

MRO

Aerospace Magazine



Spare Parts: Planning amid supply chain disruptions

Materials

Supplying a dwindling B737 Classic market

MRO Training

Adopting new technologies in MRO processes

MAAS Aviation

In the 'hot seat' with CEO, Jan van Engelen

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Capacity building and new investments drive growth at Iberia Maintenance

My travels over the last month took me to one of my favourite cities in Europe, Madrid. I had the pleasure of visiting Iberia and checking out some of their latest innovations in the inflight experience space and also a tour of their aircraft maintenance and engine repair shop at their La Muñoz facility.

I had the opportunity to speak to senior directors at Iberia Maintenance, to analyse the challenges that the industry is facing and how Iberia Maintenance is preparing for the legacy and new engines to coexist in the years to come. Demand for the CFM56 and V2500 platforms have bounced back. It was interesting to learn how Iberia Maintenance used internal resources and clever strategies to keep the business running during the pandemic and keep TATs to a minimum. Demand is strong and the company is hiring in addition to manufacturing tooling. Interestingly, they have observed changes to customer behaviours with many going for smaller worksopes, so Iberia are having to adapt to those needs.

There is a buzz around new engine capabilities coming into the facility. Currently there is a GTF training engine in the shop, with full services expected to begin by the end of this year. Work on the LEAP platform is expected from 2025, so these are exciting times for the evolution of the engine business.

The heavy maintenance Hangar 6 was full with a mix of Iberia and British Airways narrowbodies undergoing overhaul, and an A330 was being readied for redelivery to the customer. Iberia Maintenance goes through a stringent tender process for business from other IAG Group airlines so there is a strong emphasis on capacity building, efficiency in all processes and continuous improvement in order to win those contracts.

We have a detailed report from my visit to Iberia Maintenance in the August edition so look out for that, and if you are interested in hosting a facility visit, please get in touch.

Keith Mwanalushi
EDITOR



Iberia's heavy maintenance facility in Madrid.
© Keith Mwanalushi

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Patrick Delapierre and AFIKLM E&M



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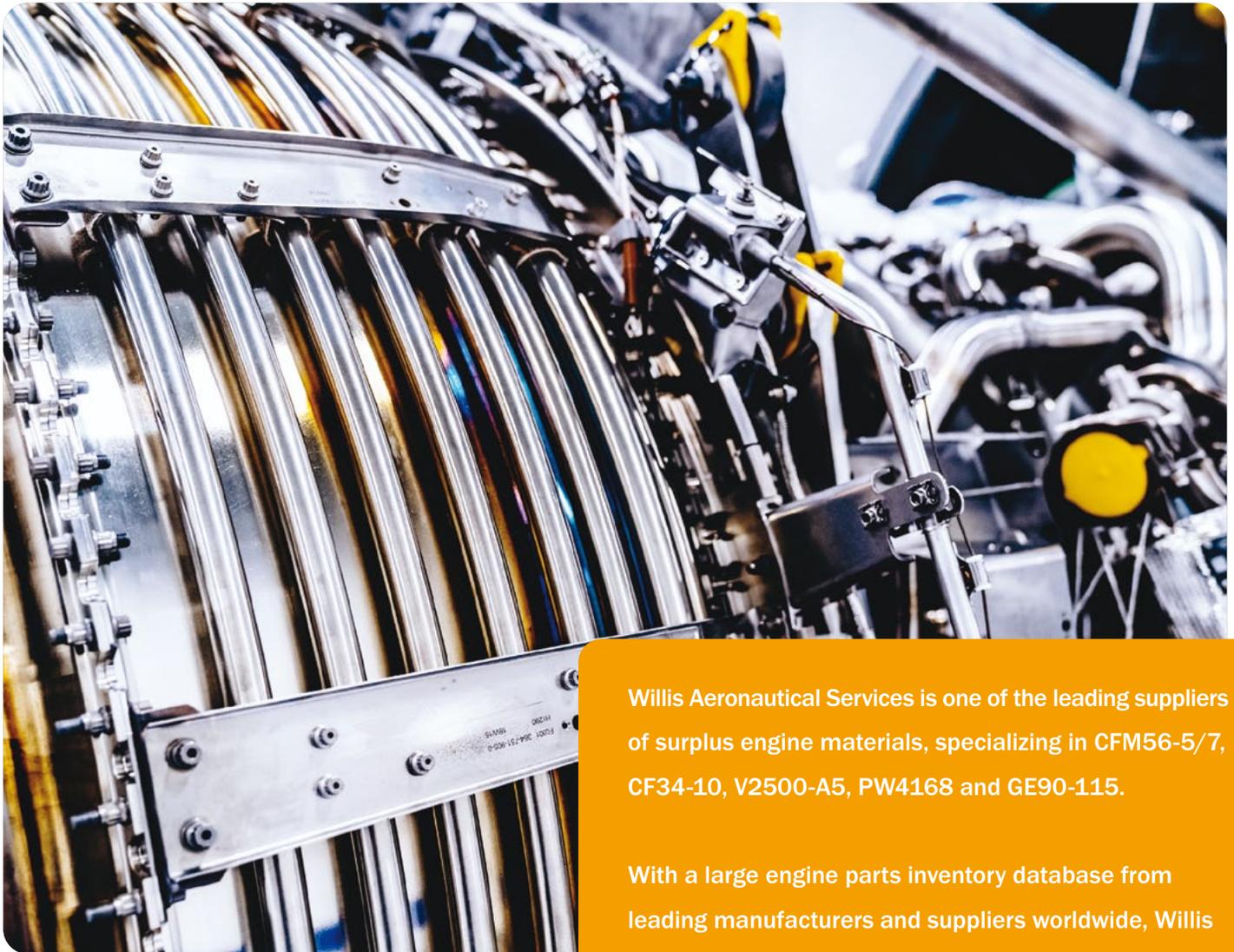
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GKN Aerospace and Materialise sign LoI



Additively manufactured wingtip for Eviation's Alice, the all-electric aircraft
© Materialise

GKN Aerospace, a prominent leader in aerospace technology, and Materialise, a global pioneer in 3-D printing solutions, have signed a Letter of Intent (LOI) to advance the research, design, and production of polymer additively manufactured (AM) parts for the aviation industry. This LOI, signed at the Paris Air Show, extends their successful collaboration. Materialise has been supplying polymer AM to GKN Aerospace since 2015 and played a vital role in delivering the additively manufactured wingtip for Eviation's Alice, the all-electric aircraft, which had its inaugural flight in 2022. The joint effort between GKN Aerospace and Materialise aims to expedite the certification of the AM process and explore the possibilities of additive production for functional and flight-critical aerostructures, capitalising on the unique manufacturing advantages it offers. The collaboration covers a wide range of activities, from prototyping to producing functional and flight-critical parts, aligning with the emerging sustainability trends and opportunities in the industry. The partnership will particularly focus on electric vertical take-off and landing (eVTOL) aircraft. The collaboration between GKN Aerospace and Materialise has already achieved significant milestones in AM, including the successful delivery and certification of multiple AM parts that are currently in use.

Storm Aviation and Norse Atlantic sign new five-year contract



Storm Aviation will perform maintenance services for Norse's B787 fleet © Storm Aviation

Storm Aviation, part of FL Technics, has signed a five-year line maintenance contract with Norse Atlantic (Norse) to perform maintenance services at London-Gatwick Airport. The newly signed agreement sees Storm Aviation perform line maintenance services on Norse's B787 fleet of Trent 1000-powered aircraft. Storm Aviation is a leading international line maintenance, base maintenance and training provider, operating 24-hour comprehensive support for commercial aircraft operators. Offering fully customised services in base AOG support, workshop facilities, aircraft modification programs and tooling hire & calibration laboratory. Line maintenance Sales Manager Chris Tubby announced, "We are delighted to be entering into a new long-term agreement supporting Norse Atlantic, facilitating their growth aspirations with first-class maintenance support services at London-Gatwick." VP Technical at Norse Atlantic UK Kevin Dudley stated, "This long-term agreement is a sign of the confidence we have in Storm Aviation as our maintenance partners, supporting our operation at London-Gatwick as we continue to build our presence at this strategically important hub." Storm Aviation is part of Avia Solutions Group, the leading aviation business group, operating a fleet of 180 passenger and cargo aircraft worldwide. The group provides a range of aviation services including ACMI, MRO, pilot and crew training, ground handling, as well as a variety of associated services.



