Pem-Air specializes in accessory overhaul and component repair solutions. We are an FAA Part 145 Certified Facility (Unlimited – Accessory Class 1,2,3 rating) with over 1,100 capabilities listings. These capabilities include component solutions for fuel systems, electronic controls, bleed systems, and other accessories, such as actuators, controls, and avionics.

Our comprehensive MRO solutions and additional areas of jet engine expertise make us an ideal partner for domestic and international operators and lessors. At Pem-Air, we want to discuss our flexible MRO solutions so we can develop long-term partnerships. If you're ready to learn more about how our customer-focused approach and extensive expertise in engine MRO can service your aircraft, we encourage you to connect with us by visiting our website.

Please click the logo to visit our website.

PEM-AIR

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"To enhance maintenance management efficiency and reduce the risk of human error, STARLUX Airlines has officially adopted the AMOS system. By leveraging this industry-leading Maintenance Information System, we aim to streamline our current task card creation processes. Additionally, the system will enable structured management of our Aircraft Maintenance Program and OEM documents, supporting greater operational accuracy and effectiveness."

says Project Team, Engineering & Maintenance Division of Starlux.

STARLUX takes off with AMOS.
AMOS will enable Starlux to streamline its documentation workflows, improve cross-functional collaboration, and support regulatory compliance.
The solution is expected to bring long-term operational benefits by aligning with the airline's commitment to innovation and service excellence.

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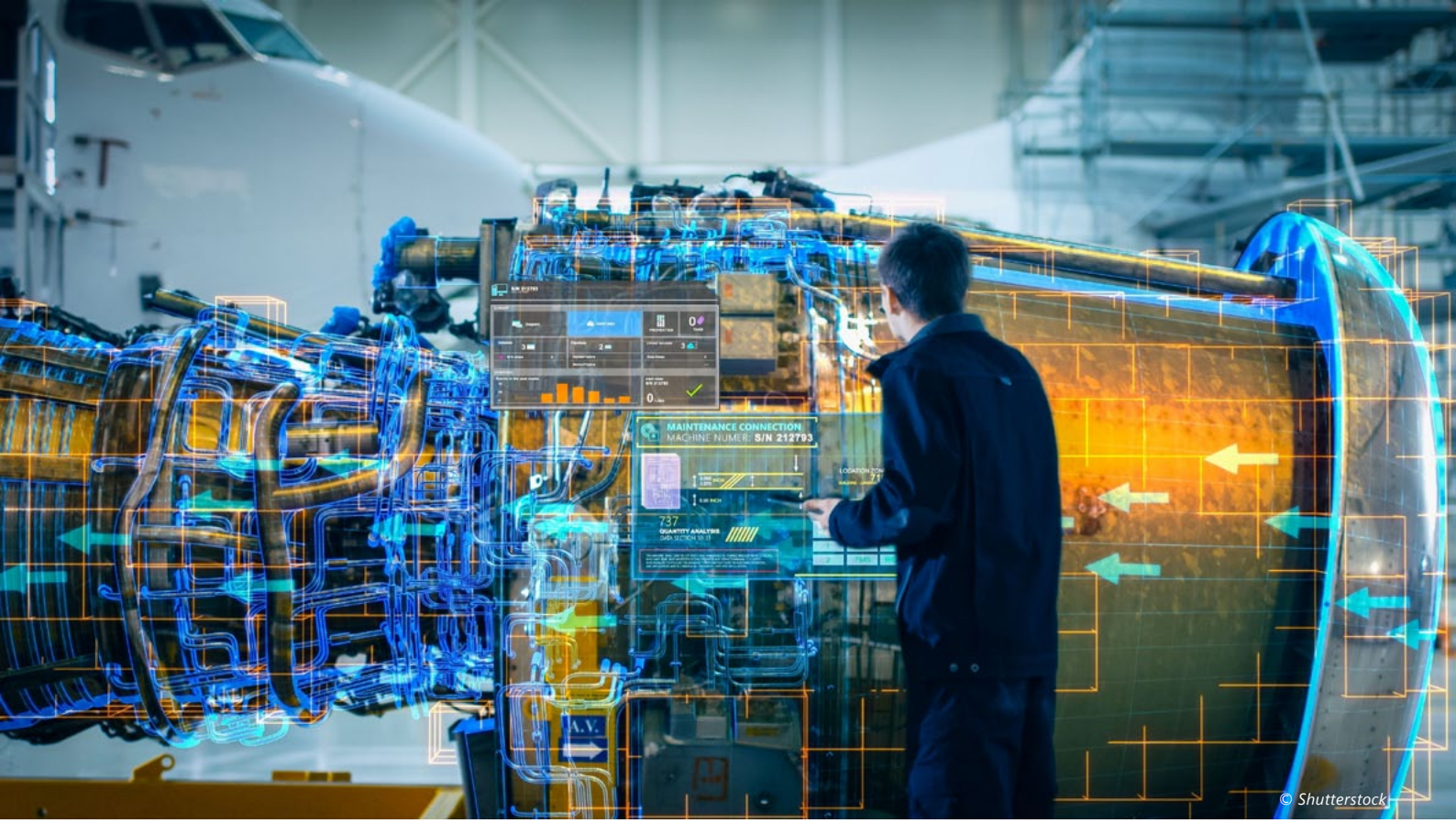

