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Sustainability at the top of the agenda

From the major aerospace OEMs, to airlines and airports the industry is ramping up sustainability commitments.

This month we have seen several airlines for instance pushing out various sustainability targets and initiatives. United Airlines is an interesting one. The US airline is looking at hydrogen aviation solutions and wants to buy around 100 zero-emission hydrogen-electric engines (ZA2000-RJ) for its regional aircraft. This should go a long way in achieving its goal to be 100% green by reducing its GHG emissions 100% by 2050, without relying on traditional carbon offsets. In recent months the airline has announced a string of other green plans including an agreement to purchase 1.5 billion gallons of sustainable aviation fuel.

Back in October, IATA approved a resolution for the global air transport industry to achieve net-zero carbon emissions by 2050. Pegasus is the latest carrier to pull its weight with plans to reduce flight-related CO2 emissions by 20% by 2030. The airline says it is restructuring all of its operations and activities in line with this goal. In terms of aircraft operations the airline is banking on the delivery of more fuel-efficient NEOs to reduce emissions.

The latest carbon emission index from aviation advisory experts at IBA indicates that emissions from global aviation are down month-on-month, which is good news from the industry. Some interesting highlights include the B737-800 aircraft retaining its position as delivering the highest share of emissions, though its share has fallen by 1.8% in the past month. The report also says overall flight volumes for the 777-300ER reduced around 5% in this period, but average sector length increased by around 6% (with the average emissions per flight increasing by a similar amount). Elsewhere, the A320 NEO saw operations increase as deliveries continue and 22 of these aircraft were delivered in October, increasing its emissions share by 1% according to IBA. An interesting report worth reading!

On the topic of sustainability, look out for our January 2022 edition which looks closely at how the industry is making MRO operations more sustainable.

As we close off another challenging year, we look forward to more recovery in 2022 and certainly hope to meet colleagues and readers at industry events again. In the meantime, on behalf of all of us at AviTrader Publications we wish all our readers, advertisers and editorial partners a peaceful holiday season and a more prosperous 2022!

Keith Mwanalushi
EDITOR



United is investing in zero-emission engines for its regional aircraft.

Photo: United

CONTENTS



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Mammoth Freighters

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16 Modifications



3 Editor's Page

5 News in Brief

10 News Analysis

Viva looks to the cloud to support ambitious growth plans

13 News Analysis

Vueling banks on Lufthansa Technik for A320 parts support

16 Modifications

Convertors face up to market challenges from OEMs and regulators

20 MRO outlook 2022

Cautious optimism as industry sees clearer skies ahead

26 Industry Interview

Ronald Scherer – CEO Swiss-AS

28 Company Spotlight

Southern Cross International

29 People on the Move

Saudi Arabian signs US\$ 8.5 billion CFM LEAP-1A engines deal

Saudi Arabian Airlines has ordered CFM International LEAP-1A engines to power its new fleet of 35 Airbus A321neo and 30 A320neo aircraft. This agreement also includes a Rate-Per-Flight-Hour (RPFH) services contract to cover engines from this new order as well as an additional 20 leased A320neo aircraft. This comprehensive agreement is valued at approximately US\$8.5 billion at list price. Based in Jeddah, Saudi Arabian Airlines operates 61 CFM56-5B-powered Airbus A320ceo aircraft and SAUDIA Group's low-cost subsidiary, flyadeal, operates 11 CFM56-5B-powered Airbus A320ceo aircraft and five A320neo LEAP-1As. Under the terms of the agreement, CFM will also assist the SAUDIA Group subsidiary Saudia Aerospace Engineering Industries (SAEI) in developing its own engine overhaul services, including disassembly, inspection, assembly, testing and qualification/certification for the LEAP-1A engines.



Saudi Arabian signs US\$ 8.5 billion CFM LEAP-1A engines deal

Photo: Saudi Arabian

Kellstrom Aerospace and Elliott Manufacturing sign commercial aftermarket distribution agreement

Kellstrom Aerospace, a global commercial aftermarket OEM Distribution leader providing a comprehensive range of aircraft lifecycle solutions, has been appointed as worldwide aviation commercial aftermarket distributor of Elliott Manufacturing, a CentroMotion Company. This commercial aftermarket partnership will allow Kellstrom Aerospace to support the material requirements of international airlines and MRO customers with factory-new Elliott Manufacturing flexible shaft assemblies, which are installed as standard equipment on most thrust reverser actuation systems (TRAS) on a broad-range of commercial aircraft engine applications as well as wing-flap and slat actuation and indicator units, wing-sweep and feedback systems, cargo door drives and many more applications demanding high-reliability flexible shaft solutions.

VietJet Air and SR Technics sign US\$150 million memorandum of understanding



Vietjet and SR Technics sign MoU worth US\$150 million

Photo: Airbus

Vietjet Air (Vietjet), the largest airline in Vietnam in terms of the total number of passengers transported domestically, and SR Technics, a leading MRO services provider, have signed a memorandum of understanding (MoU) in Zurich, Switzerland on November 26 worth US\$150 million (£112.8 million). SR Technics will be responsible for providing MRO services for Vietjet's CFM56-5B fleet of engines that are currently installed on Airbus A320 and A321 passenger jets, including the provision of engine maintenance, technical and training services, component requirements and repair and setting up a new aviation training centre, as a joint venture between Vietjet and SR Technics. Vietjet operates across an extensive domestic and pan-Asia Pacific network and is looking to expand its operations to further international destinations. The carrier operates one of the youngest fleets of jets in the region and also globally.

Lufthansa Technik provides engine services for Frontier Airlines



Photo: Frontier Airlines A320 aircraft powered by CFM56-5B engines

Ultra-low-cost carrier Frontier Airlines has chosen Lufthansa Technik to repair and overhaul 21 CFM56-5B engines as well as to supply mobile engine services. In the next five years Lufthansa Technik will perform overhauls and surgical repairs on the engines which fly under Frontier's fleet of 112 Airbus A320 family aircraft. Lufthansa Technik in Hamburg, Germany, will overhaul the engines, whereas surgical repairs can be done locally at Lufthansa Technik's facility in Tulsa, Oklahoma. To this end, major investments were made at the Tulsa engine shop: new tooling was acquired, mechanics were trained, and the existing test cell was upgraded to cover CFM56-5B testing. The team in Tulsa will also perform mobile engine services for repairs necessary between overhauls, aiming to significantly reduce operational downtime and avoid unnecessary shop visits. Depending on the requirements of the individual repair solution, the available options range from on-wing and in-field services to more complex repairs performed at the shop in Tulsa.

