AviTrader
AVIATION NEWS PUBLICATIONS
avitrader.com Edition #134
March 2025

MRO 360°

Expendables and Consumables

A look behind the curtain

Minimising Errors
Human Factors in Aircraft Maintenance

Big changes ahead
Future Trends in Aircraft MRO

VAS Aero Services
Interview with the CEO, Tommy Hughes

© *Shutterstock*

Dear Industry Colleagues,

Talk about working under pressure and yes, it can come right down to the very smallest screw. There is nothing more frustrating than when an aircraft cannot be returned to service because of a missing expendable part. In this month's issue we talk to experts about the basics of effective management of expendables and consumables.

We have also had the good fortune to be able to talk to Tommy Hughes, CEO of VAS Aero Services. Tommy very kindly gave us some fascinating insights into the company together with an idea of its future plans.

What are your thoughts on aircraft safety and the human factor where MRO is concerned? We've shared some of our own on the matter and summarised most of the key points that every MRO operation may well want to consider.

And finally, we have an article on how automation, artificial intelligence and robots could well change the future of aircraft maintenance. We are looking towards the future of MRO operations.

As always, we hope you enjoy our latest issue.

Happy reading!

Peter Jorssen
Publisher


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MRO 360°

Expendables and Consumables

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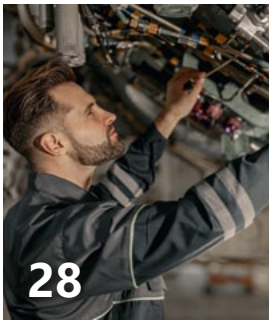

Fiji Airways appoints Heston MRO for line maintenance support in Cairns

© *Heston MRO*

Fiji Airways, the national carrier of Fiji, has appointed Heston MRO to provide line maintenance support in Cairns, Australia, marking another addition to the airline's expanding international network. Heston MRO will deliver transit and daily checks for Fiji Airways' fleet of B737 MAX 8 and B737-800 aircraft, along with unscheduled inspections, maintenance and aircraft on ground (AOG) services. As Australia's largest independent MRO organisation, Heston MRO services over 40% of all international flights at Australian airports. The Cairns operation, set to be fully operational by mid-April, will join Heston MRO's extensive network of line stations across major Australian airports. The partnership between Fiji Airways and Heston MRO began over seven years ago with limited services at a single station. Since then, it has evolved into exclusive Australia-wide support for all Fiji Airways flights, covering Sydney, Melbourne, Brisbane, Adelaide, Canberra, and now Cairns. Heston MRO maintains the highest safety and quality standards and is approved by the Civil Aviation Authority of Fiji (CAAF) to service Fiji-registered A350, A330, and B737 MAX/NG aircraft with various engine types.

GE Aerospace and Lufthansa Technik open XEOS engine MRO facility in Poland

XEOS, the joint venture between GE Aerospace and Lufthansa Technik, has been inaugurated in Poland © *GE Aerospace*

GE Aerospace and Lufthansa Technik have officially inaugurated XEOS, a cutting-edge engine MRO facility located in Środa Śląska near Wrocław, Poland. The joint venture focuses on servicing CFM International LEAP engines, which power two of the world's most popular narrow-body aircraft types — the Airbus A320neo family and the Boeing 737 MAX. Specifically, XEOS handles the LEAP-1A and LEAP-1B engines, supporting growing demand for maintenance as global fleets expand. Currently, the facility is performing LEAP-1B shop visits and supporting module work and engine testing for LEAP-1A engines. Plans are in place to introduce LEAP-1B test cell capability in the coming months, alongside an increase in overhaul capacity and repair services. Covering 35,000 m², XEOS is equipped with an engine preparation hall, a main assembly and disassembly area, a clean-and-inspect line, multiple repair stations, a dedicated engine training centre, and an advanced test cell. The facility is designed and operated using GE Aerospace's lean operating system, FLIGHT DECK, ensuring efficiency and precision. The opening of XEOS coincides with Lufthansa Technik's recent agreement to maintain LOT Polish Airlines' fleet of LEAP-1B engines. LOT operates 18 Boeing 737 MAX 8 aircraft, with a further 13 on order, making for a total of 62 engines plus spares. The first engine from LOT's fleet has already been inducted at XEOS, marking a significant milestone for Poland's growing aerospace sector. GE Aerospace, celebrating 30 years in Poland, employs over 2,000 staff across six facilities and works closely with eight local universities and more than 1,000 suppliers. Through projects like XEOS and investment in training programmes, including the Next Engineers initiative, GE is committed to developing Poland's skilled aerospace workforce and expanding its MRO capabilities in the region.

WLFC and GEM form engine testing joint venture in Florida

© Global Engine Maintenance (GEM)

Willis Lease Finance Corporation (WLFC) has announced a new joint venture with Global Engine Maintenance (GEM) to establish an engine test cell facility in West Palm Beach, Florida. The venture, named Willis Global Engine Testing (WGET), will combine WLFC's extensive experience in aircraft engine leasing and aviation services with GEM's expertise in CFM56 engine overhauls. The partnership aims to address the significant shortage of engine test cell facilities across North America, which currently limits the efficient return of engines to service. The new facility will improve turnaround times for shop visits, benefitting WLFC, GEM and third-party customers. By pooling their respective strengths, both companies seek to mitigate risk, optimise operations and accelerate their entry into this critical segment of the aviation maintenance sector. Initially, the facility will focus on testing CFM56-5B and CFM56-7B engines, widely used in commercial aviation. However, there are plans to expand capabilities to accommodate newer-generation engines in the future. The joint venture is expected to break ground on the new site by late 2025. WLFC, a leader in aircraft engine leasing and asset management, continues to invest in expanding its aviation services. This latest move enhances its ability to offer integrated solutions while strengthening its presence in the engine maintenance market. For GEM, the partnership marks an important step in broadening its global engine MRO footprint, further solidifying its reputation in the CFM56 maintenance sector. The project is set to provide much-needed testing capacity in North America, supporting airlines, lessors, and maintenance providers in keeping aircraft engines operating efficiently.

Thales signs avionics support deal for Malaysia Airlines' new A330neos

Thales and Malaysia Airlines have signed a long-term avionics service agreement © *Thales*

Thales and Malaysia Airlines have entered into a long-term services agreement covering the Thales avionics systems onboard the airline's new A330neo fleet. This strategic partnership ensures dedicated support for the airline's operations, enhancing fleet reliability and optimising maintenance efficiency. Under the agreement, Thales will oversee all repairs of its avionics products, while also providing guaranteed spares availability and timely replenishment. Stock will be held both at Malaysia Airlines' main hub and Thales' Asia-Pacific repair centre in Singapore. This dual-location approach will enable Malaysia Airlines to maintain optimal aircraft performance while streamlining maintenance processes and minimising operational disruptions. The MRO contract capitalises on Thales's role as the original equipment manufacturer (OEM) of the flight management and surveillance systems installed on the A330neo aircraft in 2024. As the OEM, Thales is uniquely positioned to offer premium repair services tailored to the specific needs of Malaysia Airlines, ensuring high-quality support that maximises operational efficiency and helps control maintenance costs. This agreement is supported by Thales's Aviation Global Services (AGS), a comprehensive one-stop shop for airline customers worldwide. AGS provides round-the-clock aircraft on ground (AOG) support, maintenance, repairs, technical assistance, training, parts trading, and line maintenance services. Thales also offers flexible programmes such as repair by the hour (RBTH) and asset availability initiatives, designed to deliver cost-effective, reliable support for its airline partners. The new contract further strengthens the longstanding relationship between Thales and Malaysia Airlines. Earlier this year, Malaysia Airlines selected Thales's Flight Management and Surveillance systems for its A330neo fleet, reflecting the airline's commitment to high standards of safety, performance and passenger experience. Thales remains dedicated to supporting Malaysia Airlines' focus on hospitality and quality as the carrier continues to expand and modernise its fleet.

FL Technics gains approval for Embraer 170/190 maintenance

FL Technics expands capabilities to include heavy maintenance for Embraer E170/E190 models © *FL Technics*

FL Technics, a globally recognised MRO solutions provider, has received EASA Part-145 approval to perform heavy maintenance on Embraer 170/190 aircraft. This milestone strengthens the company's position in the European MRO market and supports its growth strategy in servicing a wider range of aircraft types. With many of its Tier 1 clients already operating the Embraer 170/190 series, FL Technics is well-prepared to meet the increasing demand for maintenance services for this aircraft. The approval also reflects the company's recognition of Embraer's projected growth over the next decade, especially as smaller narrow-body aircraft play an increasingly vital role in serving Europe's high-frequency and regional routes. Juozas Lapeika, Deputy CEO for Base Maintenance, said that the company aims to further strengthen its presence in the global MRO market by meeting client demands. He highlighted that the Embraer fleet is well-suited for short-haul European routes operated by airlines such as TAP Air Portugal, LOT Polish Airlines, Finnair, Air Dolomiti, Helvetic, KLM, Austrian Airlines, British Airways and SAS Link. FL Technics leverages its vast experience in complex structural repairs, supported by a highly efficient production system and innovative problem-solving approach, ensuring operational excellence. Its comprehensive range of services includes base and line maintenance, spare parts and component support, engine repair, full aircraft engineering, technical training, and aerospace logistics. The company serves a global client base, including major airlines such as Lufthansa Group, Wizz Air, and EasyJet.