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The Future of Aircraft MRO Training

Leveraging AR and VR for immersive and efficient skill development

By David Dundas

We live in an age where technological improvements to so many areas of our lives see the effect of such changes have an impact at an exponential level. In the aviation MRO industry, no longer are changes almost imperceptible in the whole scheme of things, instead these changes create major challenges where staff training is concerned. Maintenance, Repair, and Overhaul (MRO) operations are critical to ensuring safety, operational efficiency, and compliance with stringent regulatory standards. Today, the sector faces ongoing challenges—an ageing workforce, increasing aircraft complexity, and the urgent need to train new technicians efficiently without compromising quality. Emerging technologies such as Augmented Reality (AR) and Virtual Reality (VR) have now entered into the arena at a time when MRO staff are just coming to terms with the new skills and ongoing training required for working with new composite materials. These latest technologies are now poised to transform MRO training, making it more immersive, interactive, and cost-effective than ever before, so the question is, will they help staff to work with new materials and technologies, or will they simply become another field where specific knowledge is required to maximise the benefits?

1. The MRO Training Challenge

Traditional MRO training often relies on classroom-based theory, paper manuals, and occasional hands-on sessions using actual aircraft or components. While effective to a degree, this model is time-consuming, expensive, and limited by the availability of equipment. Furthermore, with global fleets expanding and new-generation aircraft entering service, the skills gap is widening—making accelerated yet high-quality training an industry imperative.

2. Why AR and VR are Game-Changers

AR and VR offer a fundamentally different approach to learning.

• Virtual Reality (VR) fully immerses trainees in a simulated 3D environment, enabling them to practise maintenance procedures on virtual aircraft without physical constraints.

• Augmented Reality (AR) overlays digital information—such as 3D models, instructions, or diagnostics—onto the real-world view, allowing technicians to work with physical components while receiving guided digital assistance.

These tools bridge the gap between theoretical knowledge and practical skills, offering safe, repeatable, and engaging training experiences.

3. Benefits of Immersive MRO Training

a) Realistic Simulations Without Risk

VR allows technicians to practise high-risk or rare maintenance scenarios without endangering equipment or personnel. Mistakes become learning opportunities rather than costly setbacks.

b) On-Demand and Scalable Learning

Trainees can access VR modules or AR-guided exercises anytime, anywhere, enabling consistent training across dispersed teams and reducing travel expenses.

c) Enhanced Retention and Engagement

Studies indicate that immersive training can significantly improve memory retention and problem-solving skills compared to traditional methods, thanks to hands-on


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interaction and visual reinforcement.

d) Reduced Downtime for Equipment

Since VR simulations do not require real aircraft to be grounded for training purposes, operational disruption is minimised.