AJW Group purchases A320 CFM56 engine for teardown

AJW Group, an independent aircraft component parts, repair and supply chain solutions provider has announced the purchase of a CFM56-5B engine for teardown to support its expanding engine inventory and engine management programmes. The associated high-quality engine parts will be stored at AJW Groups global facilities to support the needs of worldwide Airbus A320-family operators. Customers will benefit from access to AJW's pool of high-quality spare parts to support their ongoing operations.



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CTT receives anti-fuselage-condensation system order from Pobeda Airlines

CTT Systems AB (CTT), a market leader of aircraft humidity control systems, has received anti-fuselage-condensation-system order from Pobeda Airlines (Pobeda), a low-cost carrier in the Aeroflot group, for retrofit installation in 20 Boeing Next Generation 737-800 aircraft. Based on list price, the order value is approx. 14 MSEK. Deliveries are scheduled to begin in Q1 2022 and to be completed during 2022. The CTT anti-fuselage-condensation system removes trapped water in blankets, keeps the crown area dry and prevents unwanted excess weight from water accumulation. This enables airlines to operate with lower energy needs and less pollutant emissions. Pobeda has installed and ordered CTT's anti-fuselage-condensation system across its entire aircraft fleet. With this order, Pobeda will operate 64 moisture protected Boeing Next Generation 737-800 aircraft.



Photo: CTT Text: Pobeda Boeing 737 aircraft equipped with CTT's anti condensation system

MTU supports Pratt & Whitney's GTF Advantage engine



Photo: MTU will support the Pratt & Whitney GTF Advantage engine

Pratt & Whitney is introducing the GTF Advantage engine configuration, unveiling a technologically improved geared turbofan engine for the A320neo family. The American engine maker announced that work was in progress. Key optimisations are being supplied by MTU Aero Engines. The new configuration should be available starting in January 2024. The GTF Advantage configuration will reduce fuel consumption and CO2 emissions by one percent each. This will improve the overall picture by 17% compared to prior-generation engines. The move will further extend GTF engine's lead as the most efficient powerplant for the A320neo family. With up

to 34,000 pounds of take-off thrust both at sea level and under "hot and high" conditions, the GTF Advantage configuration will also be the most powerful engine for this aircraft family. The higher thrust rating enables increased range and payload for operators. The new configuration has been undergoing ground and flight testing at Pratt & Whitney for a year now. The GTF Advantage engine is to become the new production standard for the A320neo family of aircraft.

Collins Aerospace signs Dispatch agreement to support Japan Airlines' Boeing 787 fleet



Collins Aerospace will support Japan Airlines' fleet of Boeing 787 aircraft through its DispatchSM flight-hour programme *Photo: Collins Aerospace*

Collins Aerospace has entered into a long-term agreement to support Japan Airlines' (JAL) fleet of Boeing 787 aircraft through its DispatchSM flight-hour programme. Dispatch guarantees the availability of high-performance avionics and communications assets to customers around the globe. The agreement marks the continuation of a successful relationship between JAL and Collins Aerospace. Collins Aerospace currently provides service to the airline's A350 fleet through an existing Dispatch contract. JAL will have comprehensive support that includes global pool access, maintenance services including reliability upgrades, access to Collins Aerospace's worldwide 787 asset pools and technical assistance.

Boeing and STAECO to open two additional conversion lines for 737-800BCF in 2022

Boeing and Taikoo (Shandong) Aircraft Engineering Co. (STAECO) have announced plans to create additional capacity for the 737-800 Boeing Converted Freighter (BCF) to help meet continued strong market demand. 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 2022, with the second line expected to begin conversions by midyear of 2022. Once the two new lines are operational, STAECO will have seven conversion lines dedicated to the 737-800BCF. "Boeing is pleased to continue growing our strong and mutually beneficial relationship with STAECO by creating additional conversion capacity to meet growing global demand," said Peter Gao, Vice President, Boeing Commercial Sales and Marketing for China. "STAECO has exhibited the expertise and track record of delivering quality freighter conversions and will play a critical role in helping Boeing meet our customer commitments today and in the future." Boeing forecasts 1,720 freighter conversions will be needed over the next 20 years. Of those, 1,200 will be standard body conversions with Asia carriers accounting for 40% of that demand.

HAECO welcomes joint maintenance management cooperation agreement

HAECO Group has recently signed a joint maintenance management cooperation arrangement with the Civil Aviation Administration of China (CAAC), the Civil Aviation Department of Hong Kong (CAD) and the Civil Aviation Authority of Macao (AACM). The new cooperation arrangement will allow mutual recognition of aircraft maintenance licences issued by all three authorities, facilitating licence holders to be able to work in aircraft maintenance organisations located throughout the Chinese Mainland, the Hong Kong SAR and the Macao SAR. Headquartered in Hong Kong, the HAECO Group also operates airframe, engine and component maintenance facilities in the Chinese Mainland, Europe and the United States, providing aviation services to aircraft operators worldwide. The new cooperation arrangement, which will facilitate the flow of aircraft maintenance license holders throughout the Chinese Mainland, will enable HAECO to tap into a wider pool of aircraft maintenance professionals in increasing employment opportunities across the region.

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Viva looks to the **cloud** to support ambitious growth plans



“The integrated nature of the solution puts everything in context of compliance, providing insights into supply chain, maintenance planning and execution.”

Rob Mather, IFS

Viva Air has chosen IFS to support its growing MRO footprint.
Photo: Viva Air



Rob Mather, VP Aerospace and Defence Industries at IFS

Latin-American operator Viva Air has chosen IFS to support its growing MRO footprint. **Keith Mwanalushi** looks at how the cloud-based solution will improve maintenance and fleet planning.

In November, it was announced that low-cost carrier Viva Air had selected IFS to support its MRO and fleet planning operations. IFS, the cloud enterprise applications company, will roll out its cloud-based solution across the growing Viva Air fleet of 21 aircraft to support the airline’s ambitious expansion plans.