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New Airbus Wing Technology Development Centre (WTDC) opens at Filton, UK



Inside Airbus' new WTDC

© Airbus

Airbus has opened a new Wing Technology Development Centre (WTDC) at its Filton, UK site to build and test demonstrators for a range of programmes and research projects. This will help speed up the design, build and testing of wings for next generation aircraft, by using the latest technology and world-leading demonstrators to further improve

the performance of its wings. Besides engine optimisation, having wings longer, leaner and lighter is one of the best opportunities to improve fuel efficiency, reduce CO2 and it all helps to work towards the aviation industry's ambition to achieve net-zero carbon emissions by 2050. Airbus Head of Filton site and Wing of Tomorrow Programme Sue Partridge

explained, "The new Wing Technology Development Centre will help us to ground our research in practicality. A key element of how we deliver technology for next generation aircraft wings is through Wing of Tomorrow (WoT), our largest research and technology programme led by the team in the UK. "Last week, we achieved a critical milestone in the programme when our second wing demonstrator was completed by the team in Broughton, Wales and delivered to the WTDC. Here it will be prepared for structural testing in our Aerospace Integrated Research and Technology Centre (AIRTeC)." The WoT programme allows Airbus to explore new manufacturing and assembly technologies so future generations can continue to benefit from flying. The WTDC adds to Airbus' existing research and technology footprint in the UK, including the Advanced Manufacturing Research Centre (AMRC) in Broughton and both the ZEROe Development Centre and Aerospace Integrated Research & Test Centre (AIRTeC) at its Filton site. Since 2014, Airbus has been awarded £117 million by the Aerospace Technology Institute for Wing of Tomorrow related research.

VAS Aero Services expands inventory with acquisition of two Boeing 737-700 aircraft

VAS Aero Services, a renowned global leader in aviation logistics and aftermarket services, has acquired two additional B737-700 aircraft. These aircraft will undergo teardown processes for efficient parts harvesting and subsequent marketing. The disassembly of both aircraft will be managed by VAS at Marana, AZ, with the process set to commence in July 2023. With this latest acquisition, VAS has now secured a total of 27 aircraft within the past 12 months. The Used

Serviceable Materials (USM) parts derived from these teardowns will enhance VAS's extensive aftermarket parts inventory. These parts will be distributed through the company's vast network of worldwide airline operators and MRO (Maintenance, Repair, and Overhaul) customers. As one of the industry's leading provider of narrow-body aircraft transition management services, VAS has built a strong reputation as a trusted partner for airlines and lessors seeking to

maximize the value of their retiring assets. Tommy Hughes, the CEO of VAS, expressed the company's commitment to meeting the needs of their customers. He stated, "The additional two Boeing aircraft added to our already substantial inventory ensures that we can offer superior, highly sought-after USM parts to our customers globally. This further solidifies our position as the premier provider of USM parts and solutions in the global aviation marketplace."



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Daher acquires France's AAA – takes on worldwide leadership role in aerospace sector



Daher has completed the acquisition of AAA

© Daher

French industrial conglomerate Daher has announced the closing of its acquisition of fellow French enterprise Assistance Aéronautique et Aérospatiale (AAA). Both highly ranked in their individual fields of industrial services for civil and defense aerospace, the merger will see Daher become better able to respond to the sector's needs in the context of sharp increases in production rates. AAA provides complementary solutions to those of Daher – such as the assembly and installation of aerostructures, systems and engines; flight line services; maintenance; as well as industrialisation and quality support. Daher is a long-standing and well-recognised player in cabin installation activities, as well as completion/outstanding work. Daher's goal is to expand on what has made AAA successful for over 30 years by capitalising on its ability to train a highly qualified workforce, both for its own purposes and also for its customers. In the dual context of the aerospace industry's increased production rates and recruitment tensions, training/certification of talent is critical for safeguarding aircraft production. With the acquisition of AAA, Daher automatically becomes the benchmark in industrial services for France, while also taking on a global leadership position, thus strengthening its presence in the aerospace value chain. Benefitting from its business model based on four highly complementary activities – aircraft manufacturing, manufacturing, manufacturing services, and logistics – the Group is capable of supporting its customers with end-to-end capabilities, not just in the aerospace industry concentration where the company is currently present, but in new regions of France and internationally. The overall management of AAA is now entrusted to Daher's Cédric Eloy as the CEO, assisted by Deputy General Manager Sylvain Ruellé, who also is a Daher employee.

Honeywell reaches agreement with SaaB Technology to acquire its HUD assets



Honeywell brings Heads-Up Displays to aircraft cockpits

© Honeywell

Phoenix, Arizona-based Honeywell Aerospace (Honeywell) has announced it is to acquire SaaB Technology's heads-up-display (HUD) assets. This will allow Honeywell to subsequently partner with SaaB Technology (SaaB) to develop and improve its HUD product offerings. The benefit of a HUD is that it gives a pilot greater situational awareness, particularly at night-time and also in bad weather. With the addition of SaaB's HUD assets, Honeywell will be able to strengthen its already comprehensive end-to-end avionics and safety portfolio. The Saab HUD will be integrated into the American company's new, integrated flight deck which has an intuitive user interface and highly scalable design – the Honeywell Anthem. The deck will also include state-of-the-art characteristics such as wide field-of-view, high-image resolution, low system latency and lower weight. It will also be made available for Honeywell Primus Epic flight decks and standalone retrofit solutions. "Heads-up displays are an essential offering for the aviation industry and have been known to reduce pilot workload, increase situational awareness, improve access to airports with Enhanced Flight Vision System and enhance safety," said Vipul Gupta, Vice President and General Manager, Avionics, Honeywell Aerospace. "The addition of HUDs as part of our wider avionics offerings will provide our customers in business aviation, air transport and defense segment a great safety tool that can be particularly useful during take-off and landing, which are typically the most crucial parts of any flight."

Sichuan Airlines chooses RECARO seats for new A319neo aircraft



CL4710 seats will be installed on Sichuan Airlines' A319neo aircraft © RECARO

RECARO Aircraft Seating (RECARO) will outfit Sichuan Airlines' brand-new fleet of Airbus aircraft with CL4710 seats. A total of 80 pax of the CL4710 will be installed in the business-class cabin of ten A319neo aircraft. First delivery of the aircraft will take place in May 2024. The RECARO CL4710 delivers advanced comfort on short- and medium-haul flights. The seat's ergonomic design, individually adjustable calf rest, footbar, stowages and privacy features all contribute to an enhanced flight experience. RECARO has a long-term relationship with Sichuan Airlines, built on customer service and high-quality seating solutions. Sichuan is the largest airline in western China, has a fleet of nearly 200 aircraft and flies to more than 90 destinations.

Swiss-AS, a leading provider of aviation software solutions, has recently announced a strategic partnership with **Croatia Airlines**, the national carrier of Croatia. This collaboration marks an important step towards optimizing and streamlining the airline's maintenance and engineering operations through the implementation of AMOS, a comprehensive software solution. In line with Croatia Airlines' unwavering commitment to upholding the highest standards of safety, efficiency, and reliability, the decision to adopt the AMOS Airline/MRO Edition comes after a thorough evaluation of various industry-leading solutions.



Swiss-AS partners with Croatia Airlines to enhance maintenance and engineering operations © Swiss-AS

By harnessing the advanced features and functionalities of the AMOS software, Croatia Airlines aims to enhance its maintenance processes and overall operational efficiency. Renowned for its robustness and industry-leading capabilities, AMOS is widely recognised as a top-notch solution in the aviation maintenance domain. With the implementation of this state-of-the-art software, Croatia Airlines will be empowered to effectively manage its fleet's maintenance, engineering, and logistics processes, leading to reduced downtime and increased aircraft availability. The comprehensive functionality offered by the AMOS software suite will support Croatia Airlines' strategic fleet renewal plans, which include transitioning to an all-new A220 fleet by 2026. This powerful software will provide the airline with capabilities for seamless aircraft phase-in and out, facilitating a smooth transition and optimising fleet operations. Moreover, the user-friendly interface and intuitive workflows of the AMOS software will foster enhanced productivity and collaboration among Croatia Airlines' maintenance and engineering teams. By promoting efficient communication and streamlined workflows, the software will further augment the airline's operational efficiency. As an added advantage, Croatia Airlines is already utilizing AVIATAR, Lufthansa Technik's independent and open digital platform for the aviation industry. The seamless integration of AMOS and AVIATAR, forming part of the new Digital Tech Ops Ecosystem, will enable Croatia Airlines to leverage the combined benefits of both systems, thereby optimizing their digital operations. Through this strategic partnership and the implementation of AMOS, Swiss-AS and Croatia Airlines are poised to elevate the airline's maintenance and engineering operations, driving efficiency, safety, and reliability to new heights.



