

# MRO

Aerospace Magazine



## Building ethical standards

Partnerships drive sustainability in tech-ops

### Recharging Aviation

News, trends and forecast for 2022

### Ageing Gracefully

Mature engine resurgence post-pandemic

### Industry Interview

Louis Philippe Mallette  
AJW Technique



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## Building a sustainability roadmap for the MRO industry

**P**roviders of MRO and aviation aftermarket solutions will increasingly be looking at how to reduce the environmental footprint by building end-of-life repurposing into the products and services development process. Increasingly, airlines and aircraft operators will expect their suppliers, vendors and MRO partners to share their ethical values, so there will be a growing requirement to demonstrate some emphasis on meeting and understanding a customer's corporate sustainability strategies.

While MRO and the supply chain are not significant contributors to environmental issues in the aviation industry, several opportunities exist to further reduce its carbon footprint and environmental impact. In the current environment all stakeholders along the aviation value chain including MROs are increasingly aware of the environmental impacts created from their operations as many of our experts have highlighted.

An expert we spoke to from Alton Aviation mentioned that the concept of waste management is an important consideration for MRO organisations and airline maintenance divisions. As part of maintaining aircraft to highly regulated airworthiness standards, MROs and airline engineering and maintenance divisions manage many parts that are considered "repairable" and "expendable". More recently, the trend of Used Serviceable Material (USM) as a way to obtain lower cost material is in fact a sustainable practice, salvaging components from retired aircraft and recycling them for further life on in-service aircraft.

With increasing numbers of retired aircraft being torn down for their parts, aviation also needs to consider the impact of the residual materials that cannot be reused.

It's also encouraging to see OEMs like Airbus taking on the challenge by development the first sustainable aircraft "lifecycle" service centre in China. Airbus has signed an MoU with the city of Chengdu and Tarmac Aerosave that covers a range of activities from aircraft parking and storage, to maintenance, upgrades, conversions, dismantling and recycling services for various aircraft types.

In this issue, you can read more about the role strategic partnerships are playing to help drive sustainability initiatives within the industry!

Aircraft operators will expect their suppliers, vendors and MRO partners to share their ethical values.

*Photo: Embraer*



**Keith Mwanalushi**  
EDITOR



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## AerSale adds additional Boeing 757 passenger-to-freighter conversions at Goodyear, AZ MRO facility

AerSale, a leading global provider of aviation products and services, has inducted the first of its 24 owned Boeing 757-200 aircraft for passenger-to-freighter (P2F) conversion at its heavy-MRO centre in Goodyear, AZ. All 24 of these aircraft are powered by Rolls-Royce RB211-535 engines, making this fleet the narrow-body freighter of choice due to its attractive payload, range and cost of ownership characteristics. AerSale's fleet of 24 B757-200 aircraft are presently stored at its Roswell, New Mexico MRO facility. AerSale will ferry these aircraft to its Goodyear, AZ facility for the completion of P2F conversions.



Photo: AerSale Boeing 757

## Voyageur Aviation unveils new EXCL programme with launch customer Sabena technics

Voyageur Aviation, a subsidiary of Chorus Aviation, has entered into an agreement to provide on-site inventory, component repair and overhaul and detailed service level support for the De Havilland aircraft of Canada Dash 8-400 to Sabena technics (Sabena) through Voyageur's Exchange Component and Leasing Subscription (EXCL) programme. "We are pleased to launch our EXCL programme in Europe with a premier customer, Sabena," said Gary Gilbert, Vice President Avparts, Voyageur. "The expansion of this programme is an integral part of the continued growth of our Avparts division." Voyageur developed the EXCL programme to provide customers with more freedom, flexibility and control over maintenance costs with no minimums or maximums on flight hours.

## FL Technics partners with SETAERO to deliver tailor-made solutions for aircraft parts and materials

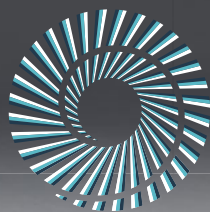
A new partnership agreement was signed between FL Technics, a global independent MRO service provider and SETAERO, a leading organization providing repair services for aircraft parts and composites. The scope of the agreement covers advanced maintenance and repair services integrated with a vast network of FL Technics' asset trading and management, forming a unique portfolio of tailor-made solutions to repair, supply and maintain airframes, flight surfaces and nacelles. All these components can be scaled and specialized based on clients' aircraft type, fleet size and geography of operations worldwide. This is a unique business case strengthening positions of both companies in the market and creating new opportunities to meet the ever-shifting needs of clients across the globe. Teams behind the milestone boast vast expertise in managing aircraft components and materials, to provide tailored services to the customers. Thus, as of the start of cooperation, the two companies will leverage owned and shared expertise as well as resources to deliver specialized off-the-shelf solutions and products for airlines and operators.

## Collins Aerospace selected as next-generation lavatory supplier for Boeing 737

Boeing has selected Collins Aerospace to be the long-term provider of next-generation lavatories for the Boeing 737 family of aircraft. The new lavatory incorporates a modular design and customization opportunities for trim, finish and lighting and includes touchless functionality, the latest micro-LED lighting technology and a centralized computing system to optimize the passenger experience, improve airline operability and help pave the way for future technology integration. The next-generation lavatory is expected to be available on new Boeing 737 airplanes beginning in 2025, with installation available in 12 separate airplane locations and several different lavatory variations to choose from, including an accessible lavatory for passengers of all mobilities.



*Photo: Collins Aerospace will provide next-generation lavatories for the Boeing 737 aircraft*



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## Spairliners and Collins Aerospace agree to new evacuation slide repair contract



Spairliners and Collins Aerospace Wroclaw agree to new evacuation slide repair contract  
Photo: Collins Aerospace

Collins Aerospace in Wroclaw, Poland has been awarded a first-time support agreement for evacuation slides by Spairliners, an independent component aftermarket service provider specialised in the support of the E-Jet aircraft family. Under the agreement, Collins will provide full test and inspection of evacuation systems, as well as repair, modification and replacement services. The operational and technical engineering support from the Collins Wroclaw facility offers efficient, fast and reliable services for all qualifying component and repair work, including access to loan and exchange units.

Benoît Rollier, Spairliners' Managing Director and CFO said this was part of a permanent search, within the MRO system, for the best solutions for customers. Spairliners' agreement with Collins will ensure the timely supply of such critical parts as evacuation slides.

## Austrian Airlines and Spairliners extend E-Jet component support contract

Spairliners, an independent component aftermarket service provider specialized in E-Jet aircraft family, and Austrian Airlines have signed a flight-hour agreement to extend the component support for Austrian Airline's E-Jet fleet. Austria's leading airline currently operates 17 Embraer E195 aircraft. The contract includes access to Spairliners' comprehensive component pool, repair services via its extensive maintenance network across the globe, logistics, as well as a dedicated on-site stock at Austrian Airline's home base at Vienna Airport. "Spairliners has proven to be a very reliable and competent partner to us, and we therefore continue to put our trust in them to provide full component support for our E-Jet fleet. We appreciate the flexible solutions and high level of collaboration they offered during the pandemic and look forward to working together with Spairliners in the future", says Wolfgang Dielacher, Head of Strategic Procurement Technics at Austrian Airlines.