“When we talk about cloud-based maintenance solutions, this covers a lot of options,” Rob Mather, Vice President Aerospace and Defence Industries at IFS tells *AviTrader MRO*. He says there are full SaaS options like the IFS Maintenix Fleet Planner that is part of the Viva Air solution, to managed cloud offerings, to remote options in a cloud of the customer’s choosing, to self-managed options—each provides different value. He highlights

that whatever cloud infrastructure you are moving to; a major aspect is the shift from Capital Expenses (CAPEX) to Operational Expenses (OPEX).

“The airline industry is currently cash-strapped for good reason, as it is facing the largest challenge in the industry’s history—so mustering funding for a large upfront infrastructure expenditure can be challenging,” Mather notes.

“On top of that, compared to a traditional on-premises installation, you don’t have the additional cost of maintaining infrastructure and the staff to run and maintain it locally. When you buy your on-premises infrastructure, you need to think about maintaining performance at the peak load you will be running, which means, to be safe, you need to be

oversized, which costs more,” he adds.

Yet with the cloud, Mather explains you can adjust resource allocations, only paying the infrastructure cost you need based on your requirements at the time. “So, when many fleets were grounded, cloud-based solutions could be ramped down, lowering costs as compared to the sunk cost for an on-premises hardware purchase. Then there is obsolescence and the need for upgrade as well. A cloud offering takes care of those issues.”

The IFS Maintenix system itself makes a huge contribution to controlling and monitoring maintenance costs across the board, Mathers indicates. He says it is extremely rich in terms of the high-quality of data it captures, which provides real-time insights to support better decision making by the aircraft operator. "The integrated nature of the solution puts everything in context of compliance, providing insights into supply chain, maintenance planning and execution. In turn, this allows customers to be more efficient in terms of inventory and visit turn-around times for example. This virtually eliminates delays due to maintenance—resulting in greater aircraft availability at lower cost with complete visibility all the way through."

At IFS, they observed some fluctuations in demand for aviation MRO software services during the pandemic. In commercial aviation, Mather recalls that with the immediate shutdown of air travel in April 2020 due to the pandemic, there was still a high degree of interest in MRO systems, manifested by a host of new RFI's or RFP's being issued—with many more enquires. "This was due to an unforeseen side effect of the pandemic—staff were not as loaded as before, and

their time was instead invested in investigating solutions to long standing problems—problems that were in fact exacerbated by a lack of flexibility to manage downsized fleets. Throughout the following months, many of these programmes began to stall-out or slow down—most likely due to both the duration of the pandemic becoming clearer and the realities of the financial constraints this imposed on the industry."

However, since the autumn of 2021, Mather has seen that many of these programmes have ramped up again. He says traditionally, efficiency gains from MRO systems have been less about head count reduction and more about achieving growth with the same headcount. "As of right now, many organisations are dealing with pandemic-related workforce reductions. As air travel increases, many organisations are having trouble bringing back their workforce at the required speed to support operations and are looking to do more with their existing workforce.

Others seem to be looking to get a jump on the marketplace with whatever edge they can achieve."

In the case of Viva Air, IFS provides IFS Maintenix and IFS Maintenix Fleet Planner licensing and support, while their technology partner Tsunami Tsolutions provides hosting and the implementation services for IFS Maintenix.

Mather states that IFS also provides the set to work and hosting on IFS Maintenix Fleet Planner.

"MRO systems such as IFS Maintenix are usually mission-critical systems, so we have service level agreements in place to support the software with response times based on the severity of the issue, which itself is based on the potential impact to the customer's business. Patches are released as soon as they become available in accordance with the SLAs and new releases are rolled out twice a year. This

provides our customers with a path towards continuous improvement and evergreen system deployment," Mather adds.

Over the last decade Viva Air has grown rapidly across Latin America

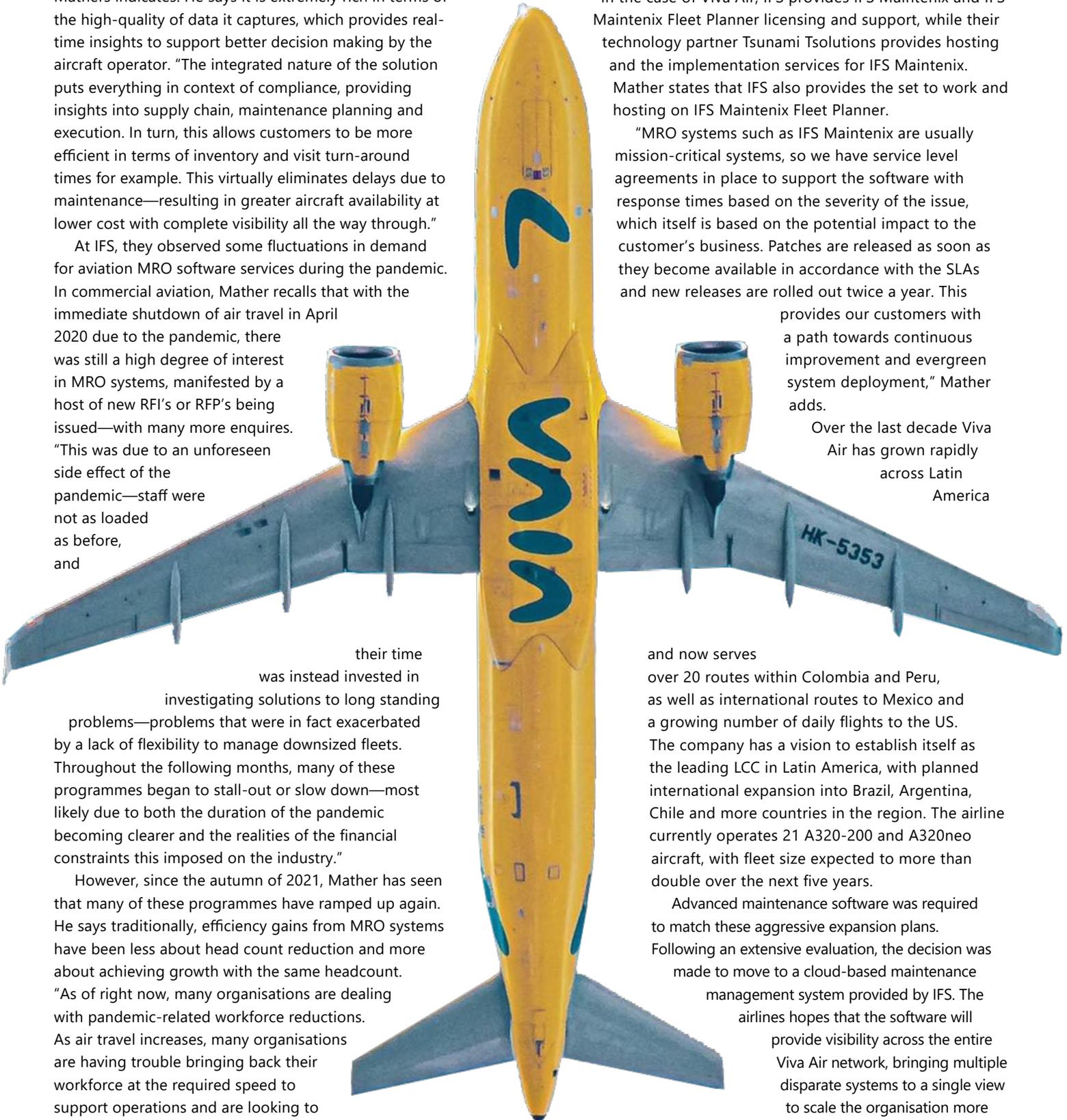
and now serves over 20 routes within Colombia and Peru, as well as international routes to Mexico and a growing number of daily flights to the US. The company has a vision to establish itself as the leading LCC in Latin America, with planned international expansion into Brazil, Argentina, Chile and more countries in the region. The airline currently operates 21 A320-200 and A320neo aircraft, with fleet size expected to more than double over the next five years.