BCT Aviation Maintenance has opted for Rusada's Envision software solution © Rusada

Base and line maintenance provider, **BCT Aviation Maintenance** (BCT), has signed up for **Rusada's** maintenance software solution ENVISION. BCT offer a wide range of maintenance services from both their headquarters at East Midlands Airport (EMA) and line stations across the UK and Ireland. This includes base and line maintenance, livery and paint support and end-of-lease services for airlines and operators worldwide. Until now, BCT relied on a system of spreadsheets and paper records to manage their operations, but the lack of cross-department visibility this provided led to them seeking a fully digitised solution. Rusada's in-house implementation specialists will now begin the deployment of ENVISION's Base & Line MRO, Inventory Management, Human Resources, and Quality & Safety modules with an aim to go live later this year.

The background image shows a male technician in a red polo shirt, black cap, and safety glasses working on a large aircraft engine. He is holding a flashlight and looking intently at the engine components. The scene is set in a maintenance hangar with yellow overhead structures.

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USM demands spark growing investment in **teardowns**, at Magnetic MRO



Magnetic MRO completed the teardown of the B737-400 in four days.
© Laura Pedjak

Support services for Boeing 737 Classics will naturally fade out in the coming years, but a market still exists to support the in-service cargo fleet still flying. Magnetic MRO recently parted out a -400 aircraft.

By Keith Mwanalushi

In early June, Magnetic MRO announced the acquisition of a B737-400 for part out - the specific aircraft, according to data from airfleets.net was a 1993 build CFM56-3 aircraft last operated by Hak Air of Nigeria. Previous operators include Asiana, Hainan Airlines and Batavia and prior to teardown, the aircraft was in storage for seven years.

Airina Kacienaite - Krake, Head of Trading Department at Magnetic Trading (Part of Magnetic Group) tells *AviTrader MRO* that B737CL projects require significant evaluation and are not as certain, especially in generating substantial profits. She says the demand for teardowns of B737 Classic aircraft is declining due to a low number of flying aircraft, resulting in lower asset

prices that may not cover the teardown costs - "Now, investing in B737CL teardown projects with the expectation of substantial profits in three to five years may not be advisable. However, there could be a future scenario with a lack of parts for this aircraft type, leading to a significant price increase," she states.

The B737 teardown was a massive undertaking for Magnetic and took just four days to part out using nearly every department within the organisation to execute the project in a timely manner and that was a significant achievement considering teardowns are not a major element of the Magnetic business but Kacienaite - Krake sees plenty of potential in the future. "With the aviation industry recovering and flight numbers returning to pre-Covid levels, there is a growing

“Anticipating trends in pricing and availability of USM parts, particularly for older 737 models, is crucial for strategic decision-making and ensuring optimal cost management in ageing aircraft maintenance.”

Airina Kacienaite - Krake, Head of Trading Department at Magnetic Trading



The front section is being retrofitted into a flight simulator for pilot training.

© Magnetic MRO

integrating USM into their maintenance strategies. "Firstly, we should understand that both cost of parts and time play a significant role in maintenance," comments Kacienaite – Krake. She says it's quite usual for new OEM parts to have a delivery time of more than 120 days, which greatly impacts maintenance time and USM parts are often more readily available, reducing maintenance downtime.

"Secondly, if taken directly from the cost side, USM parts are cheaper, ranging from 30 to 80% compared to the value of new OEM parts. Therefore, integrating USM into maintenance strategies helps reduce maintenance costs in several ways," adds Kacienaite – Krake.

In terms of pricing trends for USM on the classic B737 platforms, Kacienaite – Krake observes that currently, prices are decreasing, "but we may have a situation

when the parts become unavailable in the market, and prices may increase significantly due to supply and demand dynamics."

She says when considering the demand for teardowns and the use of USM parts, it is important to note the potential impact of aircraft retirements. "As older aircraft are phased out of service, there may be an increased need for teardowns to meet the demand for spare parts, especially from operators looking for cost-effective solutions."

In terms of the teardown business, Magnetic Group recognises the importance of adapting to market demands and closely monitors the evolving aviation industry and remains open to exploring opportunities as the market dynamics change. "Anticipating trends in pricing and availability of USM parts, particularly for older 737 models, is crucial for strategic decision-making and ensuring optimal cost management in ageing aircraft maintenance," Kacienaite – Krake highlights.

In the meantime, Magnetic MRO indicates that components from the recent teardown range from small components to bulky items which must be transported by sea, and gradually shipped to operators including those facing with AOG situations and retrofitted into a flight simulator for pilot training.

demand for aircraft parts, which makes the teardown business model promising. As of now, aviation is reaching 2019 numbers, so it is normal that the need for parts is also increasing in parallel."

Classic feedstock for the B737 Classics to feed the cargo conversions market is nearing its end with some spotty activity remaining. In March, Aeronautical Engineers, Inc. (AEI) announced it had received ETOPS 120 approval from the Federal Aviation Administration (FAA) for its B737-400/-300SF freighter conversion. This approval validated the AEI Freighter Conversion STC on ETOPS approved 737-400 and 737-300 aircraft.

AEI indicated that the latest ETOPS approval on those B737-400SF and B737-300SF freighters would open additional markets for leasing and cargo airlines and provides them with additional operational flexibility. It was further indicated that the ETOPS approval was driven by a Boeing AFM update that affected the existing ETOPS operations. AEI obtained this validation at the request of Airwork NZ in order to allow their current fleet to keep flying ETOPS missions but did not expect to see a large demand for additional ETOPS requests.

Around 27 B737 Classics were converted to cargo in 2020, and approximately 40 converted in 2021 and post pandemic that rate will have cooled off.

In addition to supporting demands for used serviceable material (USM) for the cargo market, several airlines are



Airina Kacienaite - Krake,
Head of Trading Department at Magnetic Trading



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Building technologies that support MRO training programmes

Technologies like AR can enhance the capabilities of aircraft maintenance procedures.
© VALLAIR

There is a growing momentum to adopt new technologies in training processes in the MRO sector and perhaps, the incoming innovations will also help overcome the supply chain and labour challenges the industry faces.

By Keith Mwanalushi

There is no denying that technology is making an impact on the aviation industry. Training programmes within MRO service companies are being improved to enhance their efficiency, effectiveness, and accessibility.

At SetnaiO and their growing MRO business, Setnix, they place great importance on leveraging cutting-edge technologies to enhance the quality of the products and services they are providing to customers around the world. Chief Operating Officer, Michael Coughlin says his primary focus involves exploring diverse applications of these technologies to propel the businesses forward.

“It’s an exciting time in the MRO industry with the advent of numerous advanced technologies and tools,” states Coughlin. “I feel like a kid in a candy store with so much at my fingertips and seeing more emerging each day.

By effectively harnessing these resources, we can maximise the value we deliver to our customers, which remains our top priority.”

The growth of e-learning and online platforms, data analytics, and machine learning has transformed the delivery of MRO training programmes and the likes of AJW are embracing this.

“We’re using innovative ways to operate and have built a tablet application for technicians in our MRO facility in Montreal,” declares Craig Macpherson, the CIO at AJW Group. He says this application involves the technicians’ workflow allowing them to maximise component touch time. “We aim to optimise and change the way



Michael Coughlin, Chief Operating Officer at SetnaiO

“These technologies are poised to play a significant role in revolutionising MRO training methodologies, providing immersive and interactive experiences that enhance learning outcomes.”

Michael Coughlin, SetnaiO

we work, to create more opportunities for employment in digital development and management, for technicians and engineers, and in other areas of the workforce. We're putting great effort into adopting technology while still leading people, engaging them, and changing the culture to make it more cohesive and open-minded."