4. Real-World Applications in MRO Training

Several aviation companies and training organisations are already integrating AR and VR into their MRO programmes.

• Engine Maintenance: VR environments allow trainees to dismantle and reassemble virtual engines repeatedly, mastering each step before handling actual hardware.

• AR Troubleshooting Guides: AR glasses or tablets can project step-by-step repair instructions onto physical components, reducing error rates and accelerating repair times.

• Regulatory Compliance Training: Simulations can replicate regulatory inspection procedures, ensuring technicians are prepared for real-world audits.

5. Overcoming Implementation Barriers

While the benefits are compelling, adopting AR and VR in MRO training comes with challenges:

• Initial Investment Costs: High-quality VR headsets, AR devices, and software development require upfront expenditure.

• Integration with Existing Curricula: Training organisations must ensure digital modules align with regulatory requirements and established learning pathways.

• Technological Familiarity: Both trainers and trainees may need an introduction to the hardware and software before fully benefiting from it.

6. The Road Ahead

As AR and VR hardware becomes more affordable and software more sophisticated, the barriers to adoption will become less of a problem. The integration of AI-driven adaptive learning could personalise training even further, while 5G connectivity will enable real-time data streaming for remote AR assistance.

For an industry where precision, safety, and efficiency are paramount, immersive training could become not just an enhancement but a necessity. In the coming decade, the MRO workforce may be trained predominantly through virtual hangars, AR-guided inspections, and AI-driven skill assessments—ushering in a new era of aviation maintenance excellence.


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B787 and A350 Heavy Maintenance

Company interview with IBA Group Ltd

By David Dundas

Headquartered in Leatherhead, Surrey, the UK, and with offices in Ireland, the USA, China and Hong Kong, IBA Group Ltd (IBA) was established in 1988 and has become a market-leading aviation intelligence and advisory company with award-winning expertise in all aspects of the aviation industry. With a large team of award-winning ISTAT-certified appraisers, combined with over 35+ years of proprietary data, IBA is currently a leading player in the valuations market, supporting investments in aviation. Working globally, the Group offers independent, impartial opinions and advice to lenders and investors on the value of a range of asset types including aircraft, engines, helicopters, freighters and air cargo, landing slots and spares. IBA also provides specialist expertise to help plan, purchase and monitor and manage aviation investment assets with a team which provides expert help to manage the complete deal cycle, from aircraft order, delivery, lease management and day-to-day operations to redelivery and remarketing.

We had the opportunity of talking with Nicolas Karagiannis, Aviation Analyst at IBA on heavy maintenance, with a particular focus on the Airbus A350 and Boeing B787 aircraft, two aircraft designed for the long-haul market, but also with the intent of reducing the long-term burden of heavy maintenance on airlines.


Nicolas Karagiannis, Aviation Analyst at IBA

AviTrader MRO 360°: Can you provide a brief overview of the maintenance programmes for the A350 and B787 aircraft?

Nicolas Karagiannis: Both the A350 and 787 follow a similar maintenance programme, with the airframe being subject to a heavy structural check at the 12-year mark, with smaller C checks taking place at more regular intervals (around 2-3 years). The landing gear is also overhauled every 12 years, with the APU being an on-condition component, meaning that it is not subject to any defined time or calendar limit. Then you have the engines, which are split into the engine overhaul (OH) or Performance Restoration (PR) and the Life-Limited Parts (LLPs) replacement. The driving factor that determines when the engine needs an OH is degradation in Exhaust Gas Temperature (EGT) margins due to wear or core LLP expiry. The mean time between overhauls is typically influenced by operating region, thrust setting, and sector length. For instance, an engine operated in a hot and humid climate on short-haul flights may require more frequent OHs compared to an engine operated in a benign environment.

The LLPs have pre-defined life limits expressed in Flight Cycles, and once an LLP part reaches its limit, it has to be replaced.