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## Caerdav continues to deliver maintenance support for TUI Airways

TUI Airways has continued its relationship with Caerdav, a fully-approved and certified MRO and pilot training company based at the St. Athan – Cardiff Airport Aerospace Enterprise Zone in South Wales, UK, placing another four aircraft into the company's modern MRO facility to undergo a range of maintenance work. Following on from 40 aircraft that have been through Caerdav's St. Athan base since the two companies began working together in 2019, the latest work involves two Boeing 757 and two 767 aircraft that had reached the end of their current lease. Juergen Jerome, Outsourced Maintenance Manager at TUI Airline says: "We have developed an excellent relationship with Caerdav over the past two years – something that has been brought into even sharper focus during the COVID-19 pandemic. "The team has delivered storage and maintenance support for a number of aircraft while the industry was grounded, including an engine change and end-of-lease work. What keeps us coming back to St. Athan is Caerdav's quality, consistency and flexibility, with a skilled team that is able to shift focus when required – nothing is too much to ask." This flexibility comes to the fore when preparing aircraft for the end of their operational lease with TUI, allowing for any unforeseen maintenance jobs that form part of the process, allowing for a seamless transition back to the aircraft owners.



44 aircraft have now been through Caerdav's St. Athan base since the two companies began working together in 2019  
Photo: Caerdav

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## Czech Airlines Technics to provide services to Eurowings and Bees Airline



Bees Airline Boeing 737-800 aircraft

Photo: AirTeamImages

Czech Airlines Technics (CSAT) has expanded its customer portfolio. German air carrier Eurowings, that launched operations at its base at Václav Havel Airport Prague last November, now uses CSAT line maintenance services for its Airbus A320ceo- and A320neo-family aircraft based in Prague. Another carrier, Bees Airline, that has been operating its flights between Prague and Ukraine since October 2021, has ordered CSAT on-call line maintenance services for the airline's Boeing 737-800 aircraft. The new contract with Bees Airline contains the provision of ad hoc line maintenance services, i.e., on-call maintenance. Services provided by CSAT's team at Prague Airport comprises support and possible repairs before scheduled flights. Bees Airline has been flying to Prague since October 2021, operating the Odessa and Lviv routes using B787-800 aircraft. Czech Airlines Technics also provides similar services to EasyJet, KLM, Iberia, Aeroflot, Turkish Airlines, FlyDubai and others. Last year, the company performed 312 on-call assistances.

## Aerovista secures two A321-200PCF conversions with 321 Precision Conversions

321 Precision Conversions, a joint venture between Aircraft Transport Services Group (ATSG) and Precision Aircraft Solutions (PAS), has released that Dubai-based lessor Aerovista has secured two A321-200PCF conversions. The two aircraft, MSNs 1451 and 1503, are scheduled to induct during Q1 and Q2 2023. "We are excited to have Aerovista as our latest A321-200PCF customer and appreciate its confidence in Precision as a leader in large and narrow-body conversions," commented Zach Young, Director of Sales and Marketing, 321 Precision Conversions.

## GA Telesis' Flight Solutions Group and Honeywell Aerospace sign consignment partnership

GA Telesis (GAT) and Honeywell Aerospace have entered into a consignment partnership to provide global airlines with increased component availability and better access to parts through online portals. In addition, the new programme will ensure that airlines will receive components repaired and certified with genuine OEM parts. This new partnership will be managed by GAT's Flight Solutions Group (FSG) and bolstered by the Honeywell Aerospace Trading (HAT) division of Honeywell Aerospace, through which the two will create a new evolution of consignment management. "Our work with GA Telesis will maximize the strengths of both partners to provide a cost-effective solution to our customers. This is the end-to-end maintenance support solution that the global airline community needs in the current market," said Brian Davis, Vice President, Honeywell Aerospace.

## AJW Group and Honeywell announce distribution agreement for Boeing 737 MAX ADIRU

AJW Group and Honeywell, have announced a worldwide sole distributor agreement for the global sales of Air Data Inertial Reference Unit (ADIRU) PN HG2050BC04 for later generation B737NG and all current production B737MAX fleets of aircraft.

Under the terms of the agreement, AJW will distribute the new production build ADIRU, for all Boeing 737 MAX aircraft for all initial provisioning and purchasing requirements for operators and integrated service providers.

The collaboration includes AJW holding distribution inventory at their global facilities to meet the needs of worldwide Boeing 737 MAX operators, complementing the extensive inventory of Boeing parts and maintenance, repair and overhaul services that allow AJW to deliver complete support solutions to customers. In addition, AJW Technique, AJW Group's maintenance hub and an authorised repair facility for multiple Honeywell products, is lining up for capability extension to offer complete support on the Airbus ADIRU platform.



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# Aviation must be **recharged** for new opportunities



North America is the only region forecasted to be profitable in 2022.  
Photo: DFW

As the New Year begins, **AviTrader MRO** highlights some notable news and views as 2022 sets in; including some forecasts for the year ahead.

The start of 2022 was greeted with the arrival of COVID's latest variant "Omicron" which saw some governments and authorities globally reimpose travel restrictions and quarantine rules which came as another blow to the aviation industry. However, with mass vaccination campaigns ongoing around the world and with the variant stabilising in some regions, airline recovery is still expected to continue. However, analysts indicate that the hassle of testing will continue to dent demand.

## Cargo conversions

The start of the year saw conversions continue in an upward trajectory as the demand for converted freighters has reached record levels. 321 Precision Conversions announced that Aerovista had secured two A321-200PCF conversions. The two aircraft, MSNs 1451 and 1503 are scheduled to induct during the first and second quarters of 2023.

Aerovista is an aircraft leasing, trading and management service provider with its headquarters in Dubai. The company said the A321 P2F would provide an opportunity to break into the single-aisle freighter market

that has been dominated by the 737Fs.

Boeing also entered the New Year with strong demand for its 737 and 767 conversion programmes. In 2022, Boeing will add two 737-800BCF conversion lines at STAECO's facility in Jinan, China. The first new line will open in the first quarter of the year, with the second line expected to begin conversions by midyear. Once the two new lines are operational, STAECO will have

seven conversion lines dedicated to the 737-800BCF.

The 767-300BCF is also a strong performer; to date, it has more than 100 orders and commitments and late last year Boeing achieved a milestone with the 50th 767-300BCF delivery.

EFW and ST Engineering unveiled the very first A320P2F in December. After completing all test flights and obtaining the



Boeing will add two 737-800BCF conversion lines in China.  
Photo: Boeing



Supplemental Type Certificate from EASA, redelivering the world's first A320P2F is expected early 2022.

According to EFW, this freighter solution offers 21 tonnes of payload over 1.800nm and up to 2.560nm with 17 tonnes, making it a contender in the narrowbody freighter market in all the established general freight and express markets. Operators will also benefit from the A320/321P2F's fly-by-wire cockpit commonality with the A330 widebody family of passenger and freighter aircraft.