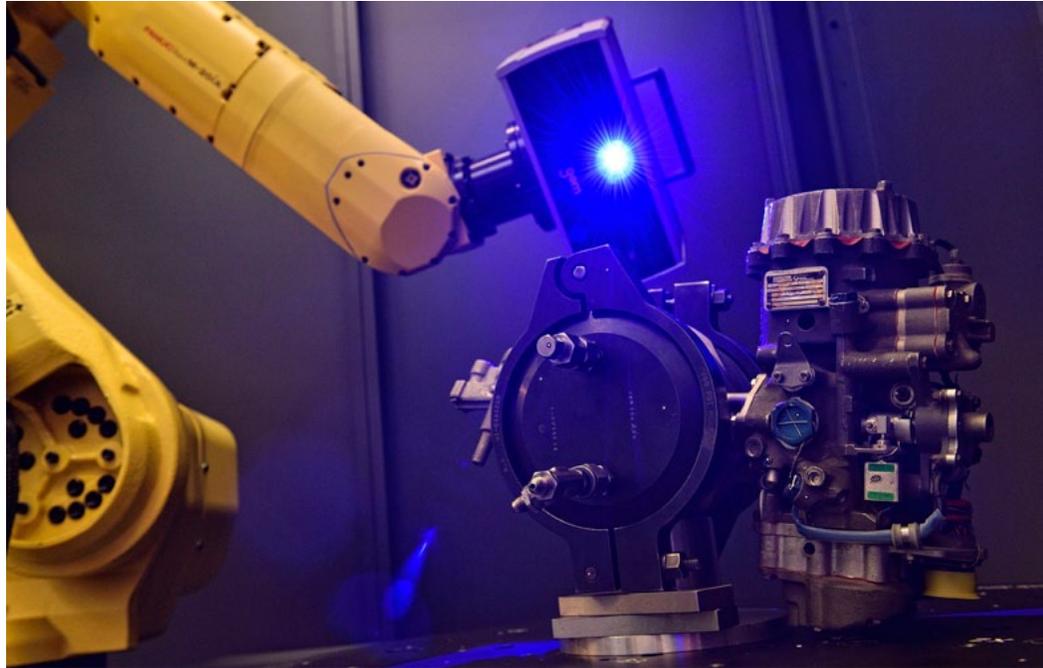


Craig Macpherson, Chief Information Officer, AJW

As a business, Macpherson says AJW is learning and embracing innovative technology and bringing the workforce on this journey while managing the change.

"It's nearly impossible to be successful at your job without knowing how to use technology that supports it. You can argue this is true for any job, not just within MRO," remarks Erkki Brakmann, CEO and Founder of SkySelect.

Brakmann feels technology is the way forward for the MRO industry and its push to digitise and specifically, AI plays which is playing a vital role in helping



Innovation in technology will help mitigate workforce shortages.

© Patrick Delapierre and AFIKLM E&M

teams navigate the labour shortage by optimising efficiency.

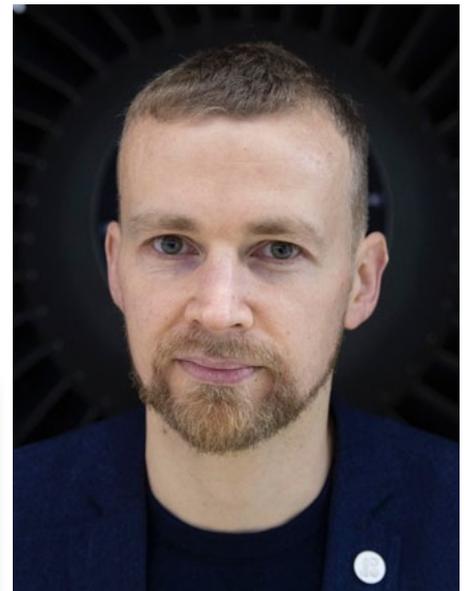
"For example, if we talk about spare parts, AI can drastically shorten the procurement process. As soon as a mechanic has identified a part that is needed, AI can identify the most probable vendors and book the purchase in a matter of minutes. In today's world, procuring a part can easily take days as the requirement passes from one person to another.

"And when surges or dips in demand occur, it's much easier to scale your technology-backed operations up or down compared to always balancing your labour force with your workload," Brakmann tells.

Brakmann emphasises that the MRO sector will not only benefit from efficiency gains, but also from cost savings, which are always important in the cost-conscious aviation industry. "By leveraging

benefits such as supply forecasting, procurement teams can save up to 20% on the costs of their parts by being proactive and optimising orders based on time and geographic locations."

The third problem that Brakmann mentions is that technology clears up the opaque supply chain and by moving from manual offline processes to digital tools and workflows, everything becomes more transparent, making it easier to track, measure and optimise the supply chain.



Erkki Brakmann, CEO & Founder at SkySelect

“ There are countless examples in the aviation industry of organisations investing in large scale technology projects, costing millions of dollars, only for the projects to never get off the ground. ”

Erkki Brakmann, SkySelect

Thierry Lefevre, Head of Technical Training Centre at Air France Industries KLM Engineering & Maintenance argues that while new technologies will contribute to addressing the workforce shortfall, they will not solve the lack of skilled labour because of difficulties in recruiting. He says developments such as the use of IT tools to optimise existing synergies within organisations will have to be considered in the design of training so that users are properly trained beforehand.

"A mix of distance for theory and face-to-face practice is now an increasingly popular solution that seems to meet the needs, especially for staff posted abroad," notes Lefevre. "Another permanent objective is to improve the quality of training content by producing training courses using more attractive and interactive teaching materials, integrating upstream the use of new technologies and effectively mixing theory and practical exercises both in the room through VR and on the aircraft," he adds.

Certainly, AI, AR, and blockchain technologies have the potential to significantly alleviate the workforce shortage in aircraft maintenance. At Vallair, they are convinced these technologies offer a range of innovative solutions that can enhance efficiency, productivity, and accuracy in the maintenance process,



Armel Jezequel, Corporate Officer – VALLAIR



Digital training innovations are increasingly vital in training programmes.

© AFI KLM E&M

ultimately reducing the burden on human resources.

"AI will help us to anticipate effectively enabling us ultimately to engineer out defects before they happen," notes Armel Jezequel, Corporate Officer at VALLAIR. "If we can use AI to automate various tasks and processes that traditionally require human intervention but where the person adds little value, it will release the workforce to focus on those areas where they do."

Jezequel says with AI-powered predictive analytics and machine learning algorithms, aircraft systems can be continuously monitored, enabling early detection of potential issues and thereby enable proactive maintenance preventing breakdowns and minimising downtime.

AI can also be used to streamline routine maintenance checks by analysing historical data and generating insights on optimal maintenance schedules.

On AR technologies, Jezequel explains how it can enhance the capabilities of aircraft maintenance personnel by overlaying digital information onto the real-world environment. "Maintenance technicians can wear AR headsets or use handheld devices to access technical manuals, diagrams, and step-by-step instructions. This reduces the time spent referencing manuals or seeking assistance, allowing technicians to perform tasks more quickly and accurately."

Coughlin from SetnaiO adds that adaptive learning stands out as a vital technology that can leverage AI to customise training programmes based on

individuals' strengths, weaknesses, and preferred learning styles. "By doing so, we can ensure that each person receives the most relevant and effective training possible, maximising their potential."

Furthermore, Coughlin feels augmented and virtual reality is an exciting tool that has already found applications in the military, and as technicians transition from the armed forces to the commercial sector, and it's only natural to witness the adaptation of this technology across the workforce. He says these technologies are poised to play a significant role in revolutionising MRO training methodologies, providing immersive and interactive experiences that enhance learning outcomes.

Coughlin continues: "Another area poised for growth is predictive maintenance programmes. Major industry players like Boeing have already entered this space, leveraging advanced data analytics to optimise maintenance programmes. As the optimisation efforts continue to evolve, MRO providers will be able to achieve more with their workforce, effectively streamlining operations and preventing bottlenecks."

At AJW Technique in Montreal, they are implementing the use of machine learning and artificial intelligence in their predictive maintenance console, as well as an industry blockchain pilot for parts trace and provenance, RFID to manage assets and tooling with real-time turnaround time and location precision, paperless workflow apps to ensure maximum efficiency and no waste at every stage of process, digital



VR has become a major component to improve the quality and efficiency of training.

© AFI KLM E&M

twins in engineering to simulate models and effects, robotics testing, and more,” Macpherson lists.