Advanced maintenance software was required to match these aggressive expansion plans.

Following an extensive evaluation, the decision was made to move to a cloud-based maintenance

management system provided by IFS. The

airlines hopes that the software will provide visibility across the entire Viva Air network, bringing multiple disparate systems to a single view to scale the organisation more effectively.



Viva Air fleet of 21 aircraft.
Photo: Viva Air



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Vueling banks on Lufthansa Technik for A320 parts support



The contract also comprises a consignment stock at Vueling's base at Barcelona.
Photo: Vueling

Keith Mwanalushi talks to Lufthansa Technik about the new five-year technical supply for Vueling's A320 fleet, following a recent contract signing for consumable and expendables.

Spanish LCC Vueling has selected Lufthansa Technik to supply it with consumable and expendable parts over the next five years that will cover the airline's A320ceo and neo fleet. According to Lufthansa Technik the contract also comprises a consignment stock at Vueling's base in Barcelona. A dedicated account team and on-site customer support manager will be available for direct exchange with the airline to ensure smooth supply processes. The LHT experts will also give an extensive phase-in support to guarantee an optimal technical support right from the beginning.

Despite the name, expendables for instance are an important aspect to any operators' overall inventory strategy, for a low-cost fastener can ground an aircraft

as surely as a \$750,000 flap assembly.

Dr. Michael Hembera, Head of Account and Supply Chain Management C&E, at LHT's aircraft component services segment points out that expendables can even cause AOGs, hence some of them are of high importance as to ensure stable operations. "So, the target for any operator must be to always ensure they have access to such critical material, either by owning it or by having a dependable provider."

Due to the current global issues and potential material shortages, non-critical material must also be observed, Hembera notes. He says since expendables cannot be repaired but must be new, the current difficulties in the worldwide supply chains can lead to a lack of such new material. "The only way to react here is to increase

your own stock level. LHT for example has already increased the C&E stock level by more than 20% to prevent running into zero-stock situations."

Reducing inventory holding costs for high-usage and non-repairable aircraft parts is important. Hembera highlights that in fact, inventory holding cost consist of several elements. "The most important is to hold as low inventory as possible and hence to ensure a high turnover ratio of the material on stock." And of course, he points out that this must be balanced as you can risk running into zero-stock situations which might require expensive short-time purchases and – even more important in the current environment – high lead times for some materials.

What clearly helps here is a big customer base, LHT for example has C&E



Vueling and LHT signed a consumable and expendable contract.
Photo: Vueling

“
For the handling and storage, you need a highly efficient logistics setup and an exceedingly high level of automation.
”

Michael Hembera,
Lufthansa Technik



Michael Hembera, Head of Account and Supply Chain Management C&E, Lufthansa Technik

material for all kinds of Airbus, Boeing, Bombardier, Embraer and McDonnell Douglas aircraft available for a broad

operator base. Hembera stresses this ensures that even low usage parts turn at least once a year. “For the handling and storage, you need a highly efficient logistics setup and an exceedingly high level of automation. A close monitoring of the stock is also required, for instance to avoid scrapping material due to expired shelf-life. So there needs to be a careful balancing of many different factors.”

The new contract with Vueling includes planning, forecasting, transportation and logistics services. Hembera reckons the best way to forecast is a mixture of looking backwards into historical consumption data, but also looking forward into future planned consumptions. “Modern maintenance management tools help provide this data, and this works quite well for planned consumptions. However, quite a bit are unplanned materials due to findings, and this can be anything. Here, lots of

historical data, statistics and probabilities and a very experienced team of planners and purchasers complete a good setup.”

Also, a common IT interface between the Lufthansa Technik systems and Vueling’s AMOS digital maintenance management platform allows the two companies to interact directly and quickly, especially in the fields of material planning and forecasting.

“This will definitely increase the level of technical readiness of the supported aircraft,” Hembera concludes.



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Convertors face up to market challenges from OEMs and regulators



Modifications from passenger to cargo requires meticulous engineering expertise.
Photo: AEI

Keith Mwanalushi talks to industry experts to analyse the challenges and advances in the modification processes for passenger-to- freighter conversions as demand continues to grow.

Recently, aviation consultancy IBA revealed that there were over 132,000 active freighter flights across the globe in September 2021, compared with just over 95,000 in September 2019 and since the outset of the COVID pandemic, freighter aircraft usage has grown dramatically.

Certainly, we have seen that the air freight market is experiencing a conversions bonanza and IBA predict around 1,000 conversions over the next decade with the bulk of that work targeted at the 737-800, A330 and 777-300s. Demand for legacy aircraft such as the 767-300ERSF also remains strong.

Modifying the aircraft structure from passenger to cargo requires meticulous engineering expertise.