What distinguishes the maintenance philosophy of the A350 and B787 from older aircraft models?

The maintenance philosophy of the newer aircraft types is that the systems are more digitally integrated, with both aircraft types containing systems within the digital infrastructure itself that continuously measure parameters in real time and allow for better maintenance planning. This philosophy is also inspired by the materials that have been used to construct the aircraft, as these are the first aircraft to be made mostly from advanced composites.

Both aircraft are known for their use of advanced composite materials—how does this affect routine maintenance tasks?

Maintenance Review Boards (MRBs) will need to understand how carbon composite materials degrade over time, how defects come to be, and how to repair said defects. However, aside from that, many other processes that were used for older models will be applicable to newer carbon composite aircraft types.

What are some of the most common maintenance challenges specific to the A350 and B787?

The main challenges will revolve around how carbon composite fuselages differ from aluminium ones. Since these are the first two aircraft types to be fully carbon composite, the MRB's understanding of the material across the lifespan of the aircraft production cycle will evolve over time. Another challenge is engine reliability issues, which are forcing engines to be removed from service and inducted into engine OH facilities sooner than anticipated, with Turnaround Times (TAT) taking longer than expected.

What kind of specialist training is required for maintenance technicians working on these aircraft?

Alongside a necessary AML or EASA B1 license (or equivalent) that is required to perform maintenance checks on aircraft, certain engineers within the maintenance workforce also require a Type Rating to certify that the correct work has been performed for the specific aircraft type.

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Do the A350 and B787 offer measurable reductions in maintenance downtime or costs compared to older aircraft?

In theory, the composite materials that have been used to construct these aircraft will offer lower maintenance costs over the 25-year lifespan as they perform fewer heavy checks (only 2x 12Y compared to the 3x 8Yr Checks on 777s or 4x 6Yr and 2x 12Yr on A330s). Additionally, the onboard monitoring systems allow for better maintenance planning of on-condition components. However, in practice, with engine reliability issues particularly on Trent-powered 787s, the addition of more frequent engine repairs are contributing to longer time off-wing and impacting TATs from MRO's.

How do you see maintenance practices for these aircraft evolving over the next 5–10 years?

Both aircraft programmes are still relatively young with an average age of circa seven years, therefore only a few aircraft have had some maintenance work performed so far. As these aircraft programmes mature and more aircraft undergo maintenance events, MROs and technicians will accumulate valuable experience. This growing expertise is expected to drive process optimisation, reduce TATs, and ultimately lower labour costs.


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Thoroughness is Key

Warehouse inspection requirements for incoming aircraft parts

By David Dundas

It should come as no surprise that in a world where there is a thriving and burgeoning market for counterfeit automotive parts, that the commercial airline industry has also been the target for the manufacture of counterfeit parts. One of the most publicised instances was when, back in December 2023, the UK's Serious Fraud Office (SFO) began an investigation onto AOG Technics regarding the supply of counterfeit aircraft parts and the falsification of the necessary documentation that, by law, has to accompany such parts. As a result of this investigation, in May this year, the company owner, Jose Alejandro Zamora Yrala, was charged with fraudulent trading, the indictment alleging that AOG Technics sold uncertified parts for passenger and cargo aircraft engines.

In 2023, Aircraft in the UK and across the world were grounded after the CAA, FAA and European Union Air Safety Agency (EASA) each issued safety alerts to all carriers who may have bought or used parts from AOG Technics. The alerts were sent out after a TAP Air Portugal technician discovering an aircraft engine part that appeared to be used when they believed a brand-new part had been ordered.

The above highlights just how important it is to adopt a rigorous inspection policy for all incoming aircraft parts through a highly controlled and structured incoming inspection process. Beyond that, there is also the obvious implications of using aircraft parts which are not fit for purpose, these counterfeit parts directly affect flight safety and operational performance. Regulatory oversight and rigorous quality requirements demand a highly controlled and structured incoming inspection process, and below we have listed ten individual elements we see as essential and necessary.