Avolon, the international aircraft leasing company, in its annual outlook paper for 2022 titled 'Rise Above' stated that freight accounted for more than a third of airline revenues in the past two years, a three-fold increase to its normal share. Seaport congestion, supply chain recovery, and e-commerce growth will continue to drive strong demand for air cargo. Another strong year for air cargo paired with continued passenger market improvements, may be enough to return the airline industry to profitability in 2022..

### The road to recovery

Avolon's 2022 outlook reveals that the pandemic survival has left airlines with \$651 billion of debt, an increase of \$220 billion since the crisis began. The airline industry is expected to incur over \$200 billion of net losses in the 2020 to 2022 period, erasing profits from the prior nine years. Just as operating margins are beginning to recover, rent and debt moratoria are coming to



an end. Despite a strong push to increase variable cost structures over the past two years, higher fixed costs threaten to delay airlines' return to profitability.

Jim Morrison, Head of Portfolio Management at Avolon said: "Aviation's resilience was demonstrated again in 2021, with airline operating losses halving to \$54 billion as airlines positioned themselves to capitalise on the pent-up demand evident in the market.

"Looking ahead, the strong economic growth forecast for 2022 will drive a further recovery in demand for air travel. While we are confident in recovery, it will be a gradual and uneven recovery that will vary region-by-region. In 2022, a strong recovery in international air traffic will follow the domestic air travel rebound of 2021, bouncing back to 70% of 2019-levels by year-end."

### New airlines

There are about 140 airline start-ups being tracked. A couple of new airlines were announced or started operations around the New Year. In Africa, Zambia Airways launched operations from a newly built hub at Kenneth Kaunda International Airport in Lusaka. The airline was established with the shareholder's agreement signed between the Government of Zambia through Industrial Development Corporation Limited (IDC) and Ethiopian Airlines Group where IDC owns 55% while Ethiopian owns 45% of the shares. Initial services are domestic links to Ndola and Livingstone using a damp

leased Bombardier Q-400 aircraft.

The Norwegian aviation authorities granted an air operator's certificate (AOC) to Norse Atlantic Airways, the carrier plans to start operations in spring 2022 on selected transatlantic flights to the U.S. The airline has taken delivery of a 787-9 aircraft leased from BOC Aviation.

Norse is planning to operate a fleet of 12 787-9s and three 787-8s, according to the carrier. The next deliveries will continue until April and the aircraft will be initially parked at Oslo Airport.

Hans Airways, the UK's newest airline, swept into the New Year with a Letter of Intent on its first Airbus A330-200 - MSN 950 - Air Europa formally operated the aircraft. The new airline plans to deploy the A330 on the popular UK-India route later this year.





Nathan Burkitt, Hans Airways' Director of Flight Operations and Crew Training and Hans Airways' CEO Satnam Saini

Hans Airways has applied to the UK Civil Aviation Authority for its Air Operator's Certificate and is hopeful of obtaining the status in time to start revenue service this summer. The airline will operate to secondary cities in India from Birmingham Airport. Cockpit and cabin crew commenced training in the UK straight into the new year on January 3.

### Some 2022 forecasts

In their recent market update online seminar, aviation advisory and intelligence firm IBA provided some forecast into the aviation landscape for 2022. In terms of passenger demand IBA indicates that airlines have taken on significant debt to have

the liquidity to survive. Balance sheets are stretched and airlines are under pressure to return to profitability.

North America is the only region forecasted to be profitable in 2022 but IBA warns there is a risk of further bankruptcies.

IBA also expects US carriers and European low-cost operators to outperform the market given their greater exposure to domestic or intra-EU travel with fewer travel restrictions. IBA expects transatlantic demand to fully recover by summer 2022 which is positive for the three major European network airline groups.

A notable risk factor mentioned in the forecast is that long-haul-low-cost will rely on stimulating the market through low

prices, yet their cost base is not materially lower than network carriers. Major network airlines with strong regional market share will have more pricing power.

Sustainable Aviation fuel (SAF) will continue to be a focus for the aviation industry as it strives to reduce carbon emissions and meet sustainability targets. IBA highlights that SAF is currently up to four-times more expensive than jet fuel, and the consequence is likely to have an impact on consumers. It is expected that fuel costs for airlines will rise as operators transition to SAF.

Experts at Avolon also say that demand for SAF is strong but supply is limited. Policies must be structured to ensure economics stack up against other renewable fuels. Blending mandates and production incentives will ensure long-term demand, enabling airlines to sign-up for offtake agreements. With revenues secured, projects will be financed, and construction started, growing SAF production capacity exponentially.

Net-zero targets imply emission avoidance will not be enough to decarbonise aviation. The global voluntary offset market could be worth \$50 billion by the end of the decade, up from \$300 million in 2018. The taskforce on Scaling Voluntary Carbon Markets is enabling this growth by crafting market standards to create certainty over the value of carbon credits and liquidity that creates price transparency. The price of mandated EU carbon permits will continue to rise as demand increases from re-opening economies while supply is squeezed.







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The aviation sector has called for wider adoption of decarbonisation objectives.  
*Photo: Avia Solutions Group*

## Industry collaboration key to **sustainability** in MRO operations

**Keith Mwanalushi** looks at how suppliers, vendors and MROs are living up to growing sustainability standards, as increasingly, aircraft operators will expect partners to share their ethical values.

Recently, the aviation sector has called for wider adoption of decarbonisation objectives and airlines, airports, aerospace manufacturers and air navigation service providers have laid out concrete solutions to the complex challenge of reaching net zero CO<sub>2</sub> emissions. And now several airlines have signed up to work towards reaching net-zero carbon emissions by 2050, aligning with the criteria and recommendations of the Science Based Targets initiative (SBTi).

Between 2009 to 2020, the aviation industry achieved an average of 1.5% improvement per year in fuel efficiency, notes Joshua Ng, Director at Alton Aviation Consultancy. He says a trip today will produce half the amount of CO<sub>2</sub> emissions when compared with the same trip three decades ago. "However,

innovative green solution development is a continuous journey, with numerous opportunities for further improvement," he states.



Joshua Ng, Director at Alton Aviation Consultancy

While MRO and the supply chain are not significant contributors to environmental issues in the aviation industry, Ng highlights that several opportunities exist to further reduce its carbon footprint and environmental impact. "Aviation uses materials including ozone, hexavalent chromium, lead, cadmium, or other heavy metals to build and maintain aircraft. Though usage is minimal, these materials emit harmful gases and particles that cause damage to the environment if not properly managed and appropriately disposed. Aviation is continuously seeking innovative ways to transition away from these harmful materials in favour of more environmentally friendly solutions."

At HAECO, sustainable development is playing an important role. In 2020,



**“Today, all stakeholders along the aviation value chain including MROs are increasingly aware of the environmental impacts created from their operations.”**

*Summit Chan, HAECO*

the company revisited its strategy and developed a series of 2030 targets that cover the three key pillars of people; (safety, diversity and inclusion), environment; (climate, water, and waste) and communities; (youth development, community support, and environmental protection)

“Today, all stakeholders along the aviation value chain including MROs are increasingly aware of the environmental impacts created from their operations,” says Summit Chan, Group Director Corporate Development who oversees HAECO sustainable development. He indicates that the HAECO group is one of the first global MROs committed to the science-based approach by setting an absolute carbon emissions reduction target to align with the 1.5degC pathway. HAECO Hong Kong, the group’s flagship business unit, has recently confirmed its support to the Hong Kong International Airport 2050 net-zero carbon pledge.