Ascent Aviation Services has partnered with Sine Draco for the A321

passenger to freighter (P2F) modification programme that was announced earlier this year. Scott Butler, Chief Commercial Officer at Ascent tells *AviTrader MRO*



Scott Butler Chief Commercial Officer,
Ascent Aviation Services

that Sine Draco expects to have the STC completed in mid-2022 and their revolutionary engineering approach coupled with Ascent's aircraft expertise and knowledge base will supply the freighter market with a much-needed upgrade to older designs.

"Some of the biggest challenges are with the aircraft OEM and their supply chains," Butler hints. "The modification programme depends heavily on technical information that the OEMs are not eager to supply, as it competes with their own freighter programmes. Also, the supply chains are experiencing historic shortages and the technical information is not available to go look for alternate sources," he states.

Mammoth Freighters just announced Cargojet as the launch customer for its new 777-200LR, initially signing up for



Sine Draco A321-200 SDF prior to conversion.
Photo: Ascent Aviation

two 777-200LRMF with additional options for two -300ERMFs and two additional -200LRMFs. The aircraft is expected to begin the conversion process in mid-2022 with delivery to Cargojet in the second half of 2023.

Mammoth says it's in a unique position to produce two different products that respond to both high density and lower density e-commerce and integrator markets. The 200LR is an ideal long-haul platform that will have over 10.5 lbs/ft³ of density and a max structural payload of 233,000 lbs (105,687 kg) or the 300ER with 7.7 lbs/ft³ of density and 220,000 lbs (99,790 kg) that hits the sweet spot required by 'e' and integrator cargo carriers. In contrast to new build



Brian McCarthy, VP Marketing and Sales at Mammoth Freighters



Mammoth is offering two 777 products for the freighter market.
Photo: Mammoth Freighters

freighter variants, Mammoth is basically offering similar or same payload, volume and range for something in the range of \$100m less.

"We are using trusted, proven and globally accepted engineering tools and practices that will produce a substantial data set, validated to meet both today and tomorrow's regulatory standards," says Brian McCarthy, VP Marketing and Sales at Mammoth Freighters.

Considering that the regulatory authorities around the world were challenged by pandemic related events, the industry continues to see considerable momentum with the number of certifications and STCs achieved by converters in the past year which shows a level of confidence in the certification process and system. Notably Skyways Technics is now installing the AKKA STC for the ATR freighter conversions.

“The modification programme depends heavily on technical information that the OEMs are not eager to supply, as it competes with their own freighter programmes.
Scott Butler, Ascent Aviation Services
”

"Authorities worldwide found a way to proceed with this important work during some pretty difficult times," McCarthy notes. "Our team is very experienced with conversions and engineering, and we see no head winds at this time but also planning on a pretty normal and straight forward design and certification."

Earlier in October, Israel Aerospace Industries (IAI) made a significant milestone with its first 777-300ER having cut an opening in the hull to install a cargo door. The conversion process includes modifying the aircraft structure, including the installation of a new cargo door, replacing and reinforcing the cabin floor, installing reinforcements in the cargo door area and adapting the electric network and other systems to enable a safe and convenient operation. In addition, this process includes receiving certification

for the converted aircraft from the aviation authorities and the US' FAA.

IAI will also convert 30 A330-300s from passenger to freighters for lessor Avolon, and the work will take place between 2025 and 2028. Rafi Matalon, IAI Aviation Group's VP of Marketing is optimistic about the prospects for the A330 especially against the competing 767. "Well, the A330-300 has a larger volume than that of the 767 and because the 767 feedstock is short, the A330-300 will lead for the coming 10 to fifteen years in the mid-size aircraft conversions category."

IAI indicated that the converted model will increase cargo volume capacity with up to 27 main deck pallet positions, "one more than the competition," and will improve the cargo loading capacity with a unique cargo door placement. Matalon explains further: "The location of the door in the aircraft will be different from the door location of the competing conversion on the market in a way that prevents the aircraft from tipping and simplifies the loading and unloading of the cargo. Our goal on each conversion programme is to minimise changes between the original passenger aircraft to the converted aircraft."

In working out availabilities for conversion slots IAI plan to convert all A330s at remote sites and it will



Rafi Matalon, IAI Aviation Group's VP of Marketing



Robert Convey, SVP Sales and Marketing at AEI

establish its sites and conversion lines in accordance with firm orders and market demand.

The A330 is proving popular for freighter conversions. Data from IBA shows that feedstock pricing in the A330 cluster is rapidly reducing, with 2009-build Rolls-Royce powered A330-300s, priced at US\$25 million prior to the pandemic and now available for around US\$15 million.

IBA believes that cargo operators will now seek much younger examples of this aircraft than the earliest MSNs and reap the benefits of additional years' useful life and a longer-term asset investment. The typical value and lease rate range for converted A330-200P2F and Airbus A330-300P2F is between US\$27 million and US\$38 million.

At Aeronautical Engineers, Inc. (AEI) they are busy with conversion commitments throughout next year and have delivered over 535 freighters to date. AEI has five conversion products, CRJ200SF, MD80SF, B737-300SF, B737-400SF and its newest product the B737-800SF.

When speaking about the challenges with the certification to perform modifications for freighter operations, Robert Convey, SVP Sales and Marketing at AEI stresses that this is becoming increasingly difficult as regulators around the world demand evermore analysis and testing. "Most development programmes

“Certification of a passenger to freighter conversion is becoming increasingly more difficult as regulators around the world demand evermore analysis and testing.”

*Robert Convey,
Aeronautical Engineers, Inc*

estimate a three-year term and without exception run long with final certification coming at the four- or five-year point. This is not a business for the faint hearted," he cautions.

Over the last 18 months or so we have seen a wave of conversions from light cargo modifications to full cargo configuration. Going forward, Convey reckons we will see the return to conventional main deck conversions and will start to see the "passenger freighter" disappear – "most authorities issued a temporary approval for main deck passenger freighters to combat the shortage of lift during COVID and these approvals are set to start expiring in 2022."

Another interesting player on the market is Avensis Aviation, in fact it has created some innovative P2F solutions to date. Chief Executive Cristian Sutter says Avensis offers a choice of three conversion solutions which are fully scalable offering operational versatility that enables cargo carrying airlines to support the increase in demand, and fleet and route growth, while maintaining turnaround efficiency and protecting their P2F fleet conversion investment.