As far as the skills labour shortage goes, Macpherson observes the aviation industry continues to face a skilled workforce shortfall. “This is in part due to the retirement of older mechanics and the accelerated growth of the airline and aircraft manufacturing industries post-pandemic. At the height of Covid, there was a reduction in aerospace employees being trained and this shortage put pressure on the aviation supply chain. This led to longer lead times for maintenance and repairs, which in turn affected flight schedules.”

The impact has been felt throughout the supply chain, through parts shortages and delayed lead times, Macpherson notes.

Building new technologies into training programmes

The industry is seeing growing popularity in areas like data visualisation, automation and digital inspections, and other similar technologies but some industry observers have questioned if there is enough capacity in the market to build such technologies to support training programmes.

“Whether the market can adopt these technologies, depends on whether businesses have the capacity to implement them within their current technical resources, whether they have the availability of skilled professionals to implement them, and whether they have the means to invest in research and development,” responds Macpherson.

Additionally, he feels the need for collaboration between aviation industry stakeholders, technology companies, and educational institutions to leverage existing expertise and resources to develop and implement these technologies effectively – “These partnerships can also provide opportunities for knowledge sharing and innovation, however, the process is slow,” Macpherson adds.

At AFIKLM E&M, they regularly see new solutions that have required major IT developments appearing on the market, such as virtual aircraft designed for educational purposes but developed from the technical specifications of aircraft. “These make it possible to have autonomous means to carry out training in virtual mode without the need to have an aircraft or a slot in simulators that are often already saturated by the needs of pilots,” states Lefevre.

He adds: “The problem that arises with the use of new technologies in training is more in the field of accompaniment and anticipation of difficulties, both of use and appropriation, that will meet instructors who will have to adapt their habits and review the animation of their training.

“In addition, the arrival of AI should have a significant impact in all areas of training, whether for the establishment of specifications or the production of training without forgetting the design.”

When it comes to technology growth, a very important aspect is technological adoption, instead of simply implementing technology, refers Brakmann from

SkySelect. “One of the key factors to help with adoption is how intuitive the solutions are to use, and this is where tech providers have a lot to improve. The easier you make the usage, the less training it requires and the faster the adoption — it is all interconnected.”

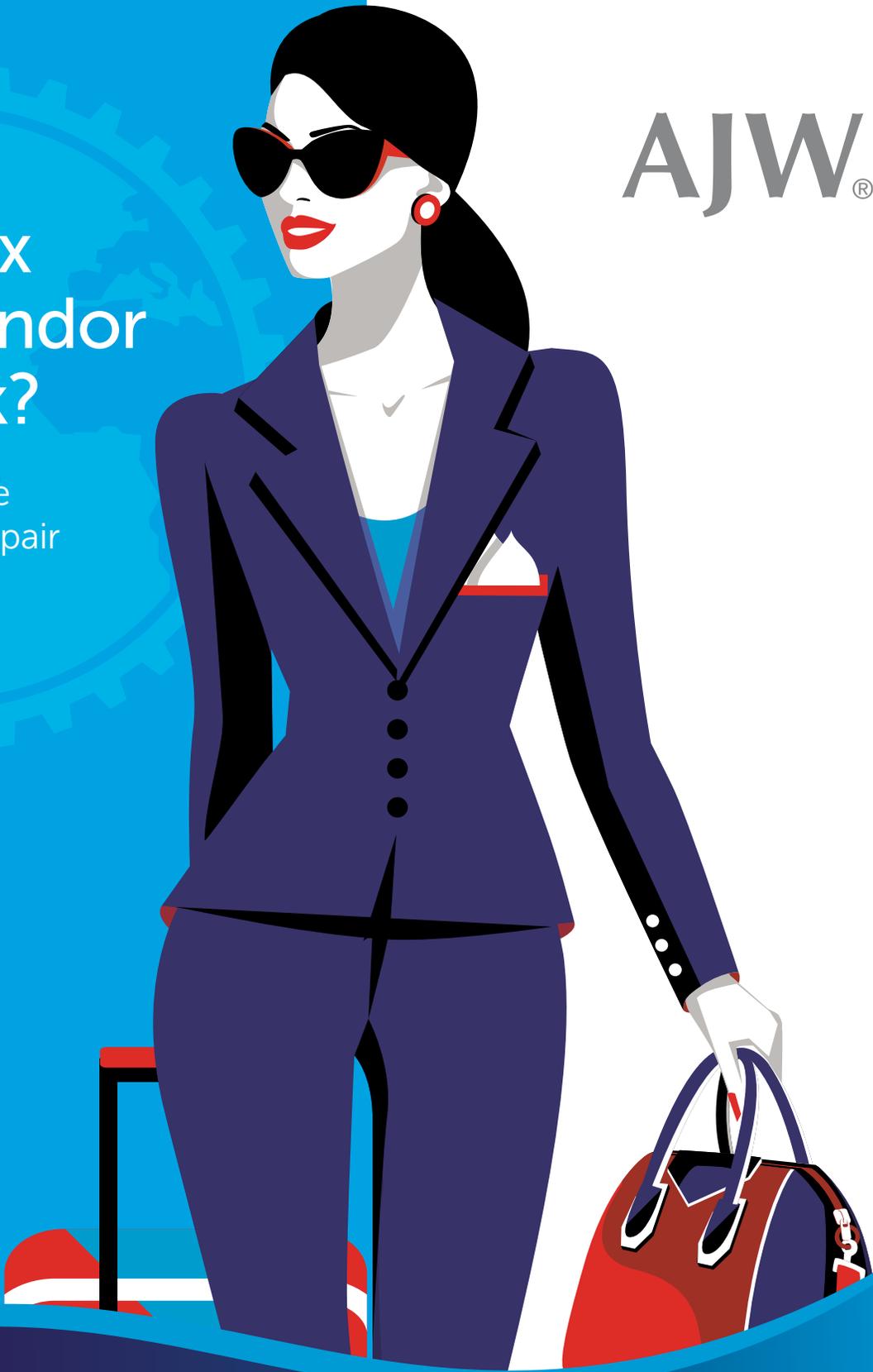
Brakmann cites several examples in the aviation industry of organisations investing in large scale technology projects, costing millions of dollars, only for the projects to never get off the ground – “In many situations, it’s because all the time and investment were spent on implementing all the components from a technical perspective.

“However, people are also a very important part of this process, as they are the users of these tech products. Therefore, consideration must be given to change management and understanding how employees will interact with the technology,” Brakmann points out.

Jezequel echoes similar views across the discussion reiterating that implementation of new technologies will often require collaboration between various stakeholders, including training institutions, aircraft manufacturers, maintenance organisations, and regulatory bodies. He says assessing the willingness and ability of these stakeholders to work together in adopting and implementing data visualisation, automation, and digital inspections is crucial for success.

“In my opinion, data visualisation plays a pivotal role in all types of businesses,” adds Coughlin. “It has been a tool we use in our operations across all our businesses, from parts trading to MRO services. Similarly, automation has proven to be a valuable tool, although it does have its limitations. While humans will always remain crucial in most aspects, automation can undoubtedly enhance their capabilities and improve efficiency. We believe in fostering innovation while maintaining the human touch that has been at the core of our business’s success.”

Ultimately, the consensus is that adoption of these technologies will continue to grow, and as they mature and become more widely available, that capacity will also continue to expand.

A stylized illustration of a woman with black hair in a ponytail, wearing black sunglasses, a purple suit jacket, and a purple skirt. She is holding a red and purple handbag. The background features a large blue gear and a globe. The overall style is modern and professional.