ITP Aero secures GE Aerospace licence for CT7-2F1 engine

GE Aerospace has granted ITP Aero a licence for the MRO of the CT7-2F1 engine, enhancing global service capabilities for operators of the Bell 525. Under this agreement, ITP Aero will become a value-added partner within GE Aerospace's TrueChoice™ programme, providing comprehensive maintenance solutions for the latest CT7 engine variant. ITP Aero is a leader in future flight technologies, specialising in the design, development, manufacturing and lifecycle propulsion services for aero engines. As the newest addition to GE Aerospace's TrueChoice network, ITP Aero will offer Bell 525 operators expanded access to high-quality, cost-effective engine servicing, backed by OEM expertise and cutting-edge technology. The company currently provides MRO services for seven different GE Aerospace CT7 engine variants. Alan Jones, executive director of MRO at ITP Aero, said: "We are delighted to become the first service centre worldwide with MRO capability for the CT7-2F1 and expand our long-standing partnership as part of GE Aerospace's in-service engine community. Adding CT7-2F1 engines into our support portfolio is an important milestone that allows us to continue with the execution of ITP Aero's strategic MRO growth roadmap, driving the expansion of our commercial aftermarket services and the operational excellence of our maintenance and repair capabilities." With over 130 million flight hours, GE Aerospace's CT7/T700 family of engines is trusted worldwide

GE Aerospace has granted ITP Aero license for CT7-2F1 engine MRO © *ITP Aero*

in every operating environment. The CT7-2 stands out for its rugged design, fuel efficiency, and exceptional performance, reliably powering helicopters across diverse roles, from executive transport to firefighting and rescue operations. Designed specifically for the Bell 525, the CT7-2F1 engine delivers enhanced performance and reliability for a range of commercial and mission-critical applications. With ITP Aero now licensed for maintenance, operators will benefit from a strengthened global support network, ensuring optimal performance and service availability.

Breaking new ground: West Star Aviation sets course for growth

Official ground-breaking ceremony at Grand Junction MRO facility © *West Star Aviation*

West Star Aviation has officially broken ground on a major expansion at its Grand Junction (GJT) MRO facility. The ceremony, held on March 11, marked the beginning of construction on a state-of-the-art hangar, adding 40,000 square feet to accommodate increasing demand for maintenance services, avionics installations, and interior refurbishments. The project also includes 38,000 square feet of office and back shop space, along with an additional 31,000 square feet of ramp space. "As we officially break ground, we look forward to the opportunities this expansion will create for our customers, employees, and the local community," said Allen McReynolds, President and COO of West Star Aviation. "The expansion at Grand Junction reflects our focus on customer needs, service excellence, and operational efficiency." Angela Padalecki, Executive Director of Airport Operations at Grand Junction, highlighted the significance of the collaboration, stating that West Star Aviation has played a crucial role in the development of the airport and local economy. She described the project as a testament to the strong partnership between the airport and the company. Curtis Englehart, Executive Director of the Grand Junction Economic Partnership (GJEP), also emphasised the importance of the expansion, noting that it will bring continued investment and economic benefits to the region. The expansion is being designed and constructed in partnership with Tectonic Management Group, with completion expected in the second quarter of 2026. Once operational, the new facility will enhance West Star Aviation's capabilities, supporting its workforce, customers, and long-term growth strategy.

Magnetic Group expands EN 9110 certification to engine MRO

Magnetic Engines workshop in Tallinn © *Magnetic Group*

Magnetic Group has successfully renewed its EN 9110 certification, now extending its scope to include engine maintenance, repair and overhaul (MRO) services. This expansion provides Magnetic Engines' customers with greater assurance of high-quality, consistent maintenance that complies with the strictest aviation industry standards. EN 9110 is an internationally recognised aerospace quality management system (QMS) standard, specifically designed for organisations in the MRO sector. It builds on general QMS principles, such as those in ISO 9001, while placing a strong emphasis on regulatory compliance, airworthiness, and safety management. "To gain the certification, a rigorous assessment was undergone against EN 9110, all to guarantee the excellence of solutions and standards provided. Compliance with this requirement also ensures that we can meet the expectations of our current and prospective customers and consistently maintain the quality of our deliverables," said Filip Stanisic, Head of Magnetic Engines. Magnetic Engines operates a dedicated CFM56/LEAP engine workshop in Tallinn, focusing on high-quality engine repairs. In 2024, the workshop repaired 57 engines, reflecting a 36% increase from 2023. Looking ahead, the company aims to further expand its capabilities and increase capacity to meet growing demand.

Jet Parts Engineering acquires Percival Aviation to strengthen aircraft interiors capability

Jet Parts Engineering (JPE), a specialist in PMA parts, DER repairs and MRO services for commercial aircraft, has acquired Percival Aviation, a UK-based company renowned for its design, production and maintenance of aircraft interiors and associated equipment. This strategic acquisition strengthens JPE's service offering, enabling the company to provide more comprehensive solutions to meet the evolving needs of the global aviation market. By integrating Percival's expertise, JPE expands its product range, combining interior components with its established aftermarket services to deliver cost-effective, high-quality solutions. Percival Aviation, based in Fareham, Hampshire, has built a strong reputation within the industry for its specialist work in aircraft interiors. The company has also been pursuing an ambitious growth plan, with a particular focus on expanding its international presence to become a leading supplier in the aircraft interiors sector. The acquisition supports JPE's mission to reduce airline aftermarket costs while maintaining a strong emphasis on service quality and product availability. Both companies share similar values, with a commitment to delivering reliable solutions and maintaining ready inventory to meet customer demands efficiently. The deal was facilitated by Vance Street Capital, a private equity firm focused on investing in engineered solutions businesses across aerospace, defence, industrial, and medical markets. JPE forms part of Vance Street Capital's portfolio, and this latest move marks a significant step in its growth strategy. With combined regulatory approvals and complementary strengths, JPE and Percival Aviation are well-positioned to drive innovation and deliver greater value to airlines and aviation stakeholders worldwide.

Airhub Aviation boosts MRO capacity in Lithuania to tackle maintenance shortages

© Airhub Aviation

Airhub Aviation, part of GetJet Aviation Holding, is significantly boosting its operations in response to mounting maintenance capacity shortages across the aviation industry. The Lithuania-based company, known for its expertise in aviation asset management, component trading, and aircraft transitions, has launched new MRO operations at Siauliai International Airport (SQQ), Lithuania. This enhancement comes as the global aircraft fleet is forecast to grow by 28% over the next decade. However, the industry continues to face challenges such as limited maintenance slots and persistent supply chain constraints. Airhub Aviation aims to alleviate this pressure by increasing MRO capacity in the Northern-Eastern European region, positioning itself as the sole provider of new MRO capacity in this area. According to Oleg Novak, CEO of Airhub Aviation, the growing demand stems from a global fleet that is maturing and remaining in service for longer periods. "As the global fleet matures and stays in service longer, maintenance needs are evolving beyond scheduled checks. More lessors, asset owners, and operators are turning to MRO facilities for bigger maintenance scopes, such as second 12-year checks. At Airhub Aviation, we see a growing demand for flexible MRO solutions that go beyond scheduled maintenance, and we are ready to meet that need. Therefore, we are adding MRO capacity in Lithuania," Novak stated. The new facility enhances the company's capacity to manage aircraft checks and (re)deliveries, aligning with its broader strategy of supporting its owned fleet as well as partner airlines and lessors. Novak further noted, "With aircraft replacement cycles extending and mid-life aircraft in high demand, efficient transitions and technical support are more critical than ever. Our MRO facility allows us to better serve our clients by integrating maintenance into our broader asset management expertise." Airhub Aviation's first MRO season proved highly successful, completing over 17 maintenance inductions, including seven heavy checks on A320ceo aircraft. The company also supports eight Continuing Airworthiness Management Organisation (CAMO) clients, manages five line stations, and oversees component repair management for over 100 customers. Its client base features notable names such as World Star Aviation, GA Telesis, and TrueNoord, reflecting its growing influence in the sector.

Liebherr-Aerospace secures new landing gear overhaul contract

Liebherr-Aerospace Saline, based in Michigan, U.S.A., has signed a definitive agreement with SkyWest Airlines, headquartered in St. George, Utah, to provide landing gear overhaul and systems maintenance for a defined portion of SkyWest's Embraer 175-E1 fleet. The programme is set to commence in 2025 and will include complete landing gear restoration in compliance with Embraer's specifications, performed at intervals of 30,000 flight hours or 12 calendar years. Since entering service in 2004, the Embraer 170/175-E1 family has been highly successful, with over 950 aircraft delivered and a current production backlog. Liebherr-Aerospace Saline has supported landing gear maintenance for this aircraft family since 2012, operating continuous overhaul lines for the full range of Embraer E170/175/190/195-E1 models. Will Dew, Managing Director Commercial at Liebherr-Aerospace Saline, stated: "We initiated induction lines for the first Americas region overhauls in 2012 and have continuously operated active lines for the complete Embraer E170/175/190/195-E1 family since that time. Over the course of the prior three years, we have undertaken a structural transformation of our MRO activities to establish additional capacity, mature efficiencies, and anchor supply chain resilience within the landing gear product line. In this upcoming phase of overhauls, we welcome SkyWest Airlines as a lead customer that will benefit from this achievement". The Embraer E1-generation landing gear system was designed and is manufactured by Liebherr-Aerospace Lindenberg GmbH, Germany, Liebherr's centre of competence for flight control and landing gear systems.