1. Regulatory and Airworthiness Compliance

Aircraft parts must comply with stringent aviation standards and airworthiness directives. Incoming inspection processes must align with:

- Civil Aviation Authorities (CAA, FAA, EASA) regulations for approved parts.
- AS9100 and ISO 9001 aerospace quality management standards.
- OEM and Part Manufacturer Approval (PMA) guidelines. All received parts must be traceable to approved suppliers and accompanied by appropriate airworthiness documentation.

2. Mandatory Supplier Documentation Verification

Every shipment must include and be checked against:

- Certificate of Conformity (C of C) or Authorised Release Certificates (e.g., FAA 8130-3 or EASA Form 1).
- Purchase order and packing list.
- Material Safety Data Sheets (MSDS) when applicable.
- Batch/lot traceability records and shelf-life information (for time- or life-limited parts). Inspectors must validate that part numbers, serial numbers, and modification status match the procurement specification.

3. Visual and Physical Condition Checks

All aircraft parts must undergo detailed visual inspection to detect:

- Physical damage such as dents, cracks, or corrosion.
- Signs of improper storage or handling, including contamination or moisture ingress.
- Correct labelling, barcoding, and packaging integrity to maintain part protection and traceability. Special attention is required for delicate parts like

avionics, seals, or composite materials, which are susceptible to handling damage.

4. Dimensional and Functional Verification

Critical parts may require dimensional checks against OEM specifications using calibrated measurement tools such as micrometres, callipers, or CMMs. Functional verification, including connector fit checks or resistance testing for electronic components, may also be required depending on part type and criticality.

5. Life-Limited and Shelf-Life Items

Many aircraft components, such as O-rings, lubricants, fire extinguishers, and life-limited engine parts, have expiration dates or operational cycle limits. Incoming inspections must:

- Verify shelf-life expiry dates and remaining life.
- Record cycle- and time-tracked components in maintenance systems for monitoring. Parts that are expired or insufficiently documented must be quarantined immediately.

6. Sampling and Acceptance Criteria

For bulk consumables, sampling may follow industry statistical standards (e.g., ANSI/ASQ Z1.4), but critical parts typically require 100% inspection due to their safety significance. Acceptance criteria must be clearly defined and documented in the quality manual, with immediate escalation procedures for any non-conformity.

7. Traceability and Digital Records

Each part must be uniquely identifiable, often by serial number or lot number, and entered into the warehouse management or enterprise resource planning (ERP) system. This ensures full traceability for future maintenance actions, regulatory audits, or potential recalls. Digital copies of airworthiness certificates must be linked to part records.

8. Handling and Storage of Non-Conforming Parts

Parts failing inspection must be clearly labelled, segregated in a quarantine area, and processed according to a documented non-conformance procedure. This includes raising a Non-Conformance Report (NCR), informing quality assurance, and initiating supplier corrective actions or part returns.

9. Personnel Qualifications and Training

Personnel performing incoming inspections must be trained in aircraft parts identification, regulatory compliance, handling requirements, and inspection techniques. Continuous training ensures compliance with changing regulations and evolving OEM specifications.

10. Integration with Aviation Maintenance Information Systems

To support fleet management and regulatory compliance, incoming inspection results must integrate with aviation maintenance and engineering systems (e.g., AMOS, TRAX). This enables real-time inventory updates, automated airworthiness recordkeeping, and streamlined supplier performance analysis.

Conclusion

Incoming inspection of aircraft parts needs to be a highly controlled process and consequently it must strictly adhere to regulatory standards, OEM specifications, and quality management frameworks. By ensuring robust documentation verification, physical inspection, traceability, and skilled personnel, warehouses and the operational procedures adopted within them play a critical role in safeguarding flight safety and operational readiness. Effective processes not only reduce the risk of installing non-conforming parts but also strengthen supplier relationships and enhance overall compliance with aviation regulations.