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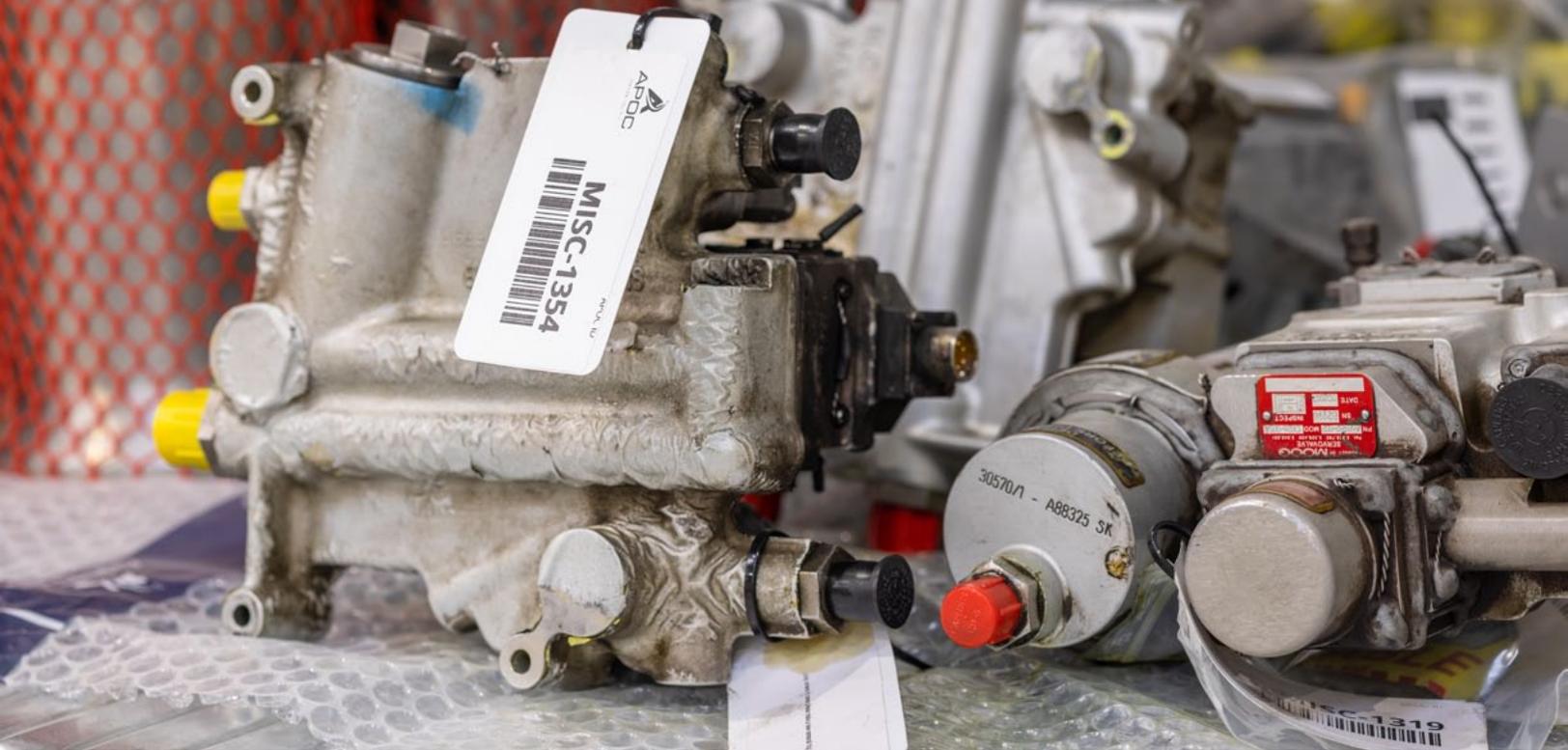
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Tactical **decisions** are key to parts planning



Correctly identifying present and future market requirements for parts is vital.

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With supply chains facing disruptions, *AviTrader MRO* scans the market to unveil how MROs and component suppliers are altering their strategies for parts planning and inventory.

By Keith Mwanalushi

MROs, parts suppliers and component repair shops will likely be reviewing their investment strategies in line with the ongoing challenges affecting the aftermarket supply chain. In fact, at AJW, one of the primary ways they aim to mitigate the continued supply chain disruptions on behalf of customers is to continue investing in inventory - "The cost

of doing so is extremely high, especially on new generation aircraft," comments Scott Symington, Chief Commercial Officer at AJW Group.

For example, AJW has invested \$13 million of capital on a single line item and holds hundreds of thousands of line items. "There are very few market players who can match that level of inventory and therefore our level of support, but

“ **Digital transformation has been a necessity and the most significant development brought about by supply chain disruptions. It has allowed us to streamline our procurement processes and operational efficiency.**

Scott Symington, AJW Group



Scott Symington, Chief Commercial Officer at AJW

that is the advantage of our scale and how we stay relevant in the market," says Symington.

He says the disruptions in the aviation industry's supply chain and inflationary environment, have highlighted the importance of having both multiple suppliers and having strong relationships with the OEMs and building strong and collaborative relationships with suppliers. "An example of this is the recent expansion of our global distributorship agreement with Honeywell," Symington mentions. The agreement makes AJW Group the sole aftermarket distributor for Honeywell Mechanical and Avionic Line Replacement Units (LRUs) fitted to current and new generation Boeing and Airbus aircraft – "We're investing in our customers' success by investing in parts," he adds.

"We are seeking to reduce the burden of tied-up capital and free up cash flow," states Tracey Downes, Head of Component Sales – APOC Aviation. She says by identifying the parts procurement cycles in advance, while ensuring precise budget and capital flow planning, APOC is optimising operations and making funds available for other investments.

At APOC, the use of AI-driven tools to increase efficiency in parts ordering and handling is key in the decision-making for potential investments. "Our IT system shows real-time stock levels and actual live requirements, backed up with minimum or maximum stock level control. As we continue to invest in narrowbody airframes, we use historic data to predict future requirements and ensure the typical units are in stock and ready to go, in line with our customers' needs," Downes indicates.

Back at AJW, they have diversified the supplier base to reduce reliance on a single source. "We drive a sophisticated pooling strategy with inventory placed purposefully around the globe, allowing easy access and distribution to our regional customers, and have established offices within regions to allow for added support and expansion," Symington states.



Steven Ades, Chief Strategy Officer at AerFin

The strategy at AJW is to continue to develop stock management and logistics solutions by investing in advanced inventory tracking systems and data analytics tools, such as dynamic pricing models, procurement forecasting, blockchain, and RFID (radio frequency identification) tracking. Symington says digital transformation has been a necessity and the most significant development brought about by supply

chain disruptions – "It has allowed us to streamline our procurement processes and operational efficiency."

In order to maintain high levels of customer fulfilment and RFQ conversion, UK-based AerFin has actively uplifted its inventory hold of high demand items, "we have increased investment throughput and expanded our global repair network to help manage turnaround times. The increase in demand for used serviceable material [USM] has also enabled us to branch out into new product lines," reveals Steven Ades, Chief Strategy Officer at AerFin.

In addition, Ades says AerFin was well vested in inventory heading into the pandemic which has given the company a tailwind of cost competitiveness as the industry recovers and OEM escalation rates kick in. "The Volumatic strategy of our inventory purchasing has also allowed us to secure long term repair agreements giving access to market leading repair rates and grant our customers an element of protection. We rely heavily on our algorithms and forecasting tools to forecast target inventory hold levels so we can continually hit high rates of customer fulfilment," he says.



Tracey Downes, Head of Component Sales, APOC Aviation

“The organisations within the industry that seem to be handling fluctuating demand the best are the ones with the best communication and collaboration throughout the supply chain and subsequently updating their forecasting models based on updated information.”

Chris Hedien, Jet Parts Engineering

Meanwhile, at Kellstrom Aerospace, they are being much more tactical in their decision-making. “We understand the importance of staying ahead of market trends and consumer demands and leverage our state-of-the-art forecasting methodologies to gain valuable insights into emerging needs, facilitating a forward-thinking approach,” tells Michael Garcia, Vice President of Commercial.

Garcia says Kellstrom’s robust financial backing plays a pivotal role in successfully overcoming challenges caused by high interest rates and extended turnaround times, which can significantly constrain organisations. “Nevertheless, our commitment to effective communication with all stakeholders ensures positive outcomes and ultimately leads to satisfied customers.”

Werner Aero Services don’t see much



Mike Cazaz, CEO at Werner Aero Services

significant change in investment decisions and are sticking to their core business, which is narrowbody and regional jets. President and CEO Mike Cazaz believes the supply chain disruptions are temporary and will eventually be corrected and they will get back to normal. “We are probably looking at another 12 to 16 months until problems will be corrected. Therefore, we at Werner are not looking to change our investment strategy currently.”

Cost reduction strategies

However, Werner Aero Services are putting major emphasis on planning and cost reductions and use sophisticated programmes that analyse airlines’ utilisation reports to ensure they have just-in-time inventory to support customers. To reduce costs, Werner Aero seeks to partner with MROs that will help reduce the cost of shop visits of spare parts. Cazaz says this helps to predict cost and offer better solutions to operators.