Jordan Airmotive delivers CFM56-5B engine to BOC Aviation

Jordan Airmotive, an independent engine MRO provider, has successfully delivered a CFM56-5B engine to BOC Aviation, one of the world's largest aircraft leasing companies and a major player in the Asia-Pacific aviation market. This milestone reinforces Jordan Airmotive's growing influence in the global leasing sector and underscores its capability to provide high-quality, reliable MRO solutions to leading aviation companies. Mahmoud Bashir, CEO of Jordan Airmotive, expressed his pride in the partnership, stating, "BOC Aviation is a key player in the global aircraft leasing industry, and we are honoured to support their engine requirements. This delivery highlights our dedication to delivering world-class MRO solutions, ensuring our partners receive high-performance, cost-effective, and reliable engine services. Our growing presence in the Asia-Pacific region reflects our commitment to serving aviation leaders worldwide with tailored maintenance and support." Jordan Airmotive, certified by both EASA and the FAA, continues to expand its global presence, offering comprehensive repair and overhaul services for CF6-80C2, CFM56-7B, CFM56-5B, CFM56-3, and the latest LEAP-1A/1B engines. With a forward-thinking approach, the company remains dedicated to strengthening its partnerships and delivering innovative MRO solutions to meet the evolving needs of the aviation industry.

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FL Technics opens new in-house sewing facility

FL Technics is expanding its service portfolio by opening an approved in-house sewing shop. This new capability will enable the company to offer a wider range of aircraft cabin products, enhancing passenger comfort and convenience. The sewing facility will produce a variety of items, including aircraft seat covers, curtains, blankets, bags and straps. These products will be available to airlines, leasing companies and other aviation clients across Europe, the Middle East, South-East Asia, North Africa and Central Asia. "The expansion was a natural step towards the company's development and business growth. FL Technics provides modifications for various commercial aircraft types under EASA Part-21J and now, having sewing services in-house, we will ensure more efficient design solutions for our customers," said Donaldas Barkauskas, Head of Aviation Design and Production Department at FL Technics. The integration of sewing services within the organisation will streamline processes between the design organisation approval (DOA) team and the sewing shop. FL Technics will now offer a complete service package, including DOA, production organisation approval (POA), and base maintenance, ensuring a seamless transition from initial request to final product installation. Equipped with modern sewing machines and a dedicated production facility, the new unit will keep essential materials in stock to optimise efficiency and turnaround times. All fabrics and materials used will meet stringent aviation safety and quality standards. "The ability to get all aircraft-related modifications from a single provider guarantees a more convenient and faster process, ensuring efficient operations and cost-effective solutions for our clients. For those selecting raw materials from our stock, we can deliver products even faster. For customers with specific requirements, we offer bespoke solutions and a variety of materials from our approved suppliers," added Dainius Koveckis, Head of Production.

FL Technics has opened its in-house sewing facility
© FL Technics

Lufthansa Technik Malta expands with new hangar for 787 Dreamliner maintenance

Rendering of the new hangar in Malta © *Lufthansa Technik*

Lufthansa Technik Malta, the European Centre of Excellence for wide-body base maintenance within the Lufthansa Technik network, is set to expand its facilities and increase capacity. From autumn 2026, a new 6,400 metre² hangar will be dedicated to base maintenance services, particularly cabin modifications for the Boeing 787 Dreamliner. As a Boeing-licensed service centre, Lufthansa Technik is the only MRO provider worldwide authorised to both engineer and implement 787 cabin modifications. The modern facility will accommodate one wide-body aircraft, while three additional parking spots will be created for narrow-body aircraft. This expansion will generate approximately 70 new jobs. The signing of the expansion agreement was officially recognised by Lufthansa Technik on Wednesday, March 12, alongside representatives from Malta's political and business sectors. Harald Gloy, Chief Operating Officer at Lufthansa Technik, emphasised the significance of the development, stating that it strengthens the company's global network. He noted that, in addition to the recent construction of new facilities in Portugal and Canada, this project marks another milestone in Lufthansa Technik's corporate strategy. Gloy highlighted that Lufthansa Technik Malta will be the first location worldwide to carry out 787 Dreamliner cabin modifications as a Boeing-licensed service centre, creating new opportunities for customers and skilled employment in Malta. Once completed, the new hangar will be integrated with existing facilities, giving Lufthansa Technik Malta a total of four hangars capable of servicing nearly all commercial Airbus aircraft, except the A380, as well as the Boeing 787 Dreamliner. Construction is expected to take approximately 18 months, with the facility becoming operational in autumn 2026.

WLFC reports record annual revenue and profit for 2024

Willis Lease Finance Corporation (WLFC) has announced total annual revenues of US$569.2 million and pre-tax income of US$152.6 million for the year ended December 31, 2024. Aggregate core lease rent and maintenance reserve revenues reached an all-time high of US$452.1 million, marking a 30.4% increase from US$346.8 million in 2023. This growth was primarily driven by core, recurring lease and maintenance revenues, reflecting the strength of the aviation marketplace. "In 2024 we leveraged our strong earnings to reinvest in the most in-demand engines and aircraft," said Austin C. Willis, Chief Executive Officer of WLFC. "Our ability to profitably deploy nearly US$1 billion is a direct reflection of how our platform maximises the value of assets." The company achieved a record US$152.6 million in pre-tax income, an increase of 127.4% compared to US$67.1 million in 2023. Lease rent revenue rose by US$25.1 million, or 11.8%, to a record US$238.2 million in 2024, compared to US$213.1 million in 2023. Maintenance reserve revenue surged to a record US$213.9 million in 2024, a 60.0% increase from US$133.7 million in 2023. This growth reflects the expanding lease portfolio, particularly leases under short-term conditions. Engines on lease with non-reimbursable usage fees generated US$174.5 million in short-term maintenance revenues in 2024, compared to US$118.3 million in the prior year. Long-term maintenance revenue, recognised at the end of lease periods, was US$39.4 million in 2024, up from US$15.4 million in 2023. Spare parts and equipment sales rose to US$27.1 million in 2024 from US$20.4 million in 2023, reflecting increased demand for surplus materials as operators extended the service life of their current-generation engine portfolios. Equipment sales totalled US$1.0 million in 2024, representing the sale of one engine, whereas no equipment sales were recorded in 2023. WLFC recorded a US$45.1 million gain on the sale of leased equipment in 2024, which included 35 engines, eight airframes, and other parts and equipment from the lease portfolio. This was a significant rise from the US$10.6 million gain in 2023, which resulted from the sale of 28 engines, one airframe, and other leased assets. The book value of lease assets, including equipment held for operating lease, maintenance rights, notes receivable, and investments in sales-type leases, increased to US$2,872.3 million as of 31 December 2024, compared to US$2,223.4 million in the previous year. Including lease assets in joint ventures, the book value rose to US$3,238.4 million from US$2,495.4 million year-over-year.

AAR to service Cebu Pacific's nacelles of A320 fleet

Jim Berberet (l), AAR SVP Component Services and Shev Weerasekera, VP Engineering and Fleet Management for Cebu Pacific © *AAR*

AAR CORP. has signed a multi-year agreement with Cebu Pacific Air to provide nacelle maintenance, repair, and overhaul (MRO) services for the airline's A320 fleet powered by the CFM56-5B engine. The work will be carried out at AAR's Component Services facility in Chonburi, Thailand. AAR has a longstanding relationship with Cebu Pacific, previously supplying USM engine material for the airline's CFM56-5B overhauls and offering warranty management and repair cost oversight services through its subsidiary, Airinmar. This latest agreement further strengthens their collaboration, ensuring high-quality maintenance solutions and operational efficiency for Cebu Pacific's fleet. Shev Weerasekera, Vice President of Engineering and Fleet Management for Cebu Pacific Air, expressed confidence in the continued partnership, stating that AAR shares the airline's commitment to maintenance quality and turnaround time while offering competitive rates. Jim Berberet, AAR's Senior Vice President of Component Services, highlighted the importance of the agreement, noting that it demonstrates the strong confidence operators have in AAR's cost-effective services in the Asia-Pacific region. He emphasised that the company is proud to expand its relationship with Cebu Pacific by providing innovative and timely solutions for the airline's nacelle maintenance needs. This agreement reinforces AAR's presence in the APAC aviation market and its dedication to delivering reliable, high-quality MRO solutions to commercial and government operators worldwide.

Vista secures US$600 million investment from RRJ Capital

Vista, the private aviation group, has announced a definitive agreement for a US$600 million equity investment from a consortium of investors led by RRJ Capital, a prominent Asian investment firm. This investment marks a major milestone in Vista's continued growth and reflects strong confidence in the group's strategic vision and business model. The new capital injection is set to optimise Vista's capital structure, improve free cash flow generation and reduce overall debt. This aligns with Vista's commitment to accelerating its deleveraging efforts, diversifying its investor base and further strengthening its financial standing. The investment will also position the group for sustainable long-term growth in the private aviation sector.

Thomas Flohr, founder and Chairman of Vista, described the deal as a significant endorsement of the company's strategy and future plans. He welcomed RRJ Capital and the consortium, expressing his enthusiasm for the partnership and the opportunities it will bring. Flohr also highlighted the value of adding these new investors to Vista's carefully curated shareholder base. Alongside RRJ Capital, Andalusian Private Capital and other partners will join the consortium, bringing a wealth of expertise and an expanded global network. They join existing shareholders such as Rhône Group LLC, who have been long-standing investors in Vista. The transaction is expected to close by the end of March 2025. Jefferies served as financial adviser to Vista, while UBS advised RRJ Capital on the deal.