An example of an effort to reduce water consumption is the adoption of aircraft



Summit Chan, Group Director Corporate Development at HAECO

“dry wash” practices using biodegradable and non-toxic detergent at the group’s Hong Kong line maintenance operations saving 90% of the water normally used for each wash, which has potential to be scaled up at airframe operations at other geographical locations.

“In terms of waste management, improving diversion from landfills is our primary focus,” Chan adds. “The group’s operations in Hong Kong and Americas have made inroads in waste separation practices to increase recycling ratio, whilst operations in the Chinese Mainland are fully engaged in waste-to-energy initiatives.”

Elsewhere, Etihad Airways has been exploring digital solutions to further optimise its technical fleet and operations management and the UAE airline will be one of the first airlines to take advantage of AVIATAR’s innovative Fuel Analytics app from Lufthansa Technik’s digital operations suite. Focusing on digital and sustainable tech-ops, it covers the use of fuel analytics, condition monitoring and automated line maintenance

planning from the start.

At the Dubai Airshow, where the MoU with Lufthansa Technik was announced, Mohammad Al Bulooki, Chief Operating Officer of Etihad Aviation Group stated that for Etihad, better data and better insights into data meant better decisions.

“Etihad is constantly looking for partners who can provide ever-insightful perspectives using operational data. In working with Lufthansa Technik, Etihad will improve the efficiency of its operation, reduce fuel burn, reduce CO2 emissions, and reduce maintenance effort – all while maintaining the highest levels of safety performance and onboard product that Etihad is known for,” Al Bulooki said.

Etihad continued its path to sustainable flying with the signing of another MoU with Boeing in November last year to collaborate and improve sustainability through navigation, flight operations and airframe technologies – focused on the airline’s Boeing 787 fleet.

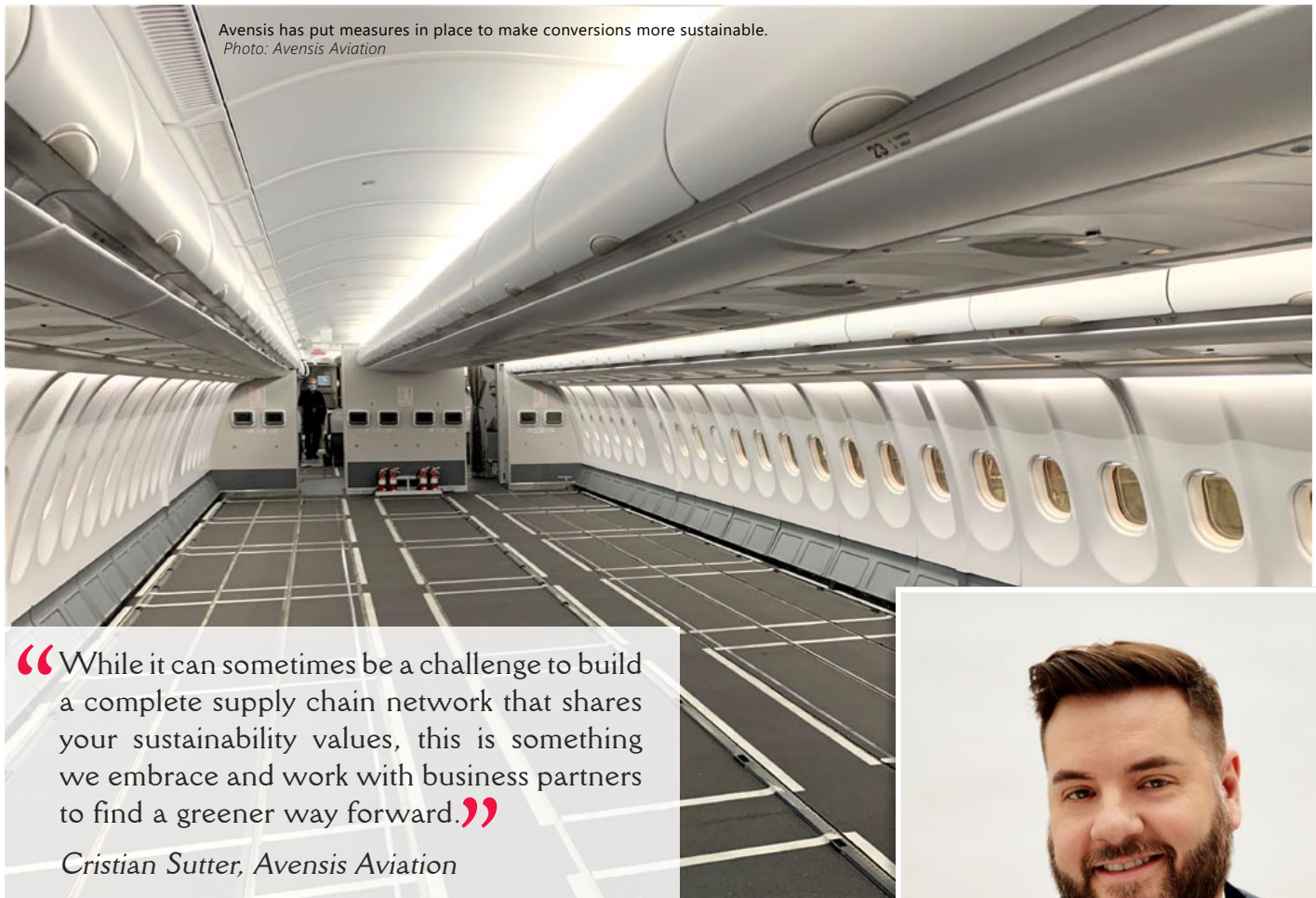
Etihad said the new agreement will focus on enhancing operations of its 787s with sustainable practices to reduce Etihad’s fuel use and emissions. In addition, company leaders said their partnership will provide an opportunity to validate concepts that could be scaled up to benefit the broader aviation industry.

Boeing and Etihad have previously collaborated using the airline’s commercial flights to test sustainable practices. Recently, Etihad reported that it operated its most sustainable flight ever with a 787-10, utilising learnings and efficiencies developed over the past two years to reduce carbon emissions in absolute terms compared to previous flights. Boeing provided navigation and flight tools to help avoid weather and turbulence and worked with other industry partners to optimise the departure, arrival and taxi to reduce fuel use throughout the flight.



Etihad and Boeing collaborate to improve sustainability focused on the airline’s Boeing 787 fleet.  
Photo: Etihad





### Converting to sustainability

Avensis Aviation has developed and delivered a range of advanced Passenger to Freighter (PTF) conversion solutions. Cristian Sutter, the Chief Executive at Avensis says one of their long-term goals is to ensure aircraft conversions become more sustainable. “Conversions are part of a wider holistic process, encompassing improvements of different kinds in each step of the product lifecycle.