As Sutter describes some of the core products include a temporary and reversible light cargo modification solution that removes passenger seats and enables airlines to install cargo directly onto the cabin floor. A permanent STC and reversible intermediate cargo modification



Cristian Sutter, CEO of Avensis Aviation

solution that fully removes the passenger cabin transforming it into a full Class E or Class F cargo compartment. There is a newly dual-purpose combi solution which features a unique combination of passenger cabin and a full Class F cargo compartment in the main deck, designed to enable airlines to operate mixed passenger and cargo flights whilst retaining landing slot utilisation. And a permanent cargo modification solution that includes a lightweight “plug type” main deck cargo door and a full cargo loading system – “It is considerably quicker and more cost effective to deliver than competing solutions, making it the benchmark of high-end P2F conversions on the market,” states Sutter.

Depending on the type of conversion, Sutter says the certification requirements vary and so does the level of modification required to convert a passenger aircraft to a light, intermediate or full freighter aircraft. “This includes the modification and installation of several new and existing aircraft systems. Indeed, the level of the change is reflected on the STC required for that conversion to be certified.”

The range of reversible and permanent solutions are attracting interest from various airlines including TAP Portugal of which Avensis has completed an A330 conversion and has a second aircraft currently being embodied. “We have an additional 15 aircraft in our immediate conversion pipeline, and we have visibility on a large number of conversion opportunities which we look forward to announcing soon,” Sutter continues.

Freighters should not be tipping over

In recent months, there have been several reported cases of freighters tipping over during loading and unloading cargo with the nose up in the air. Convey starts off by saying tail tipping of a freighter is avoidable and should

never happen. “Every freighter whether factory-built or converted has in its weight and balance established procedures for the safe loading and unloading of the main and lower decks and if followed will prevent a tail tip. Tail tip situations occur when the ground loaders fail to follow these procedures and are usually associated with an expedited or rushed load sequence,” he explains.

For some freighters, aft tipping warning devices and systems are available, notes McCarthy from Mammoth. Additionally, he states that aft tail skid support devices are used on the ramp as an added and preventative measure.

Mammoths’ affiliated company GDC Technics in Texas has a system certified called “Weight on wheels” that monitors and validates the correct loading of the aircraft. “The new version of this is being certified for the freighter market and will address this with an audible warning system that will alert ground crews of an unsafe condition or a pending unsafe condition,” McCarthy adds.

Butler too acknowledges that smart load sensing is being built into modern designs, however, tail tipping issues are almost always due to procedural failures.

Cautious **optimism** as industry sees clearer skies ahead



Airlines are having to reactive their check planning.
Photo: Southern Cross International

With indications that the MRO and aftermarket sectors are bouncing back, **Keith Mwanalushi** gathers industry leaders to discuss the key priorities for 2022 and analyse the challenges that will likely persist.

This time last year the aviation industry was in turmoil as the COVID-19 pandemic ravaged on. Looking ahead, the outlook for MRO is positive, reflecting the recovery we are seeing in airline traffic. At StandardAero, some specific programmes are exceeding expectations, whilst others are tracking the consensus – “but it is broadly as healthy as anyone could have wished for in 2020,” comments Lewis Prebble, President, StandardAero Airlines and Fleets. “It is now apparent that confidence is returning, thanks in large part to those risk-mitigation measures implemented for travellers. This confidence is quantifiable both in terms of the uptick in new aircraft orders, and – within the MRO space – the willingness of operators to invest in heavy shop visits.”



Lewis Prebble, President, StandardAero Airlines & Fleets

Prebble indicates that the key priorities in 2022 will be to manage widespread growth in terms of staffing, footprint and key tooling investments and to fully realise the strategic benefits of StandardAero’s recent acquisition of Dallas Airmotive and H+S Aviation, especially in terms of the support of the global PW100 and PT6A operator base; and to continue consolidating a strong position in APU MRO business.

At the Kellstrom Aerospace Group, they are forecasting 2022 to be marked by continued commercial aftermarket and MRO recovery, albeit not surpassing 2019 levels in most segments until 2023. Data from Kellstrom shows that narrowbody aircraft including the 737NG and A320ceo, which represent 40% of the air transport fleet, as well as large regional jets with more than 70 seats like

the E-Jets have demonstrated the largest in-service rates, and North America and China continue to demonstrate strong utilisation and capacity in their large domestic markets.

Also, with over 72% of the global air transport fleet back in service, and less than 350 aircraft retired in 2021, the population of green time engines and components is becoming constrained for some common models forcing operators to once again plan for engine shop visits and component maintenance that in some cases was deferred. Jeff Lund, CEO at Kellstrom Aerospace says the financial pressures from the pandemic on airline liquidity have caused many airlines and MROs to minimise inventory levels and personnel and adopt short-term planning leading to depleted stock-levels and a dramatic rise in critical and AOG requirements for parts and components.

“As airline profitability returns, we will see an increase in engines, components and aircraft scheduled for maintenance, and as aircraft have been returned to service after months of storage, unplanned maintenance is a common result,” Lund remarks.

He adds that savvy airlines have discovered that quick-turn engine services for module swaps and low-cost



Jeff Lund, CEO at Kellstrom Aerospace Group



Abdol Moabery, Chief Executive at GA Telesis

strategies to increase green time of engines without the cost and long delays of heavy shop visits is an effective way of maximising time on wing protecting the bottom line.

Kellstrom Aerospace Group’s wholly owned subsidiary Vortex Aviation has enjoyed a steady increase in the demand for both on wing services, module swaps and targeted workscope repairs on engines that will provide additional time on wing for engines and a cost avoidance from heavy shop visit costs.

This is the first time in a long while that Abdol Moabery, Chief Executive at GA Telesis is concerned about capacity being challenged. “There is probably about a year’s worth of deferred maintenance that may result in pent-up demand. During the pandemic, GA Telesis did not reduce its workforce whatsoever; however, many of our suppliers and service providers did, so we plan to shore up our supply

chain to ensure that we are ready for the potential bow wave,” he states.

Meanwhile at Jormaco, Chief Executive Fraser Currie has seen the market for airframe heavy checks bouncing back, he is seeing an



Fraser Currie, CEO at Jormaco



Its expected there will be surges in capacity requirements from airlines. Photo: Air Astana

upturn in the number of requests being received and anticipates that the order book will return to pre-pandemic levels in 2022. "Our key priorities are to the safety of our staff and customers by continuing to closely monitor any



Derk Nieuwenhuijze, Head of Strategy, Marketing and Communication at AFI KLM E&M

potential resurgence of the virus. Another priority area is to ensure that the business is right sized to ensure we have the capacity to ramp up as needed both in terms of human resource and available hours."