Magellan and Aequs to establish aerospace sand casting facility

Magellan Aerospace Corporation (Magellan) and Aequs Private Limited (Aequs) have signed a memorandum of understanding (MoU) to explore the development of a business plan for a 50/50 jointly owned aerospace sand casting facility in the Belagavi Aerospace Cluster (BAC), Karnataka, India. This facility aims to address the growing demand for aerospace sand castings in both the commercial and defence sectors. India currently has a limited number of aerospace-qualified NADCAP sand casting facilities. This new venture seeks to enhance the country's capabilities while also strengthening sand casting capacity in Southeast Asia. Magellan is a recognised centre of excellence for sand casting in North America, specialising in casting complex geometries using the chemically bonded sand process. The company also utilises advanced technologies such as 3-D sand printing, robotics, digital radiography, and automated differential pressure bottom pouring. India's aerospace industry has seen rapid growth over the past decade, driven by government initiatives such as Make in India and the UDAN Scheme, along with increased private sector investment and rising air traffic. India is now one of the fastest-growing aviation markets globally, making it an attractive location for aerospace manufacturing and support services. Magellan and Aequs have a long-standing partnership, having established Aerospace Processing India (API) in 2007, which became the first third-party facility in India approved by both Airbus and Boeing for surface treatment solutions. In 2024, they signed another MOU to develop an aircraft engine maintenance, repair, and overhaul (MRO) facility in Karnataka. This new sand-casting venture further solidifies their collaboration, supporting global aerospace customers with advanced manufacturing solutions.

Signing of the MoU between Magellan and Aequs © *Magellan*

Senior executives from Indamer Technics and Ramco Systems, at the Indamer facility in Nagpur, India
© *Ramco*

Global aviation software provider **Ramco Systems** (Ramco) will implement its next-generation aviation software at **Indamer Technics** (Indamer), a prominent Indian aviation services company. Indamer delivers technical, operational and financial solutions aimed at enhancing efficiency and competitiveness within India's commercial aviation and government sectors. The implementation of Ramco's comprehensive aviation software will equip Indamer with an integrated platform covering a range of essential functions, including maintenance, engineering, supply chain management, quality, contract and quote management, customer billing and finance. This end-to-end solution will enable Indamer to manage operations seamlessly from contract to cash while providing full visibility over materials, resources, and tools.

Additionally, the software will offer Indamer an advanced analytical platform designed to enhance decision-making capabilities and streamline workflows. By automating processes and data entry in maintenance planning and work scoping, the system is expected to significantly improve operational efficiency. Ashwani Acharya, Chief Operating Officer of Indamer Technics Pvt. Ltd., commented: "We selected Ramco Aviation Software for its ability to deliver real-time business insights and the automation we need to scale our business efficiently. By optimising costs and turnaround times through effective resource utilisation, the solution will empower us to enhance our operations seamlessly. We are expanding and increasing our capabilities and Ramco's proven expertise in supporting the Indian MRO providers, coupled with a strong focus on innovation, makes them the perfect partner for this digital journey. We are confident that this collaboration will play a pivotal role in driving our continued growth."

Trax, a global provider of paperless aviation maintenance and engineering software products, has released that **Cathay Pacific**, Hong Kong's home airline, has selected Trax to power its engineering department's strategic digital transformation. The agreement strengthens Trax' global customer base of leading airlines and will support Cathay Pacific's pursuit of next-generation aviation technology initiatives. Central to Cathay Pacific's move towards real-time, data-driven maintenance operations will be Trax's comprehensive, web-based eMRO solution, fully managed cloud hosting services, and a suite of its innovative eMobility applications. These include AeroDox, VisualCheck, Line Control, TaskControl, and eContent Control. Trax' advanced mobile and cloud-based solutions will provide the airline with instant access to critical operational data, enabling informed decision-making, enhanced coordination, and increased productivity — all within a paperless environment. "Trax's advanced maintenance solutions will modernise our operations, providing improved coordination and greater efficiency to support our commitment to safety, operational reliability, customer centricity, and innovation," said Keith Brown, Cathay's Director of Engineering. "The implementation of Trax's solutions will further enhance Cathay Pacific's goal of being an industry digital leader."

Leaders from Trax and Cathay Pacific signed the agreement in Hong Kong in March 2025 © *Trax*

LS Technics hangar © *LST*

Ultramain Systems, a provider of advanced digital solutions for the aviation industry, has announced a strategic partnership with **LS Technics** (LST) to implement ULTRAMAIN® v9 Unity MRO software, one of the most comprehensive and intuitive solutions for aircraft maintenance, repair and overhaul (MRO). This collaboration represents a key milestone in LST's digital transformation, reinforcing its commitment to operational efficiency, process optimisation, and a modernised work environment. By adopting ULTRAMAIN MRO, LST will benefit from digitisation of processes, transitioning fully from paper-based documentation to real-time, secure access to critical operational data. The software will optimise MRO operations by streamlining the management of maintenance activities, improving control and efficiency across both line and base maintenance. Additionally, it will support a modern, mobile work environment, allowing technicians to work seamlessly on mobile devices with an intuitive, user-friendly interface. "I am very pleased that the strategic cooperation and implementation of ULTRAMAIN will allow us to realise our ambitious growth plan while optimising productivity and maximising resource utilisation. This is a groundbreaking step in our technological transformation, which will strengthen our market position and increase our operational efficiency," said Tadeusz Stachera, CEO at LS Technics.

SMFL and LCI joint venture to acquire Macquarie Rotorcraft

Sumitomo Mitsui Finance and Leasing Co., (SMFL) and LCI Investment (LCI) have announced that their joint venture helicopter leasing company, SMFL LCI Helicopters (SMFLH), has entered into an agreement to acquire Macquarie Rotorcraft Limited (MRL), the helicopter leasing business of Macquarie Asset Management. The financial details of the transaction remain commercially confidential. Founded in 2013, MRL is a global helicopter leasing firm with a fleet of approximately 120 leased aircraft, which are used in offshore transportation, emergency medical services, search and rescue, and utility operations. Following the acquisition, SMFLH and LCI will expand their combined fleet to around 310 aircraft, further broadening their customer base and exploring synergies with their existing businesses. The newly merged operation will be managed by LCI. In 2020, SMFL and LCI, an aerospace subsidiary of Libra Group, established their joint venture, SMFLH, for helicopter operating leasing. SMFL further strengthened its partnership in 2023 by acquiring a 35% stake in LCI, which has contributed to the steady growth of the joint venture. This acquisition marks a significant step towards the expansion of both SMFL's and LCI's presence in the helicopter leasing sector. With increasing demand anticipated in the market, the companies aim to build a strong position and continue to expand their business and customer base within this dynamic industry.

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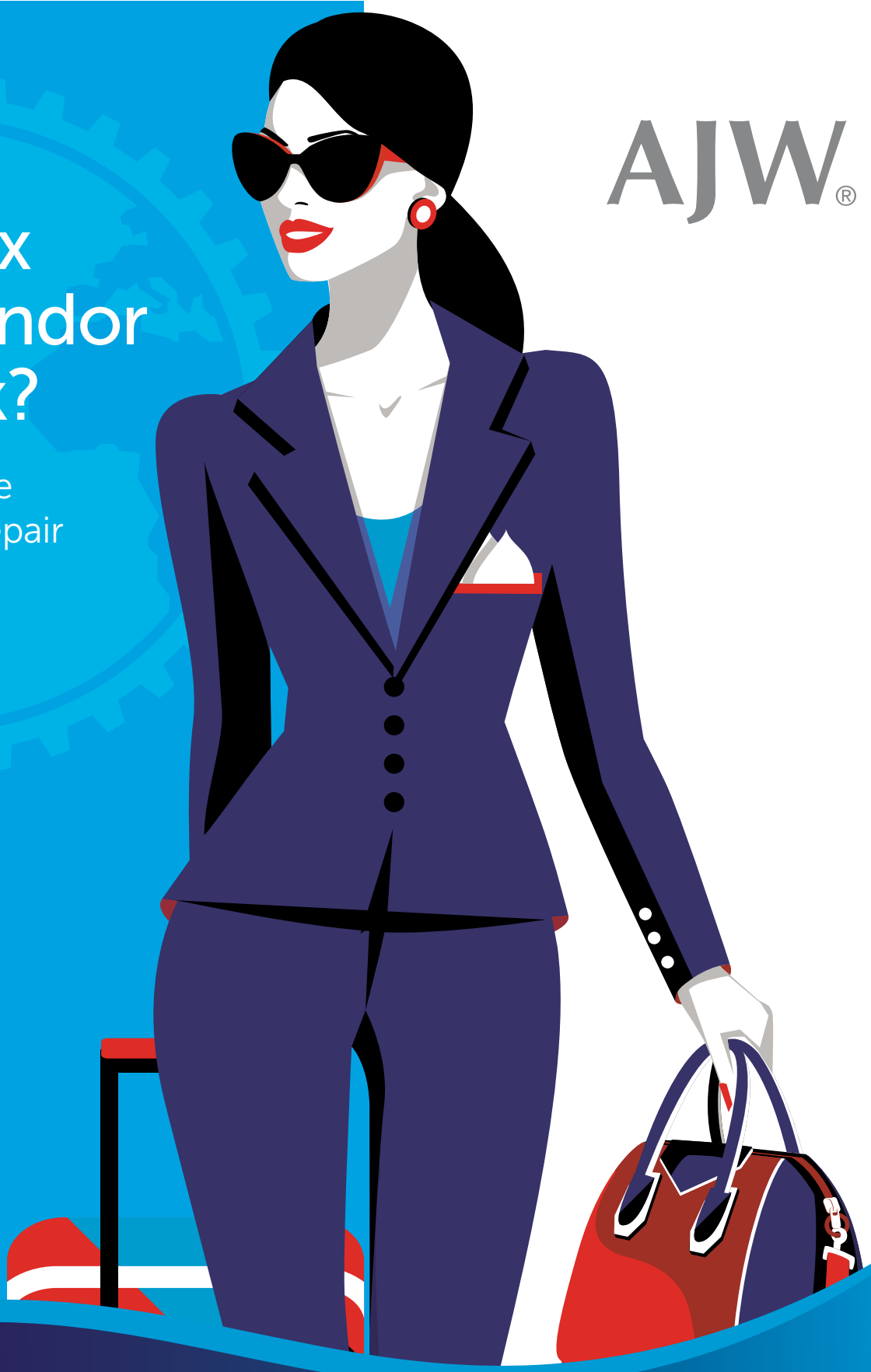