“For example, repurposing an aircraft that still has several years of life ahead of it can be more efficient than manufacturing a whole new aircraft. The carbon footprint of building a new aircraft can be dramatically higher in comparison to reutilising one that has had its carbon footprint of its manufacture offset years ago.”

Avensis has committed to an ISO 14000 certified supply chain - a set of internationally recognised standards that ensures that all its suppliers have

sustainability targets high in their corporate agenda. “We use 100 percent recyclable materials as much as possible in every new part manufactured for our aircraft conversions and make sustainable choices from inception to completion,” Sutter reports.

Industry conferences have been discussing around how industry can reduce the cabin’s environmental footprint by building end of life repurposing into the products’ development process. Sutter acknowledges that the pandemic has made clear that the aviation industry needed to be more flexible to survive, as well as become more sustainable as whole. “No one would ever have predicted that a brand-new passenger aircraft would have its cabin removed, and start flying cargo in a temporary freighter configuration, prior to the COVID-19 pandemic.

“Our conversion programmes are repurposing as many cabin components as possible, to simplify things from



Cristian Sutter, CEO at Avensis Aviation

an operational standpoint, including crew training and maintenance, and to streamline the ability to reverse the conversions back to passenger configuration should demand increase in the future. This gives airlines greater operational flexibility and efficiency with their fleets,” he states.

Avensis has built in sustainable practices and greener choices from its launch in October 2020, not only regarding engineering and design philosophy, but also in terms of the supply



Etihad and Lufthansa Technik focusing on digital and sustainable tech-ops.  
Photo: LHT

chain, choice of materials, and the way the business is run.

Sutter confirms that Avensis is working closely with partners to align its sustainability culture as a key part of the business relationships with them. "While it can sometimes be a challenge to build a complete supply chain network that shares your sustainability values, this is something we embrace and work with business partners to find a greener way forward."

### Collaboration and challenges

Back at HAECO, they believe continuous stakeholder engagement is crucial in driving sustainable development. In February 2021, HAECO established a new centralised commercial team to expand capabilities, services, and product offerings. "The aim is to improve customer focus and advocacy, while supplementing HAECO's existing global customer support network. From a sustainable development perspective, it also facilitates in understanding the customer's corporate sustainable

development strategies and challenges," says Chan.

In May 2021, HAECO also revamped its materiality assessment approach and completed a detailed review by an independent consultant. The results allow HAECO to have an updated view of the expectations and requirements from its key stakeholders on their corporate sustainability strategies and challenges.

Key ethical values were covered in the material assessment and Chan reports that the results show that diversity and inclusion was a highly ranked topic from stakeholders. Chan: "HAECO understands the importance of eliminating bias. A 5-year action plan was put in place with specific attention to awareness building, training, and diversity and inclusion policies and practices."

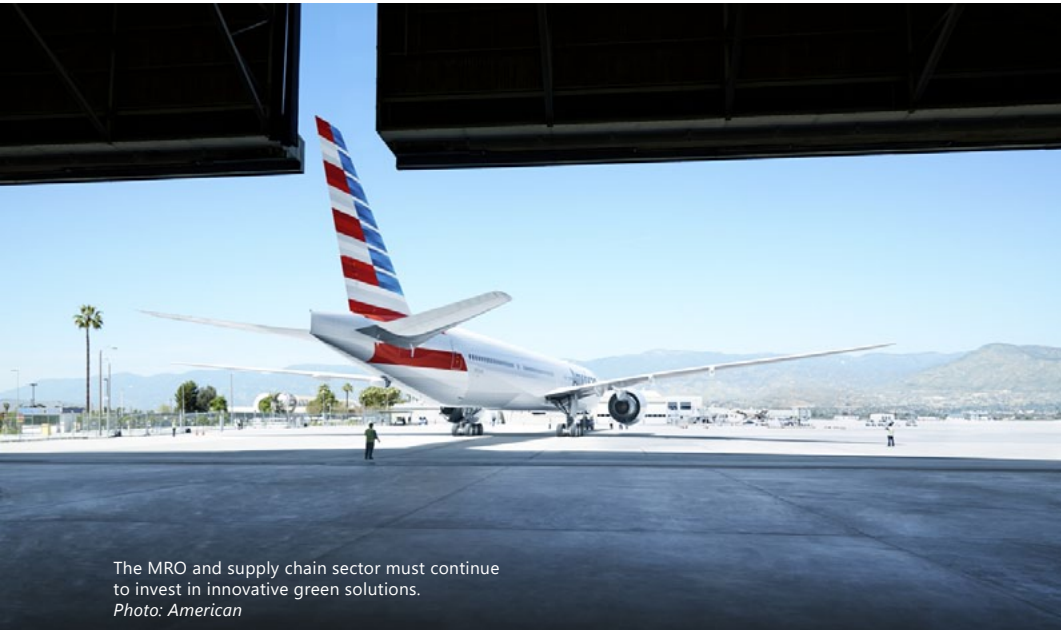
Driving greener practices in the MRO operations and the aviation supply chain can only be achieved by working jointly with the various stakeholders and authorities. A vast majority of HAECO's carbon emissions are from purchased

electricity and jet fuel consumption during engine testing. Chan explains that reaching decarbonisation relies heavily on local power supplier's greener energy mix where HAECO does not have complete control. HAECO is committed to scale-up Solar PV on-site installation at its operations in Hong Kong, the Chinese Mainland, and the Americas in the next 2 to 3 years. "We are also trialling IoT technology to monitor energy efficiency and to identify electricity saving opportunities with a more advanced approach."

HAECO is also exploring and working with stakeholders to adopt the use of Sustainable Aviation Fuel (SAF) by 2030. "This requires local governments, authorities, and industry players taking a strong lead to overcome supply challenges for the long run," Chan adds.

In fact, aviation intelligence and advisory firm IBA recently indicated that despite the excitement over electric air taxis or hydrogen aircraft, in reality we can expect that these new technologies





relief funds with sustainable initiatives and impact. For example, the French government has provided COVID-19 relief funding for French companies to support research into carbon neutral aircraft and investments in carbon reduction technology."

Overall, Ng concludes saying a carbon neutral, sustainable aviation industry will not be easy and will require significant investment over the coming decades. "With the aviation industry under a strong spotlight as the world increasingly prioritises environmental sustainability, the MRO and supply chain sector must continue to invest in innovative green solutions."

will likely only account for a fraction of carbon capture but likely to be mostly achieved by using SAF. However, IBA highlights that SAF is currently up to four-times more expensive than jet fuel and fuel costs for airlines will rise as operators transition to SAF.

While many large MROs and manufacturers have the resources and strategic bandwidth required to address the industry's sustainability challenges, Ng from Alton Aviation highlights the need to recognise the smaller players in the aviation supply chain, smaller independent MROs and manufacturers whose resources are constrained and therefore unable to prioritise environmental sustainability. "Many of these smaller businesses were already struggling prior to the pandemic with significant competitive pressures exerted on them by high-tier suppliers."