Currie feels the greatest challenge will be unpredictable surges in capacity requirements from the airlines. "As business return to pre-pandemic levels many airlines are having to be somewhat reactive in their check planning."

Joramco is continuing to plan for a significant upturn in demand as to pre-pandemic and they also predict that the sector will see far more of an emphasis on passenger-to-freighter activity.

Derk Nieuwenhuijze, Head of Strategy, Marketing and Communication at AFI KLM E&M reckons as the recovery accelerates, MROs will need to evolve how they deliver their services from this point onwards. "We see airlines around the world emphasising proximity and adaptability. As far as flexibility goes, this demand is reflected in the growing

popularity of pay as you fly solutions. Because of the pandemic, Nieuwenhuijze says airlines are less inclined to engage in fixed contracts, and flexible solutions will enable them to better manage their recovery step-by-step and in the long term build up their defences against the unpredictability of the market.

At Spairliners they see the uptick trend continuing in 2022 and beyond. Also, they see the variety of support requests that are coming in not seen before. "Airlines have always been keen on making the most out of the assets that they are having, and especially today they tend to be even more careful before making big investments," says Taco Stouten, Head of Sales and Marketing at Spairliners.

Stouten adds: "Innovation, simplification, and risk-sharing are the key requirements from the market, which make our core priorities for 2022. And because the aircraft industry is focussing on the development of the next generation propulsion systems, we foresee that the



Qualified manpower is becoming even more crucial.

Photo: Ascent Aviation Services

aircraft that are flown today, will remain in service for at least another decade, and so does the need for MRO."

With their expertise in the E-Jet platform, at Spairliners, they see the greatest opportunities for growth to be in the Americas, because more than half of all E-jets are flying in that market. "However, the market and philosophy in the United States is completely different from those in Europe." For instance, Stouten explains that in the United

States the use of DERs and PMAs in the aircraft component business is standard practice, whereas European carriers have

been largely reluctant to use them so far. "However, Europeans have come to realise that the biggest cost savings can be made through the use of such innovative practices and some of our customers have already expressed that they welcome this development."

Digital services and especially predictive maintenance are also opportunities that Spairliners are pursuing and that the whole value chain is investing in currently, as this is becoming a strong leverage for more efficiency in operations and costs.

"In general, I think the market is cautiously optimistic," adds Scott Butler, Chief Commercial Officer at Ascent Aviation Services. He says the airlines and operators are quickly getting aircraft back into the air, but they will not be spending the same in the MRO and aftermarket until the market has fully recovered and sustained itself.



Taco Stouten, Head of Sales and Marketing, Spairliners

Innovation, simplification, and risk-sharing are the key requirements from the market, which make our core priorities for 2022.

Taco Stouten, Spairliners



Some challenges will persist, but opportunities still exist

Recovery might be on the horizon, but we are certainly not out of the woods yet as an industry. Butler observes that supply chains are already heavily burdened right now and there is a definite struggle to get material ramped back up to pre-covid norms. "Also, qualified manpower is becoming even more crucial than it was pre-COVID as many left the aviation sector altogether coupled with delays in new classes of mechanics.

James Bennett, Commercial Director at AerFin echoes similar sentiments saying organisations flexed resource in accordance with reduced activity levels and are now, in some cases, struggling to re-recruit and position themselves for the eventual upturn. "We are already seeing elongated lead times on component repair, and this is before the market recovers to 2019 levels, which we're expecting to be anywhere between mid to the end of 2023. This will be redressed but we anticipate more pain for all in 2022 before the supply chain

has fully recovered."

Reducing costs has always been important for airlines, but as Bennett sees it, this pandemic has brought all cost saving initiatives much more sharply into focus. "As we know material is the biggest component of any MRO event, whether engine or airframe, so naturally we see increased demand for USM being one of the big opportunity areas."

AerFin is already seeing numerous airlines reviewing existing contracts to see whether there's any way USM or reduced material costs can be provisioned for. "In addition to USM, more cost-effective maintenance options are another area that we're already working with our customers to support," says Bennett. He highlights that quick turn maintenance activity was already being asked of the industry pre-pandemic and was mainly why AerFin decided to launch the 'MRO Lite' service offering at its EASA/FAA certified facility – "We expect this to continue to form part of operators' future strategies."

Much of the industry supply chain



Scott Butler Chief Commercial Officer,
Ascent Aviation Services

will remain fragile for at least the next 18 months, reckons Prebble from StandardAero and this will have an inevitable knock-on for MRO performance. "We work very closely with our OEM partners and customers to provide the best possible demand signal. More than ever, good communication and expectation management is paramount."

From a market perspective, Prebble says perhaps the biggest challenge remains the Asia-Pacific regional aircraft market, which has been badly impacted by the pandemic. "The gradual uptick in vaccination rates in the region will hopefully allow the sector to see a return to financial health as load factors improve, though the timing of a full recovery remains uncertain," he says.

In terms of opportunities, at StandardAero, these will likely be the same areas that have driven growth during 2021: the resurgence of the regional turbofan market, most notably for the CF34; the continued strength of the cargo market, which has had positive implications for a range of platforms, from the RB211 and CFM56 to the PW100 and PT6A; and the ebullient business aviation market, which has benefitted the PT6A and JT15D. Prebble adds: "There is still a lot of green time available on platforms like the CFM56-7B, and that is driving more innovation in fleet management and work-scoping in the short term as airlines look to defer expenditure as their balance sheets recover. We have adapted to that but expect a potentially rapid return to more conventional heavy shop visit volumes in the medium term."

Lund from Kellstrom notes that the supply of USM feed stock has become constrained on certain platforms. He says as USM is repaired, repair turnaround times (TATs) have increased dramatically due to delays in obtaining OEM piece parts in support of the repair activity. Kellstrom provides OEM distribution solutions which forecast and stock factory new OEM material for just in time availability with a 98% fill rate from stock.

"Another identified constraint has been the availability of qualified mechanics to perform repairs," Lund states. "For the aftermarket, the shortage of mechanics, regional variations on lockdown are having a significant effect on the repair TATs."

The USM market should rebound due to increase in deferred maintenance. Kellstrom Aerospace is focused on



James Bennett, Commercial Director at AerFin

ensuring the supply chain demands are met with provisioning inventory to meet the increase in demand. Also, as airlines improve utilisation, their demand forecasting of new and USM components will increase.