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VAS Facility in Boca Raton, Florida
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VAS Aero Services

An interview with the Company CEO, Tommy Hughes

VAS Aero Services is a wholly owned subsidiary of Satair, an Airbus company. The company is a leading provider of aviation parts and services, and in an industry marked by constant change, VAS stands out for its stability and reliability as a global resource for innovative, tailor-made solutions. The company provides a portfolio of services that address the industry's logistics, warehousing, programme management, and sourcing needs, and as a leading provider in the aftermarket, delivers unmatched inventory distribution services to major Airlines, OEMs, and MROs.

Tommy Hughes has been the company CEO since 2015 and is a seasoned professional with over 30 years in aviation and aerospace. He leads the company's strategic direction and operations, and in 2022, facilitated VAS' acquisition by Satair, a wholly owned subsidiary of Airbus.

We were recently fortunate to catch up with Tommy and he was kind enough to spare us some time to help us get to know a little more about the company and the state of the MRO environment.


Tommy Hughes, CEO VAS Aero Services

AviTrader MRO 360⁰: Can you tell us about your company's core business?

Tommy Hughes: VAS Aero Services (VAS) is a leading provider of aftermarket services in the aviation industry and a highly experienced provider of nose-to-tail Used Serviceable Material, with more than US$4bn in engine/airframe/component assets currently under management. We source, warehouse, and market aftermarket components across a broad range of aircraft and engine platforms and provide related logistics and programme management services to airlines, MROs and OEMs around the world.

VAS maintains state-of-the-art warehouses as well as a global sourcing and sales network. Our business and operations footprint covers North America, the UK, Europe, Southeast Asia, Australia and China (through the expansion of Satair Chengdu, a powered-by-VAS USM end-of-life facility).

With over 45 years of experience, VAS has one of the largest portfolios of any provider of quality aviation assets in the aftermarket. The company became part of the Airbus Group of companies in 2022 when VAS was acquired by Airbus's Satair subsidiary. We now operate as a wholly owned, independent subsidiary of Satair.

How do you see the aviation parts market evolving over the next five years?

I see a larger role for Used Serviceable Materials (USM) over the next several years. OEMs have signed big multi-year deals to supply new aircraft. This likely will limit resources for manufacturing new replacement parts. That leaves an opening for third-party USM parts suppliers such as VAS. Deliveries on the new aircraft in the sales pipeline are years away, so keeping current aircraft flying and producing revenue

will be the key to profitability for many operators near term. And that plays to VAS' strengths in lifecycle management, aircraft transition and teardown, and USM parts sourcing and distribution. As we look ahead, we like what we see.

What are the biggest challenges currently facing the aircraft parts supply chain?

Global supply chain disruption continues to be a challenge. It often leads to shortages and delays in obtaining critical parts, which plays out as maintenance delays and increased downtime for aircraft. I expect this issue to continue to plague the industry for the near term. That's why, from the airline and MRO perspective, it's critical to have a close relationship with your parts and materials supplier. Parts shortages bring on another challenge: visibility into parts availability. Researching the marketplace for needed parts can be slow and painful, especially for those airlines or MROs that may not have the capabilities or resources to thoroughly and continually monitor and assess industry-wide inventories. Again, this underscores why partnerships with third-party suppliers are so important. With our overarching view of the aftermarket, suppliers such as VAS know what is available, where, when, in what condition, in what quantities and in what price range. Our market intelligence helps ensure that our customers have access to the parts and materials they need, at a properly valued price.

How does your company manage inventory and logistics to ensure timely delivery?

We are firm believers in investing in IT infrastructure. With over one million parts in stock, automated inventory tracking has become an essential element of our business. Our ability to know the precise condition, location and availability of parts is key to delivering parts on time and on budget. In the aftermarket, you cannot know enough about your customers' needs or your own capabilities to meet those demands. Todays CRM and ERP systems grant us that critical view and allow us to exceed customer expectations.

What role does technology play in your operations, and are there any innovations you're particularly excited about?

VAS has invested over US$30 million in dedicated IT infrastructure and enhanced capability for aftermarket business solutions. Our customised SAP system seamlessly integrates with customers' systems for aftermarket programmes, automated quotations, inventory management and programme management. Customers are able, at a glance, to see inventory availability and order needed parts and material. All parts are certified air-worthy and include the proper documentation, provenance and history so clients know they are receiving verified, flight-ready material. With warehousing strategically located in the US and Europe, and through our alliance with Satair, we can deliver parts rapidly, increasing TAT and reducing AOG… all thanks to our investment in IT infrastructure and automated order processing.

What are the key trends shaping demand for used aircraft parts?

Supply-chain-disruption induced parts shortages, the growing backlog of orders for new aircraft and the increasing emphasis on sustainability are all driving the increasing demand for USM parts.
We're certainly seeing greater need for replacement parts as lessors and airline operators are keeping aircraft in service longer due to the large backlog of new aircraft deliveries. That insight led us to acquire twenty-six A320 aircraft, seven Airbus A330 ex-China Southern Airlines aircraft and increase our teardown business with the Dr. Peters Group to now include eight A380 aircraft.
These aircraft acquisitions mean, of course, that for some years to come VAS will have access to a greater supply of quality, certified used parts for distribution across our global aftermarket customer base to support the maintenance needs of A320s, A330s and A380s that continue in service.
Harvesting and redistributing the used serviceable material from these aircraft means that those parts will have a continuing, useful life as replacement parts. By reclaiming and recycling those parts, we're saving the energy needed to produce new parts and the subsequent carbon emissions created in the process.

Where do you see your company in five to ten years, and what are the key priorities to get there?

With forecasts for continued growth of both passenger and cargo air transport, the industry's future looks bright, indeed. It will impact all aspects of the aviation business, including aftermarket parts supply, repair and logistics. How can we as a company participate in and benefit from that growth? That's a question we continually ask ourselves. A few years ago, VAS undertook a long-term strategy development program. It required a bold look in the mirror and asking some tough questions to determine where we want to be as a company. As a result of that process, we realised that to succeed we needed to invest more in our business infrastructure and in our people. And that's just what we did. We expanded opportunities for our associates, provided mentorships and beefed-up training. And we sourced state-of-the-art IT systems that would allow us to operate more efficiently, more proactively, more productively.
Doing so propelled us to where we are today, among the leading USM parts suppliers in the world. Surviving and thriving for the next five to ten years will require more of the same. There's no standing still, so you'll find VAS investing in facilities, people and the latest technology – deploying innovative logistics systems, recruiting and rewarding top-quality employees, harnessing the power of AI, enhancing our aircraft transition management capabilities and doing whatever it takes to be the leader in aftermarket trading, re-distribution of assets, and programme management reporting.

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***Alexandra**, Avionics Technician*

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Expendables and Consumables

A look behind the curtain

By David Dundas

In the world of MRO, it can be easy to take certain elements for granted owing to their lack of 'presence'. By that, we mean those smaller items that tend to be overshadowed by the focus of attention being more on major (and costlier) components. However, expendables and consumables are as vital an element of MRO operations as without them, aircraft would simply be unable to fly safely. While the terms expendables and consumables tend to be interchangeable, for the purposes of this article, we consider the likes of nuts and bolts, fasteners, gaskets, seals, filters, etc., to be expendables, and hydraulic fluids, greases, oils and cleaning chemicals, etc., to be consumables.

We wanted to know more about just how critical a role expendables and consumables played in MRO operations, and so we asked three leading operators for their opinions on a series of related topics.

How has the market for aircraft maintenance expendables and consumables evolved in recent years?

The market for expendables and consumables in aircraft maintenance has experienced significant shifts driven by supply chain volatility, fleet modernization, along with the need for more cost-effective maintenance strategies and increasing demand for efficiency. As Daniel Tautges, Executive Vice President, Component Control explains, "In recent years, we've seen supply chain disruptions, material shortages, and inflationary pressures impacting the availability and cost of these items. At the same time, airlines and MROs are prioritising just-in-time inventory strategies and digital procurement solutions to streamline operations. The demand for predictive maintenance solutions has also increased, requiring better data integration between suppliers, operators, and MROs to ensure stock levels are optimised without overcapitalisation."