Ng says given the devastating impact of the pandemic to customer airlines worldwide, they are simply prioritising survival and for these critically important members of the aviation supply chain, governments must step up and provide financial incentives aimed at reducing their carbon footprint. "That said, some governments are stepping in to support aviation by linking COVID-19



Aviation only accounted for 2.4% of global CO2 emissions in 2019 according to IBA.

Photo: Chaz Taylor



# **SIMPLICITY** **FOR THE** **WIN**

**WHEELS AND BRAKES**  
**IT'S THAT SIMPLE**



Most accelerated retirements were for four-engine aircraft like the 747.  
Photo: Ascent Aviation Services



## MROs back up mature engine resurgence

As aviation starts to recover from the pandemic, **Keith Mwanalushi** examines if there is an impact on supply and demand for shop visits for older engines and the subsequent cost of maintenance.

**A**s IATA defines it, technical ageing is the inherent effect of age on the aircraft over time and each sub-assembly will age depending on its own flight hours and cycles.

During the pandemic, we saw some mature engines go into storage while others were torn down but as David Green, VP and GM for CF34 and CFM56 at StandardAero points out, the impact of the fleet retirements announced during 2021 and 2022 varies by engine family. He says many of the accelerated retirements announced were focused on 'four-holers' and widebody twinjets, though a number of decisions did affect the CRJ200 and E190 fleets.

"As CFM International itself has pointed out, retirements of Boeing 737NG [CFM56-7B] platforms during the



David Green, VP and GM for CF34 and CFM56 at StandardAero

pandemic have actually lagged behind prior years, and the rapid recovery in regional aircraft operations seen in many parts of the world – not least North America – has shielded much of the regional aircraft market from the worst effects of the pandemic, including CF34-8 powered platforms such as the E175 and CRJ700," Green notes.

Mike Cazaz, CEO at Werner Aero Services observes that discretionary spend on engine maintenance has been deferred, delayed, or declined altogether, impacted largely by availability of green time engines to fly the lower utilised fleet. "The exception to this is where engines have been covered under a service agreement particularly with the OEMs where operators have pushed to fly these units and ensure their benefits remain. If

discretionary spend is required operators are pushing to do minimal worksopes, for instance hospital visits.”

Speaking on the CRJ100/200 family’s gradual retirement from mainline operation Green says it is a trend that precedes the pandemic, driven in large part by U.S. scope clauses, and the preference by airlines for regional jets in the 70-plus seat category. That said, he says the CRJ100/200 continues to do sterling work in support of the U.S. government’s Essential Air Service (EAS) scheme, serving smaller airports across the nation, and the type also continues to enjoy popularity in the freighter conversion market.

Green further explains that the reduction in CF34-3B1 flight hours, and the increasing availability of green time assets, will inevitably have an impact on demand for shop visits, and the long-term impact of this trend has already been seen through the exit from the market of several traditional MRO providers for the type. “StandardAero however will continue to support CF34-3 operators, minimising maintenance costs for customers through our extensive in-house component repair capabilities, which allow us to adopt a ‘repair not replace’ philosophy for many of the engine’s components.” Green tells.



Mike Cazaz ,CEO at Werner Aero Services

**“These customers are naturally demanding the latest part standards offered by the OEMs including condition and trace to be high.”**

*Simon Walker, AerFin*



Simon Walker, VP Asset Management, AerFin

StandardAero will also continue to support the fleet of over 1,000 CF34-3 powered Challenger 600s and 800s in service worldwide, with its CF34 MRO services complemented by airframe and avionics capabilities on the type, as well as the global fleet of CF34-8C and -8E powerplants.

Most shop visits seen and supported by AerFin during the pandemic have been for the newer variants of current engine options such as the V2500 Select One or CFM TI engines. “These customers are naturally demanding the latest part standards offered by the OEMs including condition [number of repairs] and trace to be high. This seems to be the case even on shorter build engines that will be parted out or scrapped at the next removal,” says Simon Walker, VP Asset Management at AerFin.

“This seem to be the case even on shorter build engines that will be parted out or scrapped at the next removal,”

Walker comments. In addition, to mitigate SV costs he adds that operators are also looking at procuring modules to keep costs down which in turn reduces the time the engine is off wing and potential lease engine costs.

At SR Technics they have seen negligible impact on supply and demand for shop visits for older engines and the cost of maintenance saying 2020 retirements averaged the numbers of previous years and 2021 seemed to show numbers lower than expected, below the average in fact.

“It seems airlines and lessors prefer to wait and see how traffic and residual values recover,” states Fritz Beiner – VP Procurement at SR Technics. “Most of the aircraft retired in 2020 and 2021 were already slated for retirement.”

However, Beiner does observe currently significantly less availability of tier one material on PW4000-94, and not much better on CFM56.





EGT margin deterioration is largely driven by hardware distress.  
Photo: Ascent Aviation Services



Most MROs will continue to support legacy platforms.  
Photo: FL Technics

### Pushing up the EGT margins

Undoubtedly, the highest exhaust gas temperature (EGT) margins will be found on new engines, so assumingly it is critical for ageing engines to have a maintenance cycle that will achieve the highest margins possible.

Green from StandardAero explains that EGT margin deterioration is largely driven by hardware distress, such as increased tip clearances, seal leakage, airfoil erosion and compressor fouling – “As such, any maintenance activities which address these areas will help to recover and maintain EGT margins. While the replacement of expired LLPs will provide the largest recovery in performance, operators are also able to protect their margins through less substantial worksopes such as regular compressor washes, which help to keep the gas path clean by removing contaminants from the engine.”

Caroline Vandedrinck – SVP Business Development at SR Technics adds that the most effective way to regain EGT margin is a so-called core performance restoration, where HPC, combustion chamber, and HPT are overhauled. “For ageing engines, it is beneficial to additionally replace older airfoils with new parts. For example, HPC airfoils are subject to erosion. Overhauling HPC airfoils does not necessarily allow dimensionally

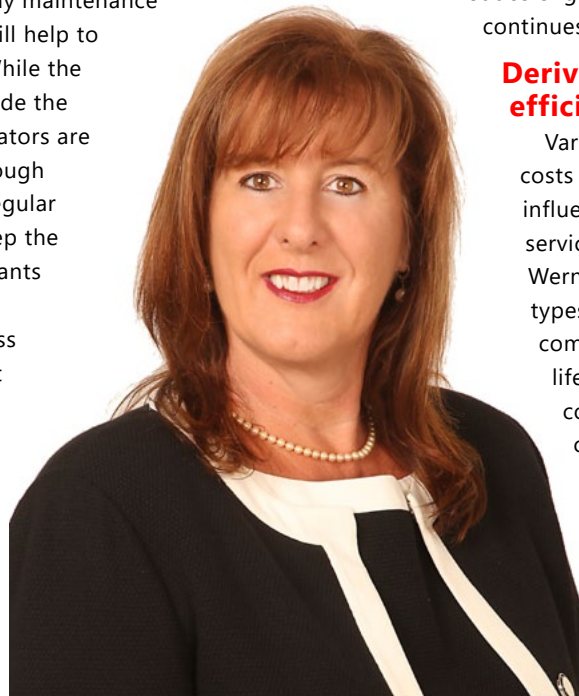
restoring them to new part condition,” Vandedrinck stresses.