Resource Management

The Challenges in Developing Shift Plans for Aircraft Line Maintenance

By David Dundas

There are several reasons why developing shift plans for aircraft line maintenance differ so greatly from those shift plans found more commonly throughout industry as a whole. Of course, those of you who are already involved in the commercial airline industry, in one form or another, will already have a good idea, because this industry, more than any other, is so highly regulated and the focus on safety more acute than anywhere else in such a setting.

Primarily, aircraft line maintenance is an integral part of aviation safety and operational efficiency, which involves the close inspection, comprehensive troubleshooting, plus the rectification of any problems, together with scheduled and at times unscheduled maintenance while aircraft are on the ground between flights. Because of the 'nature of the beast', time is of the essence as the longer an aircraft is on the ground, the more money an operator will lose. Next, we have the fact that all maintenance operatives have to be highly skilled and trained in their specific field of expertise. For these reasons alone, operatives cannot be reallocated to tasks simply on a 'needs must' basis. We then have regulatory requirements that have to be strictly adhered to and the constant driver to keep the aircraft being worked on in an airworthy condition. When you finally add that element of unpredictability that forever infiltrates the MRO environment, and the development of shift plans for line maintenance teams becomes a massive challenge.

To understand the predicament being faced, let us delve a little deeper into the challenges faced by those responsible for developing shift plans.

Regulatory and Safety Compliance

One of the greatest challenges faced when creating shift plans is ensuring compliance with stringent aviation regulations. Maintenance staff can only work a certain number of hours, continuously and weekly, while also adhering to mandatory rest breaks as outlined by authorities such as the European Union Aviation Safety Agency (EASA) or the Federal Aviation Administration (FAA). This regulatory framework is designed to mitigate fatigue (the greatest contributory factor to errors in working practices), which can compromise maintenance quality and safety. Shift planners must therefore balance workload distribution with legal constraints, making it difficult to accommodate unexpected operational needs. After all, highly skilled maintenance staff require an appropriate level of renumeration for their skills, so from a financial perspective, MRO operators cannot have a massive bank of 'on call' staff who can cover for unexpected illness or an unanticipated increase in workload.

Unpredictable Aircraft Schedules and Operational Disruptions

Aircraft operational schedules can be negatively affected in so many different ways, including weather delays, air traffic

control restrictions, and technical issues. This unpredictability creates a dynamic environment where maintenance teams have to be available at all times and frequently outside a scheduled operating windows. Developing a shift plan that can accommodate sudden surges in workload, such as an aircraft requiring unplanned repairs at short notice, requires a high degree of flexibility and often requires last-minute changes in staffing levels.

Diverse Skill Sets and Certification Requirements

As an example, line maintenance involves tasks ranging from routine inspections to complex troubleshooting, often requiring specific certifications for certain aircraft types or systems. Shift planners must ensure that each shift includes an adequate number of personnel with the appropriate qualifications and experience, an even greater challenge when forced to deal with multi-fleet operations. This requirement can lead to problems with shift planning when certain highly specialised technicians are in short supply, as their availability becomes a limiting factor in the overall planning process.

Workforce Availability and Retention

We have previously written about the challenges faced by MRO operators when it comes to staff retention. As a whole, the aviation industry often faces workforce shortages, particularly for licensed engineers and technicians. As a direct consequence, this shortfall places additional pressure on shift planners to ensure adequate coverage for every shift while adhering to those regulations specifically introduced to avoid problems such as staff burnout. High turnover rates, seasonal variations in demand, and the physically demanding nature of line maintenance work further complicate staffing availability and thus work scheduling. Additionally, shift work itself can have a negative impact on the work-life balance, leading to absenteeism or reduced morale, which in turn can affect operational reliability and efficiency.