As lead-times have lengthened, and raw material has become more difficult to procure, Jets Parts Engineering (JPE) in Seattle are willing to take on larger blanket orders to help manufacturing partners smooth out their own supply chains.

“Increasing costs is a pain being felt by manufacturers, suppliers, and end customers,” comments Chris Hedien, Vice President of Supply Chain and Operations at JPE. Jet Parts Engineering is big on saving airline customers cash through alternative solutions (PMA, DER repairs, and MRO services). “As an aftermarket supplier we are very sensitive to price increases both internally and externally, so we strive to keep pricing stable.” Hedien hints one way to keep pricing stable is by placing larger quantity orders often



Chris Hedien, Vice President of Supply Chain and Operations at Jet Parts Engineering

allowing for larger price breaks as well as being willing to invest in raw materials through partner manufacturers when price fluctuations are in favour.

Patrick Markham, Vice President, HPG Technical Services at HEICO notes that the costs of component repairs are being driven by material costs for the details that are consumed in the repairs. He says since the price of OEM parts has been increasing substantially, they are needing to pass on that additional cost for their standard OEM repairs.

Even prior to the pandemic, Markham reports that HEICO Repair Group’s focus has been focused on developing solutions to reduce costs and TATs; utilising DER repairs, USM and/or PMA parts to keep repair costs low. He says with the supply challenges, the use of DER repairs, USM and PMA parts has become even more important in keeping the cost and TATs of repair stable.

“PMA parts and DER repairs are much more in demand,” Markham observes. “In the post-pandemic era, the availability and TAT has become even more important than the cost savings. Even before the pandemic, operators had been more open to using PMA parts and DER repairs. Through the pandemic and into



Businesses have had to take labour inflation into account when looking at costs.

© AJW

Forecasting parts demand

Predicting parts supply as accurately as possible can be complex, especially in times of irregular demand in the market.

Garcia feels the industry demand profile is subject to various influences. He says understanding the root causes of these issues is crucial as they directly impact both the supply chain constraints and the resulting demand. "To enhance our operations, it is imperative to recognise the drivers influencing the demand profile, understanding the key drivers as well as the supply effectivity and communicating with all stakeholders up and down the supply chain allows for better predictability."

Kellstrom are relying on cutting-edge forecasting tools, reinforced by the integration of AI technology and the wealth of historical data at their disposal, to enhance the accuracy and efficacy of forecasting capabilities.

Ades from AerFin admits predicting demand for non-scheduled maintenance and non-life limited parts is a very difficult task unless there is access to removal rate data, and even then, he reckons it can only serve as a guideline. "We have experienced some customers manage their fleets through predictive maintenance where early removal can increase the

the post-pandemic era, this trend of increased usage and acceptance has only accelerated," he stresses.

Symington from AJW notes that labour costs have risen due to shortages in the skilled workforce, and businesses have had to take labour inflation into account when looking at costs. He says with airlines' procurement departments being leaner it requires suppliers of size and scale to act as a department store or a one-stop shop – "Our contracted services allow airlines to reduce the cost of capital for holding inventory and reduce the cost and cash flow of in-house repair management."

And Downes from APOC advises that the best way to address cost reduction for parts planning and inventory is not with short-term fixes but by taking the long-term perspective, and correctly identifying present and future market requirements for parts. "This ties in with APOC's longer-term company objectives and forward-looking approach aimed at supporting our customers with the right parts, in the right place, at the right time. This in turn enables airlines to avoid the financial burden and risk of holding expensive parts inventory themselves, leaving them free to focus on their daily operations safe in the knowledge that at any given time we have the unit they need available," she explains.

To address the cost issue, Kellstrom

Aerospace are actively working with partners to develop and implement cost-cutting initiatives that yield long-term benefits. "We present a comprehensive solutions package encompassing technical support by providing light maintenance services while avoiding extensive and expensive full overhauls; and also, strategic OEM partnerships by working exclusively with OEM partners to reduce long lead times," Garcia details.

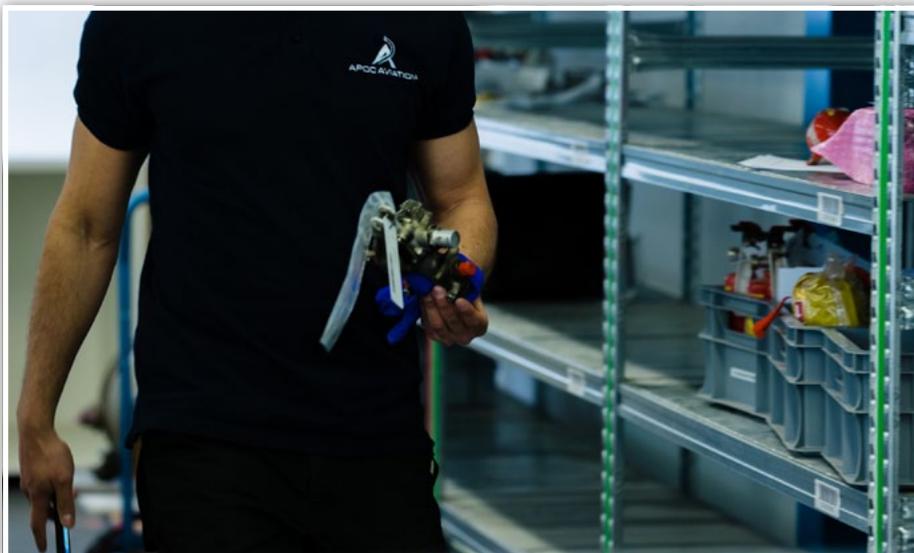


Michael Garcia, Vice President of Commercial at Kellstrom Aerospace

number of 'no fault found' inspections and can lead to increased costs, as inspection tolerances on bench may be lower than on wing thus in turn driving up inventory hold requirements." Ades further explains that without access to all customer fit list and MTBUR (Mean Time Between Unit Removal) data, there is heavy reliance on the strength of customer relationships and demand, and inventory turn analysis to ensure the right part is in the right place at the right price.

Airlines, MROs, and lessors need to consider a multiplicity of sourcing scenarios, indicates Downes. She says some airlines that have traditionally heavily outsourced through pooling, or PBHs [flight-hour] or repair cycle management are now looking at longer-term component repair arrangements.

For example, Boeing created a component services programme as a low-risk method for airlines to reduce aircraft maintenance costs. The programme provides around-the-clock access to a dedicated inventory pool of selected high-value, dispatch-critical components, such as avionics, actuators, and precision mechanical assemblies. This allows participating airlines to shrink their inventory of dispatch-critical, high-value line replaceable units – "APOC is reviewing closely and monitoring such programmes



Airlines, MROs, and lessors need to consider a multiplicity of sourcing scenarios.

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to ensure we can offer alternative solutions for those operators that wish to remain flexible with their choice of provider.

"Furthermore, APOC's continual investment in software guides our decision making with accurate planning and forecasting data, ensuring that we are ready and well equipped to support the renewed growth in the USM market," Downes continues.

All supply chain organisations have a slightly different method for handling irregular demand with some doing a

much better job than others. Hedien for JPE feels the easiest way to handle this irregular demand is to simply have more inventory on the shelf, but that isn't always financially feasible. "The organisations within the industry that seem to be handling fluctuating demand the best are the ones with the best communication and collaboration throughout the supply chain and subsequently updating their forecasting models based on updated information," he says.

At AJW Technique, the Montreal based MRO facility uses digital tools to better understand demand variation to predict future requirements. Symington says this enables them to allocate parts for future requirements well in advance, allowing them to mitigate the increase in lead times.

According to AJW, this dynamic forecasting using AI supported digital tools captures the historical parts usage information at the lowest level and allows them to construct a detailed forecast using a macro-level demand forecast at a component level - "This is then fed to our supply chain team to ensure parts are provisioned as early as possible in the process. The information is updated on a real-time basis and as a result, we have achieved fill rates of 90% plus, giving the team more time to manually focus on finding solutions for the remaining issues," Symington concludes.



At APOC, IT systems shows real-time stock levels and actual live requirements.

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Q & A

In the hot seat...

Jan van Engelen
Chief Executive Officer
MAAS Aviation



What attracted you to this industry?