Marina Vivas-Birkeland, Director Asset & Price Management BVAS, VAS Aero Services has seen a major change in a sector traditionally dominated by OEMs but which is now witnessing a shift as airlines and MROs increasingly turn to third-party suppliers for both efficiency and flexibility. "The adoption of digital inventory planning and management tools is also driving this change, as these help streamline procurement and move from a reactive purchasing model to a more proactive, planned approach. As a result, customers are seeking dependable distributors who can offer needed parts at competitive prices, and VAS Aero Services has emerged as a key player in this evolution. We are proud to be a trusted alternative source for expendables and consumables. With over 400,000 square feet of warehouse space and a large expendables inventory, we are equipped to fulfil both routine and urgent material needs worldwide. We stock and redistribute parts from our U.S. locations in Boca Raton, FL, and Kent, WA. Our strong relationships with OEMs and airlines allow us to offer a wide range of parts sourced through long-term consignment and resale agreements, ensuring consistent availability and quality at more competitive prices. This approach aligns with the industry's growing demand for efficiency, affordability, and reliability," she comments.

Meanwhile, Scott Butler, Chief Commercial Officer, Ascent Aviation Services identifies unpredictability as a key factor since the COVID-19 pandemic, stating that "Ascent had to pivot very quickly from a Heavy Maintenance environment to Preservation & Storage. This put a huge strain on the supply chain."

Marina Vivas-Birkeland, Director Asset & Price Management BVAS, VAS Aero Services

> **"With improved access to sensor data and advanced analytics, airlines can now predict maintenance needs, plan ahead, and avoid unexpected downtime."**
>
> *Marina Vivas-Birkeland, Director Asset & Price Management BVAS, VAS Aero Services*

What are the key trends shaping the demand for expendables and consumables in the aviation industry?

The demand for expendables and consumables is being shaped by several key trends, all focused on improving availability and lowering operating costs across the industry. Two main trends that are driving this change are the use of predictive maintenance technologies, and a growing focus on sustainability. Marina Vivas-Birkeland makes the consequences clear as she tells us that: "With improved access to sensor data and advanced analytics, airlines can now predict maintenance needs, plan ahead, and avoid unexpected downtime. This enables customers to manage expendables and consumables more efficiently by replacing parts only when necessary. As a result, inventory management is streamlined, leading to cost savings and improved operations. Consequently, there is an increasing demand for affordable expendables and consumables. Aftermarket suppliers like VAS Aero Services are meeting this demand by offering competitive pricing and quick delivery. This provides airlines and MROs with more options without compromising quality. Sustainability has become another focal point in the aviation industry, leading to a stronger emphasis on re-distributing expendables and consumables rather than scrapping them, especially when these parts still have a viable market demand. This approach not only makes environmental sense but also helps airlines reduce waste and lower costs. Third-party suppliers are instrumental in this sustainability shift, helping to minimize waste, energy consumption, and carbon emissions while maintaining a reliable supply of quality parts."

While Daniel Tautges also identifies sustainability as an influencing factor, he comes up with several additional trends that are shaping demand. To begin with, he discusses fleet transition and sustainability: "As airlines retire older aircraft and introduce next-generation fleets, the expendable and consumable mix is shifting. Newer aircraft often require different maintenance approaches, affecting demand patterns. Additionally, sustainability initiatives are prompting interest in eco-friendly alternatives." He then discusses global supply chain diversification: "Airlines and MROs are diversifying their supplier base to mitigate risks. There's a growing push for localized stockpiling and partnerships to reduce reliance on single-source vendors." Finally, he talks about digital procurement and predictive maintenance: "The adoption of AI-driven procurement tools is improving forecasting accuracy, reducing excess inventory while ensuring critical parts availability. Predictive maintenance is also driving demand for condition-based replenishment rather than traditional time-based stocking."

Interestingly, Scott Butler identifies three further areas of influence – big data, usage forecasting and AI, as he tells us that: "Big data and usage forecasting are allowing the industry to strategically purchase long-term and stock according to the MRO demand. AI is adding another tool to the bag and allowing very sophisticated models to be generated and utilized accordingly."

What are the biggest challenges in sourcing expendables and consumables for aircraft maintenance?

One of the biggest challenges is the ongoing disruption in global supply chains and unfortunately, this issue is likely to persist in the foreseeable future. These disruptions result in shortages and delays in obtaining critical parts, causing increased aircraft downtime and higher costs, where the lack of a few bolts can disrupt and delay operations. As Marina Vivas-Birkeland advises: "Another challenge is getting accurate information on the availability of these types of materials," adding that "Searching the market for expendables can be time consuming, and many airlines and MROs lack the resources to thoroughly check all available sources. This is where aftermarket suppliers like VAS Aero Services offer a key advantage, providing real-time information on availability, condition, traceability and price to ensure customers get the right materials at the right price."

Daniel Tautges has identified four of the greatest challenges, also including supply chain disruptions and lead times, while ongoing geopolitical tensions, manufacturing slowdowns, and logistics constraints have also extended lead times for critical consumables. He adds that price volatility - the cost of raw materials, particularly specialty metals and composites, has fluctuated significantly, impacting procurement budgets, while regulatory and compliance Constraints, such as compliance with evolving regulatory standards (PMA approvals and traceability requirements etc.,) can create bottlenecks in sourcing and stocking. He also points out that where data Integration and visibility are concerned, many MROs and operators still struggle with real-time visibility into inventory levels, leading to inefficiencies in procurement planning.

A further challenge identified by Scott Butler is the changes in aircraft mix. He states: "As the OEMs have had issues ramping up to demand, we have had to keep older aircraft flying which has not been part of the larger forecast, leading to supply chain disruptions."

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How do airlines and MROs manage supply chain disruptions for these materials?

Supply chain problems have plagued the MRO sector since late 2020, coinciding with the outbreak of the COVID-19 pandemic. The question is, how do you mitigate for such an ongoing challenge?

At VAS Aero Services, Marina Vivas-Birkeland has identified three areas that can help the situation: "Airlines and MROs are increasingly focusing on working with a group of trusted suppliers, including third-party options like VAS Aero Services. By diversifying their supplier base and establishing strong partnerships, they reduce the risks associated with relying on a single source. This approach helps create a more flexible and dependable supply chain, one that can better withstand unforeseen disruptions. Building strong, long-term relationships with suppliers is essential for success in this strategy. By securing long-term contracts, engaging in collaborative planning, and maintaining open and transparent communication about challenges, better coordination during disruptions can be achieved. Safety stock agreements for high demand or hard to find parts are also essential, ensuring that parts are always available when needed. As previously mentioned, airlines and MROs are increasingly utilizing forecasting tools and inventory management software to optimize stock levels. These predictive analytics enable them to accurately forecast demand, preventing both overstocking and shortage of critical parts, even during supply chain disruptions."

Daniel Tautges at Component Control adopts a slightly different approach, though based on similar principles. Put succinctly, he has focuses on four principal areas: "Strategic Stockpiling: Maintaining higher safety stock levels for critical consumables, particularly at major maintenance hubs. Supplier Diversification: Establishing multiple supplier relationships to avoid dependency on a single source, especially for high-turnover items. Digital Inventory Management: Leveraging cloud-based ERP systems like Quantum Control to enable real-time visibility into stock levels, supplier performance, and automated reordering. Predictive Analytics: Using AI-driven forecasting to anticipate demand fluctuations and proactively adjust procurement strategies.

At Ascent Aviation Services, Scott Butler identifies long-term planning and forecasting to secure material is the best solution for disruptions. "Bringing on vendors who can help manage the supply chain forecast is a solution we at Ascent find valuable, allowing the disruption to be managed further upstream where it won't impact our projects," he comments.

What strategies can suppliers adopt to ensure a steady supply of critical consumables?

Inventory management is a significant challenge for many airlines and MROs. Maintaining an adequate supply of consumables without overstocking requires precise forecasting, which can be difficult due to variable demand and long lead times for some parts. To address this challenge, suppliers can implement strategies to ensure a steady supply of critical consumables. Marina Vivas-Birkeland's advice? "Investment in advanced forecasting and inventory management systems is essential. By leveraging predictive models, maintenance organizations can anticipate demand fluctuations, plan production schedules, and maintain appropriate stock levels. This helps avoid shortages during peak demand periods and ensures timely delivery of critical consumables. For example, VAS Aero Services customers can integrate their information

> **"We employ several different solutions at various stages, VMI / kanbans as well as AI predictive forecasting to help give us the best visibility to our needs."**
>
> *Scott Butler, Chief Commercial Officer, Ascent Aviation Services*

Scott Butler, Chief Commercial Officer, Ascent Aviation Services

management systems with our online parts platform for constant visibility into availability, trace documentation and pricing. This transparency enables real-time tracking, reducing lead times and enhances responsiveness. Additionally, collaborating with airlines and MROs to share demand forecasts and maintenance schedules allows suppliers to adjust stock levels in advance to meet specific needs. Real-time data and historical trends improve forecasting accuracy and inventory planning. To further strengthen supply chains, suppliers should consider long-term partnerships and supplier agreements. This approach ensures priority access to critical parts and mitigates risks of relying on a single supplier.

Daniel Tautges feels strongly that to maintain a consistent supply of expendables and consumables, suppliers should focus on: "Strengthening Supplier Networks: Developing robust relationships with multiple manufacturers and distributors to minimize disruption risks. Leveraging Data-Driven Demand Planning: Using predictive analytics to anticipate customer needs and proactively manage inventory. Investing in Logistics Resilience: Enhancing warehouse management, last-mile delivery capabilities, and alternative shipping routes to counter logistical delays," adding, "Enhancing Transparency & Communication: Providing real-time order tracking and proactive notifications to customers to ensure expectations are aligned.