During a core performance restoration shop visit, at SR Technics they also focus on peripheral areas such as gearboxes, interface to low pressure compressor / low pressure turbine and accessories. “This is because, besides a good EGT margin, we believe that the engine reliability is crucial. SR Technics provides additional workscope not only to restore performance and related EGT margin but also to optimise and reduce engines’ carbon emissions,” Vandedrinck continues.

### Deriving maintenance cost efficiencies

Various parameters influence maintenance costs so going forward, its likely market influences could impact cost efficiencies for services on older engine types. Cazaz from Werner Aero Services says on certain engine types the use of module swapping has come more pronounced to build longer life engines – “this trend will probably continue as retired engine assets continue to be utilised to fly the fleet. Useful green time will continue to be the greatest contributor to asset value as aircraft and engines are retired,” he anticipates.

At StandardAero they stress that the utilisation of a ‘repair not replace’ maintenance philosophy, backed up by a suitably comprehensive portfolio of



Caroline Vandedrinck – Senior Vice President Business Development, SR Technics

**“Workscopes have always been a point of discussion in the past, but more than ever, maintenance costs can be reduced by applying clever workscoping.”**

*Fritz Beiner, SR Technics*



Fritz Beiner – Vice President Procurement at SR Technics

in-house component repair capabilities, is a proven way to achieve cost efficiencies for operators. Green says an initiative-taking asset management strategy may also complement this approach, by allowing the MRO to use used serviceable material (USM) where appropriate. He adds that 3D manufacturing also has some potential to help further reduce maintenance costs, especially for parts with long lead times. Finally, the utilisation of engine health monitoring (EHM) could also help operators to avoid expensive maintenance events by catching and correcting issues early.

Walker from AerFin notes that although options have been on the table for many years, operators including lessors seem to be accommodating more module swaps and using the special procedure workscope to keep inspection levels at sensible levels and lower costs allowing another run albeit it being a short run instead of a belt and braces approach to satisfy contracts or work scope planning guide (WSPG).

Meanwhile, at SR Technics, they are pulling all the stops to reduce clients' costs of ownership and are focusing on some key areas. "Workscopes have always been a point of discussion in the past, but

more than ever, maintenance costs can be reduced by applying clever workscoping.

There are many ways of tailoring a work package to match the exact expected utility of the engine post-maintenance, which can be explored and optimised if the asset owner, the operator, and the MRO provider work together," says Beiner.

He further explains that within the scope of work, the supply chain plays a significant role. Beiner adds: Typical retailers' supply chains are only one-way, from supplier to end customer. They cannot cater to new progressive ideas like circular economy. In the MRO industry, we have been doing this for decades."

It looks certain that operators are seeking to monetise assets at the end of their utility and MRO providers can regenerate and manage this complex material flow. "We see that the rising availability of such assets will bring maintenance costs efficiencies," Beiner states.

Interestingly, SR Technics has developed a solution called BRAVO (Beyond Residual Asset Value Optimisation), and Beiner reports that the overwhelmingly positive response from the market has proven its relevance.



Some discretionary spend on engine maintenance has been deferred,

*Photo: Caerdav*



# Q & A

INDUSTRY INTERVIEW

## In the hot seat...

Louis Philippe Mallette  
SVP Operations, AJW Technique



Louis Philippe Mallette, SVP Operations.  
All photos: AJW Technique

### What attracted you to this industry?

From an early age I was interested in aerospace – attracted by technology and a career that combines engineering with the opportunity to travel the world. Flying takes away the constraints that cars and boats have in terms of travel and the more I discovered about the aerospace sector the more I loved it.

For the last 18 years I have travelled the world improving operations for companies in China, Japan, Northern Ireland, Morocco, Mexico, United States and Taiwan. I joined AJW Technique last year as SVP Operations, with a view to taking the business to the next level at an exciting time of expansion and diversification.

I grew up just 10 minutes away from the AJW Technique facility in Montreal and following my 18-year international

adventure, I was ready to come home to Canada, so the role at Technique felt like it was meant to be.

AJW Technique has a great reputation and is a well-known name in the sector, the Group is well-known for the quality of work and the support it gives to airlines - it has a long history and should be proud of that. It has adapted well over the last 90 years to changing markets and that is a massive strength.

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

AJW Technique is the central hub for AJW Group's component maintenance, repair and overhaul service. We work directly with AJWA Group and global customers to improve component reliability, maximise time on-wing, and reduce direct maintenance costs. We employ a pool of highly skilled, licensed engineers and

technicians, and are in a prime position to deliver world-class solutions.

I manage both the Montreal facility and the new centre of excellence for Battery MRO facility, AJW Technique Europe, at the Group's Headquarters in the UK. The Montreal facilities are extremely impressive and the work culture outstanding, it is not surprising that last year the facility was named one of Montreal's Top Employers.

Our focus for the start of 2022 is ensuring that our wealth of knowledge and experience is harnessed and made more transferable. AJW Technique is going through a period of growth and diversification, building on its considerable success and knowledgebase. I want to ensure that people are given the winning conditions so that we can be confident on the next phase of growth in our tenth year of operations.



Technicians at AJW Technique, Montreal.

### **Are you seeing much recovery in the market for MRO services?**

We see growth in all our business lines – leasing, engines, parts, exchanges, maintenance, and contracted services scope. As a market-leading integrator, we can provide a one-stop shop for all customers worldwide, with the agility to support one aircraft to three hundred aircraft fleets with bespoke or end-to-end supply chain solutions.

Volumes have picked up exponentially over the last few months, nearing 2019 levels for some airline customers. There has been a shift in the repairs market with more mechanical units than avionics work, and an increase of in-service narrow body fleet like the Airbus 320s and in the widebody fleet like the Boeing 787 versus other platforms that have gone into early retirement or repurposed to cargo aircraft. Our key customers are sharing with us their forecasted flight plans, providing a very confident outlook for the year ahead.

In response to the demands of our local European customers, last year we expanded AJW Technique into a franchise with the launch of AJW Technique Europe. It is operating as a battery shop and will expand into a series of other capabilities to complement the repair services offered at AJW Technique in Canada.

Last year we also added AJW Technique

Interiors product lines to our capability list, helping airlines who need to refit cabins, replace seat covering and carpets by reducing costs and supplying a superior alternative.

### **At AJW, how do you ensure consistency in terms of repair quality for aircraft components?**

We consider our technicians the real commodity of our business, most of the technicians here at AJW Technique have over 25 years of experience in the maintenance, repair and overhaul world dating back from the days of Aveos. It is their legacy knowledge that is unmatched and that keeps our customers' confident that their units are in good hands.

At AJW Technique, our foundation for training is what sets us apart. We focus on both Quality Control and Quality Assurance. Through our On-The-Job training programme, we cover process tools and hundreds of hours on aircraft components to ensure that the strict standards are met and surpassed. Our training programme is Transport Canada approved and allows every qualified technician to receive an airworthiness certificate on every unit on which they have worked. Technicians generally start on the simpler components and then progress to the more complex units as they gain experience.