I have a long history of working in the aviation services industry and have always found it a fascinating sector to be involved in. The key attraction to joining MAAS was the team of passionate professionals focused on quality, sustainability, and customer experience, who have built the strong brand and reputation the business holds today. There is great potential to further enhance MAAS' market position, I look forward to getting personally involved and adding value through my complementary skills, industry experience and network. I am excited to be working with the team and supporting the company's continued success.

What is your key priority for MAAS Aviation as the new CEO?

My focus is on enhancing performance and driving sustainable growth throughout the business. MAAS has a refreshing 'no-nonsense' culture and a healthy focus on its people – characteristics we are building upon as we create new opportunities to reinforce our business values, network synergies and customer centric, partnership approach.

What key trends are you seeing with aircraft painting services post-pandemic?

The main change we have seen in recent years is to the painting systems themselves. Developments in new technologies have led to impressive performance improvements both in terms of increased quality and longevity of paint finish, and in environmental benefits. On average, aircraft need to be repainted every 4 to 5 years, but using the latest technology paint products such as basecoat clearcoat and Socogel/ Bogel – coupled with our OEM-standard painting techniques and processes – we at MAAS are seeing finishes that still look great and perform well seven and even eight years after being painted.

In terms of the painting process itself, the key operational trend is an increased adoption of digital tools to streamline operations and efficiency. We recently implemented a state-of-the-art, digital, cloud-based Management Information System across our sites which has

transformed our data-driven decision-making abilities and reporting. As we continue to see high demand for painting slots, especially during peak season, this ensures we are optimising operations and delivering unparalleled performance.

How is the drive for sustainable aircraft painting progressing?

In the sector there is of course an ever increasing focus on sustainability and ESG issues, but at MAAS this has been a key part of our business plan for many years and we work hard to be as 'green' as possible in all our operations and facilities. As we design, build and operate our own cutting-edge paint shops, environmental systems are included in our site plans from day one and I'm proud to say that all MAAS facilities are ISO 14001 environmental management certified. We have an executive leadership team manager responsible for driving our ESG roadmap forward with the objective of making a meaningful contribution to combating the impact of CO2 and other greenhouse gas emissions generated through our business practices. We have a number of recycling initiatives already in place to reclaim and reuse materials. The latest example of this is a water treatment plant that has been installed at our Kaunas facility to process chemical waste from our daily operations and separate the water from the contaminants, enabling cleaner and easier disposal.

Furthermore, all of our paint bays have underground sump systems built below the hangar floor to ensure no waste chemicals or contaminated water ends up on the apron or local area. We have also developed our own unique recycling technology which allows us to recover 80% of the solvents we use. These are then redeployed for cleaning equipment such as paint guns, lines and pipes. We also recycle all the dry materials used in the painting process, such as paper, plastic sheeting and tape.

Other smaller scale initiatives include offsetting programmes at some of our sites and a business-wide policy that all new company vehicles must be 100% electric. As mentioned, developments in paint technology are also making great headway in improving sustainability. We work closely with paint manufacturers to ensure we

get the most out of the high-performance aerospace coatings we use, so they not only look superb but also reduce aircraft weight to improve fuel efficiency, thereby lowering emissions. Our aim is to balance the best combination of performance and sustainability across our multi-site operation. As an industry there is still a long way to go on the road to sustainability, but we are committed to investing in innovative solutions that make a real difference.

What challenges are you observing in paint and coatings market?

Whilst there has been strong recovery in the market and we see a lot of optimism, it's fair to say that there are still many challenges post-pandemic. Escalating operating costs, supply chain and production issues as well as recruitment and workforce challenges, are all putting pressure on the sector. But these problems are not exclusive to the aircraft painting and coatings market, or even the broader aviation industry, these are far reaching business issues that we must adapt to in order to thrive and grow.

These operating conditions provide an opportunity to examine the business and identify areas where operational excellence can be enhanced. By continuing to invest in our people, processes and infrastructure, I am confident that MAAS will grow to become an even stronger business.

What's next in the pipeline at MAAS Aviation?

MAAS Aviation is a world-renowned aircraft painting and exterior coatings specialist, which has earned the reputation of delivering the highest quality industry standards across our network of facilities. Our number one priority is to ensure we consistently deliver the OEM painting standards we are known for, working closely with our customers to optimise their operations and enhance our partnerships. In tandem with this, we are exploring a number of initiatives as we strategically grow and evolve the business. These include acquisition and partnership opportunities, as well as developing our business offering, so we are by no means standing still. I look forward with enthusiasm and optimism as we continue on our path of business growth and innovation.

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Savas Toplama

flydocs, a leading asset management solution provider for the aviation industry, has announced the appointment of **Savas Toplama** as its new Chief Commercial Officer (CCO). With extensive experience in the aviation industry, Toplama will be responsible for accelerating flydocs' global commercial strategy and driving business growth. Toplama brings a wealth of knowledge and a proven track record of success in aircraft operations, business development and technology strategy with over 17 years of experience across aviation and professional services. He will be succeeding and collaborating with **John Bowell** who was the company's first CCO and an instrumental figure in elevating flydocs' commercial strategy through marketing, business development and customer success activities to drive business growth and market share which positioned flydocs as a leader in the digital asset management space. In his new role as CCO, he will lead flydocs' commercial and marketing team, focusing on strengthening customer relationships, identifying growth opportunities and delivering innovative solutions that meet the evolving digital needs of the aviation industry. With his deep understanding of the market and passion for customer-centric strategies, he will work closely with the flydocs' leadership team to execute the company's ambitious vision and further establish its position as a preferred partner in aviation digital asset management.

RECARO Aircraft Seating, the global supplier of premium aircraft seats for airlines and OEMs, has announced two changes to its Executive Boards. **René Dankwerth** joins the RECARO Holding Executive Board as Chief Business Development Officer, while **Roland Grimm** joins the RECARO Aircraft Seating Executive Board as EVP Supply Chain & Sustainability. These appointments are an important step in the company's continued efforts to drive growth and bolster its leadership team. René Dankwerth brings a wealth of experience to his new role as Chief Business Development Officer at RECARO Holding. With a distinguished career spanning 17 years at RECARO Aircraft Seating, Dankwerth has held various key positions, including Director of Quality, Director of Purchasing, EVP of R&D, and General Manager at the RECARO Aircraft Seating facility in the United States. Dankwerth's responsibilities will extend

to overseeing Growag and AAT Composites, as well as Licensing & Merchandising. Roland Grimm, the newest member of the RECARO Aircraft Seating Executive Board, assumes the position of EVP Supply Chain & Sustainability. Grimm's tenure with RECARO began more than a decade ago as a Product Manager at RECARO Aircraft Seating. He has since climbed the ranks, serving in roles such as Head of Sales, Head of Spares & Supply Chain, Operations Executive at AAT Composites, and most recently, Director Supply Chain & Sustainability. In addition to his global supply chain optimization responsibilities, Grimm will also oversee the RECARO Aircraft Seating facility in Poland. **Dr. Mark Hiller**, CEO of RECARO Holding and RECARO Aircraft Seating, emphasized the significance of these appointments in the company's growth trajectory. "Adding members to our Executive Boards is not a decision we take lightly, as our Executive Boards are key to our growth path as a company," said Dr. Hiller. RECARO Holding has just announced record-breaking growth in 2022, underlining the company's commitment to delivering the highest-quality products and services to its customers. Additionally, RECARO Aircraft Seating showcased its latest innovations in sustainability, smart technology, and premium cabin seating at the Aircraft Interiors Expo (AIX) in June in Hamburg.



Wolfgang Tatzler

Topcast, a prominent aircraft parts distributor and MRO service provider, has appointed **Wolfgang Tatzler** as its Chief Executive Officer. With over 30 years of experience in the aviation industry, Tatzler brings a wealth of knowledge to the role. Previously, he served as the president of Telair International, a leading supplier of aerospace cargo loading solutions. Prior to that, he spent more than a decade at Satair, where he oversaw product management teams responsible for major product lines in the aircraft system OEM portfolio, supporting global distribution contracts. The appointment of Tatzler comes during a period of notable growth for Topcast, spurred by the resurgence of air travel in Asia. Capitalising on the market recovery, the company has embarked on various new business initiatives and formed partnerships, including the revitalization of the APEC sales team, expanding business operations in the Americas and prioritising talent recruitment and retention.



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