Meanwhile, Scott Butler takes a slightly different approach, advising that: "We employ several different solutions at various stages, VMI / kanbans as well as AI predictive forecasting to help give us the best visibility to our needs."

Daniel Tautges, Executive Vice President, Component Control

How is digitalization impacting the procurement and management of expendables and consumables?

Digitalization is capable of significantly improving parts procurement and management, enhancing operational efficiency and consequently reducing costs. Marina Vivas-Birkeland provides a key example of this with automated inventory management systems, "... which allow airlines and MROs to track consumables in real time. These systems help maintain optimal stock levels, prevent shortages or overstocking, and improve long-term planning by predicting demand fluctuations. Automation also streamlines the ordering process, increasing accuracy and reducing manual errors. With better forecasting, airlines and MROs can respond faster to changing needs, ensuring parts are always available when required. For instance, our eVAS digital platform facilitates seamless communication between procurement teams and suppliers. Customers can easily access parts catalogues, request quotes, track delivery status, and receive updates on product availability and lead times. This transparency and efficiency simplify the sourcing process, improve collaboration, and ensure that airlines and MROs get the parts they need on time," she advises.

According to Daniel Tautges: "Digitalization is playing a transformative role in the aviation supply chain. Advanced ERP platforms like Quantum Control are enabling real-time inventory tracking, automated procurement, and seamless supplier integration. AI and machine learning are enhancing predictive maintenance and demand forecasting, allowing MROs and operators to optimise stock levels while reducing waste."

And to round off, at Ascent Aviation Services, Scott Butler sees digitisation as a "game changer". He explains: "Our human capital can best be deployed in the strategic purchasing and problem solving while the digitization can help streamline the purchase and forecasting of consumables and expendables. It's very nearly automated now, allowing us to serve our customers better to solve the problems that come up during the maintenance visit."

> **"AI and machine learning are enhancing predictive maintenance and demand forecasting, allowing MROs and operators to optimise stock levels while reducing waste."**
>
> *Daniel Tautges, Executive Vice President, Component Control*

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Minimising Errors

Human Factors in Aircraft Maintenance

By David Dundas

Regular, effective and error-free maintenance is essential for the safe operation of all aircraft, whether it be small training aircraft like the Cessna 172 or a commercial passenger jet capable of carrying over 150 people, like the Airbus A320. There is one element of aircraft maintenance however that is perhaps more critical when it comes to safety than any other element, and that is human input – mechanics, engineers, etc. While every effort can be made to ensure that all the parts and materials, consumables and expendables used in aircraft maintenance meet all the necessary safety standards, such exacting standards become somewhat irrelevant in the face of human error where aircraft maintenance is concerned.

As a perfect example of human error, we have the incident on January 5, 2024, involving a door plug on an Alaska Airlines 737 MAX jet which blew out at an altitude of approximately 16,000 feet on a flight between Portland in Oregon and Ontario in California. In reality, there was nothing structurally wrong with the door plug (used in place of an optional emergency door that was not required), and nor was there anything structurally wrong with the four bolts what should have held the door plug in place, but owing to human error, the bolts were never used to secure the plug and maintenance and safety checks thereafter failed to notice the mistake.

Despite technological advancements, maintenance errors still contribute significantly to aviation incidents and, as a consequence, understanding human factors and implementing strategies to minimise human error is vital for ensuring the very highest safety standards, which this industry demands. The intention with the following is to explore the human element in aircraft maintenance safety and to examine methods to help mitigate human error.

The Importance of Human Factors in Maintenance

First, we have to look at how engineers, technicians and other members of an MRO team physically function in their day-to-day operations. By this we refer to cognitive, physical and also social influences that can affect overall performance in the workplace. We want to see how effectively technicians and the likes carry out their tasks, how they utilise tools and understand and follow procedures, and how they respond to pressures and time constraints, especially when fatigued. Even small human errors can have significant consequences, affecting aircraft reliability, passenger safety, and operational efficiency. However, we also need to examine the types of mistakes made.

What Are the Common Types of Human Error in Aircraft Maintenance?

Omission errors are often the result of complex and long-winded maintenance procedures. It is not so much a case of technicians omitting a step to lighten the workload but simply getting distracted, perhaps by tight time constraints or simply misunderstanding the instructions given.


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We also have the improper installation of aircraft components such as missing bolts as we have mentioned above, or incorrectly connected systems, which can lead to mechanical failures. These errors often result from miscommunication, lack of training, or once again, fatigue. Miscommunication is one of the hardest challenges to eradicate from maintenance teams as sometimes the ensuing misunderstanding will not become immediately obvious. Beyond this, you also have highly technical manuals that require considerable knowledge in order to follow specific instructions. Add inaccurate maintenance records and a failure to log all completed work and the problems with human error can mount.

Another challenge is keeping up to date with all the latest technology, new tools and new materials. For many mechanics and technicians, it is very much a constant learning curve as using the wrong tools or incorrect handling of equipment can damage aircraft components, but that damage may not always be immediately obvious. And then we have fatigue, which can destroy concentration levels and impair cognitive functions, such as making the right decisions. Fatigue isn't always work-induced though long shifts, working nights, and tight deadlines, but can also result from off-site activities, making it harder for supervisors to look out for.

Finally, we have organisational and cultural influences. For example, a workplace culture that prioritises speed over safety may encourage shortcuts and non-compliance with standard procedures, while poor and ineffective leadership and lack of safety reporting mechanisms will likely discourage technicians from speaking up about potential risks or seeking to implement better working practices.

Strategies to Minimise Human Errors in Aircraft Maintenance

Reducing human error in aircraft maintenance requires a multi-pronged approach, one which involves integrating training, work environment improvements, and safety culture improvements. While it may seem a little like stating the obvious, but simply educating engineers and technicians about the causes of human error and introducing better prevention strategies can make a huge difference. Beyond that, you also have the opportunity to implement implementing Crew Resource Management (CRM) training tailored for maintenance personnel to improve teamwork and decision-making.

The next two points are closely related, and those are fatigue management and improving the work environment. For some MRO operators, the workload can vary dependent on orders. However, when shiftwork is required to either clear a backlog or there is simply a number of urgent tasks, it is difficult for staff to adapt to working night shifts some weeks, then only day shifts the majority of the time. Where possible, it is always best to have regulated shift patterns. Beyond this, encouraging breaks and providing fatigue-awareness training to help workers recognise when they are too tired to operate both efficiently and safely is also a sound proposition.

When it comes to communication and documentation, to begin with, implementing standardised reporting procedures will help to improve documentation accuracy, while using digital maintenance logs and automated checklists can lead to a reduction in paperwork errors. As for better communication, this is often a 'work culture' aspect and the easiest way to


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improve communication is to simply and openly encourage it, especially as it is a great means for knowledge sharing.

Advances in Today's Technology and Automation

In today's other article on aircraft maintenance, we have specifically drilled down on automation and the human factor. It is clear that with advances in robotics and automation, when combined with new materials, there is a sea change in place intent on reducing the human input into aircraft maintenance and therefore reducing the chances of human error. We have reached the stage where using augmented reality (AR) systems can provide real-time maintenance guidance and reduce errors, while implementing error-proofing tools such as torque sensors and barcode scanning for component verification can also help reduce the opportunity for human error.

Fostering a Safety Culture

There are three main ways to improve a safety culture in a business, and in the MRO environment, the first step would be to encourage technicians to report errors without fear of punishment, fostering a learning-based approach to safety. We then have the need for regular safety audits to identify procedural weaknesses and enhance compliance, and finally there is a need to promote leadership commitment to safety, ensuring that efficiency pressures do not compromise maintenance standards.

The Role of Regulatory Bodies

Aviation authorities such as the FAA (Federal Aviation Administration) and EASA (European Union Aviation Safety Agency) set guidelines to ensure high safety standards in maintenance operations. As a result, these regulations require airlines and maintenance providers to conduct human-factor training, implement fatigue management programmes, maintain thorough documentation and audit systems, and finally, continuously improve safety protocols based on industry best practices.

Looking Further Into the Future

As technology advances, new strategies are emerging to further reduce human error in aircraft maintenance. We have earmarked four specific areas where we feel future developments will have a major influence in reducing the opportunity for human error in aircraft maintenance.

First, we have AI-powered predictive maintenance, allowing maintenance to be scheduled before a failure occurs, reducing reliance on reactive repairs. Then there is wearable technology, such as smart glasses, to provide technicians with hands-free digital checklists and real-time expert assistance. Third we have blockchain-based record-keeping, ensuring maintenance documentation is tamper-proof and easily accessible, and finally we have Virtual Reality (VR) training, offering immersive simulations to enhance technician learning and decision-making skills.

Conclusion

Human factors play a pivotal role in aircraft maintenance, influencing safety, efficiency, and overall operational reliability. While human error is virtually unavoidable, proactive measures such as human-factor training, fatigue management, improved communication, and technological advancements have the potential to significantly reduce instances. Airlines, maintenance providers, and regulatory authorities should continue working together to bolster a culture of safety and precision in aircraft maintenance operations and through understanding and addressing human limitations, the aviation industry can achieve even greater safety standards in the years to come.

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Future Trends in Aircraft Maintenance: Automation and Robotics

Big changes ahead

By David Dundas

It goes without saying that aircraft maintenance is essential for not just safety, but also efficiency, as well as being part of a set of aircraft records that detail its history. Complete records of aircraft maintenance enhance the value of an aircraft, and reduce the risk of any end-of-lease penalties when returning an aircraft to its lessor.