On a monthly basis, our training committee (which oversees the certification of all new qualifications) reviews performance levels and provides feedback and recommendations on evolving the training programme to ensure that AJW is always ahead of industry requirements.

We focus on continuous improvement so technicians creatively streamline the repair process on the units they specialise in to reduce the price to the customer and decrease turnaround time.

### **What has been the market response to the new AJW Technique Interiors business?**

AJW Technique Interiors is a specialist facility specialising in aircraft interiors, innovative materials for seat covers and the manufacturer and supply of headrest covers, life vest pouches and carpet kitting. We see AJW Technique Interiors as a complimentary service, giving our customers one-stop-shop with design, development, testing and production all housed under one roof to drive cost savings and efficiencies. Alongside AJW Technique Europe and AJW Technique Montreal, this venture allows us to offer global maintenance services across all regional and commodity needs.

AJW Technique Interiors can furnish you with a fully tailored solution for the design, development and production of replacement seat covers in the revolutionary new synthetic leather designed for aviation by the automotive industry, SkyLeather®. We also offer seat cover manufacturing, carpet kitting, headrest covers and life vest pouches from our European facilities in central Europe, with automotive quality and unparalleled savings driven by economies of scale. These innovative products and the associated cost savings have been met with great interest from the airlines we are in discussions with and plan to share exciting news early this year on our launch customer!

### **Did you see a slowdown in the seat cover manufacturing sector because of the pandemic?**

No, quite the opposite, the weight-savings, eco-friendly material and durability make SkyLeather, an ingenious alternate



to reconstructed or hide leather, an extremely cost competitive product. And our seat cover cut and sew services, for material or leather, is highly competitively priced so we are able to offer considerable cost savings to airlines for all seat cover materials and processes.

## How is the digital push progressing at AJW Technique?

We are proud of our achievements over the past two years, from dashboards that closely monitor fleet recoveries by customer and by platform ensuring our operations are synchronised with flying patterns as well as customer-facing real-time monitoring dashboards and tracking tools, which make internal productivity fully transparent and the customer experience seamless from end to end.

To maximise our technicians' component touch-time, we invested in tools to enable a digital shop floor, such as productivity trackers, automated payables and receivables, credit control automation, turnaround time gaming systems, performance management dashboards, piece parts provisioning models, and dynamic pricing algorithms. We have also tested asset location tracking using RFID and Bluetooth technology as a proof of concept. This allows our technicians to



AJW technique workshop floor.

have a full view of high value assets at their fingertips facilitating traceability and workflow management. Beyond RFID technology, we have also invested in hands-free systems and collaborated on predictive maintenance discoveries.

There continues to be huge advancements in digital products that will streamline legacy processes known to the aviation industry for decades. Such as more mainstream solutions for predictive maintenance, remote auditing from aviation authorities, streamlined request for proposal processes which are

in most cases subcontracted to consulting partners to manage due to the high analytical and administrative nature.

We predict that more aviation businesses, MROs, OEMs, airlines and brokers alike will come together to develop more digital products that fix some core industry issues as opposed to creating siloed solutions that solve bits of their four walls. Most part sales businesses have gone fully digital as well. AJW has launched a series of online platforms such as AJW® eventory our on-line inventory store for example which automates parts trading but also flows work into AJW Technique by securing repairs of as-removed parts.

## What are your priorities for 2022?

For a company that was established 90 years ago in 1932 our business model has always been entrepreneurial, flexible and agile, which has been fundamental to our continued success over the past two years and we see as pertinent for the coming year.

Our priorities will continue to focus on continuous improvement and service delivery excellence, ramping up and growing AJW from strength to strength in its 90th year alongside AJW Technique in its 10th. Operators are looking for choice, flexibility and customisation which as an independent company are the strengths of AJW. The future for the MRO aftermarket is looking strong, and we are setting ourselves up for success.



AJW Technique Europe is operating as a battery shop and will expand into other capabilities.

## »»»»→ on the move



Paul Dwyer (l), Dan Cavanagh (r)

Jackson Square Aviation (JSA), a full-service commercial aircraft lessor, has announced that **Paul Dwyer** has transitioned his role as JSA's Chief Risk Officer ahead of his upcoming retirement. **Dan Cavanagh** has succeeded Dwyer as Chief Risk Officer, effective January 1, 2022. Dwyer will remain at JSA until his formal retirement on February 28, 2022.



Richard Hough

Engine Lease Finance Corporation (ELFC) has announced the appointment of **Richard Hough** to the position of Chief Operating Officer. Hough joined the company in 1997 and has held several positions of increasing responsibility within the technical department. In 2011 he was promoted to the position of Executive Vice President Technical and in 2013 also assumed responsibility for the company's IT function. Before joining ELFC in 1997 he spent seven years with Shannon Aerospace where he trained as an aircraft engineer. Hough is succeeded by **Aoife Fennell** who takes up the role of Executive Vice President and Chief Technical Officer. Fennell joined ELFC in 2001 as an engineering manager and for the last 20 years she has undertaken increasing levels of responsibility within the technical function of the company as Vice President and most recently as Senior Vice President with responsibility for the EMEA region.

CDB Aviation, a wholly owned Irish subsidiary of China Development Bank Financial Leasing (CDB Leasing), has appointed **Michelle Wu** as Head of Commercial, Greater China. Wu joins CDB Aviation from GECAS, where she spent a more than two-decades career holding various executive roles focused on executing marketing efforts and nurturing



Michelle Wu

key airline relationships in the region. Most recently, she was Senior Vice President Marketing Commercial & Regional Manager China, leading the lease placement, extension, and sale and leaseback of more than 350 new and used aircraft and freighters. Prior to GECAS, Wu was Deputy Director of Leasing Office at Civil Aviation Administration of China (CAAC), where she arranged aircraft financings for CAAC affiliate airlines and, in her regulatory capacity, participated in drafting the related aviation laws and regulations in China.



Anthony Spaulding

Magellan Aviation Group has announced **Anthony Spaulding's** return to the organization. He will be joining the Magellan team as Executive Vice President to support interim President & CEO **Michimoto "Mitch" Asano**. Spaulding brings to Magellan over 35 years of experience in US Naval Aviation, Airline MRO, Engine OEM and Engine Leasing with globally recognized organizations. Mitch Asano states, "We're very excited for Anthony's return. His depth of experience, knowledge and management capabilities will complement our growing team of seasoned executives and the future growth of Magellan."



Pamela Fletcher

Delta will welcome a Chief Sustainability Officer in 2022, continuing its commitment to build a sustainable future for air travel. **Pamela Fletcher** will join Delta as Senior Vice President and Chief Sustainability Officer and will join the Delta Leadership Committee as the airline industry's only C-Suite level CSO. Pam will report directly to the CEO.

CDB Aviation, a wholly owned Irish subsidiary of China Development Bank Financial Leasing (CDB Leasing), has appointed **Michelle Wu** as Head of Commercial, Greater China. Wu joins CDB Aviation from GECAS, where she spent a more than two-decades career holding various executive roles focused on executing marketing efforts and nurturing





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