The Balance Between Cost and Availability

As mentioned, the wages of highly skilled engineers are an important factor when looking at a business' overall running costs. This creates a critical situation where an MRO operative has to provide an efficient and proactive service to a valued client, a service that can adapt to unforeseen circumstances and keep AOG time to a minimum. Failure to do so can see the costly cancellation of an MRO agreement, or failure to achieve renewal of an existing contract. The challenge for the creation of shift plans is to allow for contingencies, to ensure that there are sufficient additional staff who, if called in, will have the legal capacity to work extra hours, but without paying them. When creating a schedule for a team of five people, that is not a massive challenge, but for a team of 500 people, that is a whole different story. In short, overtime costs, temporary staffing, and on-call arrangements all add financial complexity to shift planning.

Integration with Digital Tools and Data Systems

Today, shift planning often involves the use of specific digital workforce management systems. However, the integration of these systems with airline operational control systems, maintenance planning software, and human resource platforms can create additional problems and challenges. Inaccurate data, system incompatibilities, or delays in updating schedules can result in less-than-optimal staffing decisions, which can then have an effect on both efficiency and compliance.

Cultural and Regional Variations

For international MRO operatives with premises located in a number of different countries, there is no 'one-size-fits-all' solution to shift planning. For a start there are often differing labour rights and laws. There are then religious differences, differences as to what days of the week are deemed 'the weekend' and differing cultural attitudes which have to be taken into consideration.

In Conclusion

Like no other industry, safety regulations dominate any shift planning, and it is ensuring that these regulations are strictly adhered to that create the greatest problems. For a sector of the industry that involves a reasonable degree of unpredictability, mitigating for the unexpected makes shift planning an art in itself and despite the advancements in technology and AI, one has to question if such planning is possible without personal input from someone who is fully up to date with all staffing levels and availability.

PEOPLE

on the move

Dr Ottmar Pfänder

MTU Aero Engines (MTU) has announced the appointment of **Dr Ottmar Pfänder** as its next Chief Program Officer, effective January 1, 2026. He will take over from **Michael Schreyögg**, who is stepping down at his own request after a career spanning more than 35 years with the company, including over 12 years on the Executive Board. Dr Pfänder, currently responsible for MTU's commercial engine programmes within the Chief Program Officer's organisation, previously led the corporate strategy department, reporting directly to the CEO. His appointment to the Executive Board is for an initial term of three years, running until December 31, 2028. In his new capacity, he will oversee all commercial and military engine programmes as well as MTU's global maintenance business. The transition is designed to be seamless, with Schreyögg stepping down on December 31, 2025, but continuing to support Pfänder in an advisory role during the handover period. **Lars Wagner**, Chairman of the Executive Board, expressed gratitude to Schreyögg for his energy, extensive expertise, and dedication to MTU over the decades. He also welcomed Pfänder's promotion from within the company's ranks, noting his significant experience and leadership qualities as strong assets for his new position. The appointment reflects MTU's focus on continuity and internal talent development, ensuring strategic stability as the company continues its work on both commercial and military engine programmes and expands its global maintenance operations. This leadership change marks a key step in MTU's long-term succession planning and ongoing commitment to operational excellence.

Eddie O'Dwyer

GT Engine Services, part of the STS Aviation Group, has announced the promotion of **Eddie O'Dwyer** to Vice President of Business Development, effective from August 1, 2025. O'Dwyer, who joined GT Engine Services in 2020 as General Manager, has advanced through a series of key leadership positions within the organisation. He became Technical Director in 2021 and was subsequently appointed Chief Commercial Officer in 2024. Throughout his tenure, he has played a pivotal role in strengthening the company's technical capabilities, shaping its commercial strategy and enhancing relationships with its global customer base.

MAAS Aviation, the internationally renowned specialist in aircraft painting and exterior coatings, is pleased to announce the appointment of **Patrick Fransen** as General Manager of its MRO division, overseeing operations in Maastricht and Kaunas. Fransen joins MAAS from the European Support Center, where he held a senior operational position at a global helicopter service company. He will assume day-to-day responsibility for MAAS's European MRO aircraft painting operations, leading the ongoing delivery of the highest quality work and best-in-class turnaround times across all production sites.