While aircraft technology has continually changed, maintenance technology has tended to be reactive as opposed to proactive. That now seems set to change with the introduction of automation and robotics in the MRO environment. The advantages? More precise maintenance, reduced risk of human error, and for the MRO itself, reduced operational costs after investing in the new technology.

In the following, it is our intention to take a closer look not just at today's enhancements to the maintenance sector, but to see what the future may hold, with specific attention being paid to the role of automation, robotics, artificial intelligence (AI), as well as other cutting-edge technologies.

The Need for Advanced Maintenance Solutions

Traditionally, aircraft maintenance has always been a labour-intensive exercise, and over time new maintenance techniques and equipment have been geared towards reducing the labour element. In addition to the cost element, the longer a plane is on the ground, the greater the true cost of maintenance and repairs to the carrier. With the need to develop more efficient, accurate, and cost-effective maintenance solutions, so the arrival of robotics and automation has been widely embraced.

Robotics in Aircraft Maintenance

While robotics has been around for decades, it is the advancements in technologies that robotics incorporates that has been the game changer where aircraft maintenance is concerned. So, what are we referring to?

To begin with, we have automated inspection systems which use advanced imaging technologies such as infrared cameras, ultrasonic sensors, and LIDAR to detect structural issues. What is also important to mention here is that these technologies are all capable of identifying structural issues that may not be easily spotted by the naked eye. However, the cost-effective benefit is hard to ignore as, for example, drones fitted with specialist cameras scan an aircraft's exterior for surface damage, corrosion, and other defects in a matter of minutes, reducing the time required for manual inspections.

Next, we have automated painting and coating systems. While saving considerable time on the labour front, there are multiple other benefits that make this new spraying technology such a boon to aircraft maintenance. With automation comes smoother applications of paint, fewer inconsistencies, reduced material waste and the opportunity to eliminate exposure of maintenance staff to hazardous chemicals.

Automated composite repair systems is next on our list. With the extensive use of composite materials in today's jetliners, new repair methods are also required, and these new materials lend themselves well to robotic systems. As an example, a robotic system can cover all aspects

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from detecting a fault, assessing the work required to repair it, and then carrying out the repair itself. Better still, with the introduction of Artificial Intelligence (AI) these new robotic systems are now capable determining the best repair system to carry out the repair, thus improving both safety and durability.

We also have robotic drilling and fastening, always a challenging task where a high degree of accuracy is demanded and the work physically challenging. With the introduction of robotics, this has enhanced aircraft assembly and maintenance by ensuring accuracy and reducing the physical strain on human workers. These robots can perform repetitive tasks with high precision, leading to improved aircraft integrity and performance.

The roles of Artificial Intelligence (AI) and Predictive Maintenance

The greatest advantage of AI is its ability to process massive amounts of data in milliseconds. Where aircraft maintenance is concerned, AI has the capability of more accurately predicting when a component is likely to fail, enabling MRO operators to work proactively as opposed to reactively, and schedule parts replacement during routine, scheduled maintenance as opposed to having an aircraft on the ground while a new part is acquired. Reduced downtime equals improved revenue for any commercial carrier.

Beyond scrutinising data, AI is of huge benefit when it comes to working with 'digital twins'. A digital twin. A digital twin is a virtual representation of an aircraft that mirrors its real-time performance. By integrating data from sensors strategically located throughout, AI can simulate different operating conditions and predict maintenance needs with remarkable accuracy, once again benefitting both the MRO operator and the commercial carrier. Beyond this, we also have smart maintenance scheduling which is also AI-driven. AI-powered maintenance scheduling systems optimise workflow by prioritising tasks based on urgency, availability of resources, and operational requirements, the outcome being that delays are minimised and efficiency in maintenance operations is enhanced.

At this stage it would be remiss not to mention the internet of things (IoT) and the role of IoT technology in enhancing aircraft maintenance. The optimum set up is where real-time data is collected through smart sensors which have bee embedded in critical aircraft components and which continuously monitor parameters such as temperature, pressure, and vibration. The data is then transmitted to maintenance teams, allowing for immediate action when abnormalities are detected.

Challenges and Considerations

Of course, all changes in aircraft maintenance require investment from MRO operators, and careful calculations have to be made as to how any such investment can be recouped without jeopardising any existing MRO contracts. Better still, being a market leader in new maintenance techniques that are more efficient can see an MRO operator become even more competitive when it comes to securing major maintenance contracts. There is no question that changing over to robotic and AI-driven maintenance and repair systems will require considerable financial investment, which can be prohibitive to small airlines and maintenance providers.

As with most new machinery, so new skills are usually required. However, here we are talking about mew machinery that will help to reduce the need for manual labour. Many companies will be reluctant to lose highly skilled and valuable members of staff, so the solution would be to provide the capability for retraining and upskilling maintenance personnel to work alongside advanced technologies.

Beyond the practical side, there is then regulatory compliance and with all things 'internet connected', cybersecurity risks. While robotics can help MRO operators reduce the physical workload, this cannot be done without the approval of aviation authorities which must develop and update regulations to accommodate the use of robotics and AI in maintenance operations.

The Future of Aircraft Maintenance

There really are no limitations when it comes to changes and improvements in aircraft maintenance. The future is undoubtedly being moulded by automation, AI, and robotics, and as these technologies continue to evolve apace, we can expect even more sophisticated solutions, perhaps even to the point of fully autonomous maintenance hangars, AI-driven troubleshooting assistants, and advanced self-repairing materials. These innovations not only have the potential to enhance safety and efficiency but to also redefine the role of maintenance professionals in the aviation industry.

PEOPLE

on the move

David Crull

Jackson Square Aviation (JSA), a full-service commercial aircraft finance company, has announced the appointment of **David Crull** as its next Chief Financial Officer, effective March 17, 2025. He will succeed **Wilson Chen**, who is set to retire on June 30, 2025. David Crull brings over 20 years of senior finance leadership experience within the aviation sector. His career includes guiding high-growth companies and managing complex financial operations. JSA believes his expertise will be crucial as the company continues to strengthen its market position and pursue new business opportunities. With plans to expand its market presence, JSA views Crull's appointment as a key step in supporting its strategic initiatives aimed at driving continued growth. His leadership is expected to play an important role in delivering value to clients and supporting the company's ambitious future plans.

Sean O'Riordan

TrueNoord, the specialist regional aircraft leasing company, has appointed experienced aviation finance professional, **Sean O'Riordan**, to the newly created role of Strategic Planning & Analysis (SP&A) Manager. O'Riordan, who will be based in TrueNoord's Dublin office, joins the company with over a decade of experience in aircraft leasing and finance, underpinned by a strong background in commercial planning and analysis. He commented, "My previous roles at SMBC Aviation Capital and Goshawk allowed me to develop deep expertise in financial modelling, deal structuring, and transaction analysis, through working on key restructurings, lease transitions, and portfolio acquisitions. I bring a highly analytical approach to commercial forecasting and strategic planning and am excited to apply these skills in support of TrueNoord's operations and growth objectives." In his new role, O'Riordan will be responsible for providing financial forecasting models and delivering critical business insights to support commercial policies and strategic decision-making. He will also collaborate closely with TrueNoord's shareholder, Freshstream, on financial strategy and equity initiatives, ensuring the lessor remains well-positioned for future growth.

Donal Boylan

AJW Group has appointed **Donal Boylan** as President – Asia Pacific. This move reflects the company's strategic focus on strengthening its presence and accelerating growth across the region. With an impressive career spanning over 35 years in aerospace and defence, Boylan brings a wealth of industry knowledge and leadership experience to the role. His career includes senior engineering and commercial positions, such as founding partner at BCAP, board Vice Chairman at Vietjet Air JSC and CEO at Bohai Leasing (Hong Kong), which owns Avolon. Boylan also played a key role as co-founder of RBS Aviation Capital, now operating as SMBC Aviation Capital. His track record includes leading aircraft leasing firms through significant expansions and public listings, further demonstrating his expertise in the sector. In his new position, Boylan will spearhead strategic initiatives aimed at strengthening the AJW Group brand, enhancing customer relationships, and driving business development throughout the Asia Pacific market. Operating from AJW's Singapore office, he is tasked with advancing the company's objectives in one of the world's most dynamic aviation regions. AJW Group remains focused on innovation, service excellence and leadership within the global aviation industry. Boylan's appointment represents a significant step forward in reinforcing these values while expanding the Group's influence across Asia Pacific.

Stifel Financial Corp. has appointed **Jonathan Siegmann** as Managing Director of Equity Research, focusing on the aerospace and defence industry. He will be based in the firm's Boston office. Siegmann brings extensive experience in the sector, having most recently worked in the new space industry as Senior Vice President of Corporate Development at Terran Orbital Corporation. During his tenure, he led investor relations and corporate development, culminating in the company's sale to Lockheed Martin in 2024. Prior to this, Siegmann spent nearly 15 years at Fidelity Investments, where he served as a Portfolio Manager and Equity Research Analyst. He specialised in covering public and private aerospace, defence, and new space companies across North America. From 2015 to 2021, he managed the Select Defence & Aerospace Fund (FSDAX), further solidifying his expertise in the sector. His appointment strengthens Stifel's research capabilities in aerospace and defence, reflecting the firm's commitment to providing in-depth market insights and analysis.