Butler from Ascent sees a lot of opportunity to expand capabilities in the component sector to offer a one-stop shop for operator maintenance needs. Additionally, due to costs savings and OEM supply chain woes, he feels USM will be very sought after by operators.

In terms of proximity, AFI KLM E&M anticipate the trend will point towards growing regionalisation of MRO markets. "For fleet operators, this is as much about shielding themselves from rising logistical costs as it is about implementing supply chain loops being close to the customers. This trend was already visible before the crisis but has been accelerated as a result. We think that this regionalisation of maintenance activity will be increasingly carried out via industrial partnerships that will enable the sharing of risks and capacities, combining local industrial

bases with global commercial clout," explains Nieuwenhuijze.

Moabery believes all areas of the GA Telesis business will share a significant demand increase over the next 24 months. He anticipates that over that period, the market will right-size itself, and things will trend back towards a more stable marketplace. "However, the areas we are watching carefully are the engine MRO and components sectors. There has been quite a bit of turmoil in those sectors, and as a result, we anticipate some level of volatility. We plan to be on the right side of the volatility and take full advantage of the organisational continuity we maintained during the pandemic."

Moabery stresses that GA Telesis predicted this, and as a result, launched two major greenfield projects during the pandemic, a new landing gear technology centre of excellence and GATES SPAH, a partnership with ATSG, expected to be operational in 2022. "These will serve as key differentiators, and we fully intend to continue to add high-technology service offerings," he concludes.

Q&A

In the hot seat...

Ronald Scherer
CEO Swiss-AS



Ronald Scherer, CEO at Swiss-AS

What attracted you to this industry?

Well, the usual cliché also applies to me, my father worked for airlines for most of his life. Instead of locomotives or cars, I used to play with aircraft with my father and we even built a large miniature airport on a wooden board over a period of several years and completed it with aircraft models. Therefore, it is not surprising that besides me, one of my brothers also found his way into the cockpit, and another into the cabin. I developed a lot of interest in the software for maintaining the aircraft, that was 32 years ago and here I am now.

What does a typical day involve in your role?

For more than 16 years I was actively involved in the software development of our product AMOS. At the same time, I was responsible for the product presentations and was always involved in the conceptual development of AMOS; however, I am no longer involved in programming. Currently, Swiss AviationSoftware has more than 240 employees. In addition to my duties as CEO, my working day still consists of product presentations (since COVID struck

this has been mostly through web demos). As part of the management team, taking care of the various interfaces within the owners (SWISS and Lufthansa Group), I am still very actively involved in responding to questions about further development of our product AMOS (member of the product board). In addition, I am an ambassador for our corporate culture presented to our new employees as part of their welcome day.

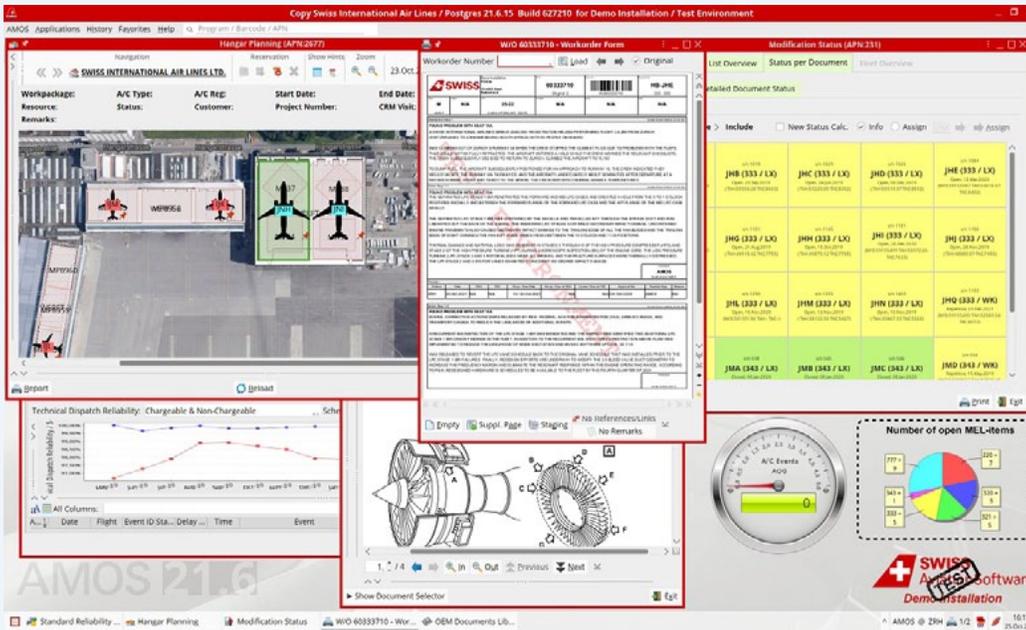
Briefly, how is the MRO software business so far?

Like others in the industry, the years before COVID were the most successful phase at the company. One record year followed the next and then then the pandemic had a significant impact on

us, and it still does. However, since our business does not only consist of the sale of software, we were also still able to keep busy with other ongoing projects, which fortunately were not all affected during the height of the pandemic in 2020. Fortunately, no employee had to leave the company due to the pandemic, and we used the time to tackle issues that we could not turn our attention to during the boom years. Since summer 2021, we have seen a noticeable recovery in our core market.

Are you seeing much recovery in the market for software and digital services?

The airline industry is in a noticeable recovery phase. Many of our customers



AMOS screen shot.

used the crisis period to prepare for the market conditions of the future and digitalisation has become a hot topic (not only in the airline industry) and is additionally boosting our business. For many airlines and maintenance companies, the future lies in the consistent digitalisation of their processes. What seemed unfeasible for many reasons before the pandemic is now possible. After months of great uncertainty, the industry has almost returned to a phase of optimism.

What impact has the pandemic had on the business if any?

We were able to continue to support our almost 200 customers with our services, to continue some AMOS implementation projects and to use the time for internal activities, so we were still able to manage the challenging time relatively well. With the mix of software sales, operation of the software in the cloud, consulting and training, this still led to a positive annual result despite very adverse circumstances.

Swiss-AS opened a new office in Tokyo in cooperation with Lufthansa Systems. What is the nature of this partnership?

The Tokyo office is an extension of the existing Singapore branch, established in

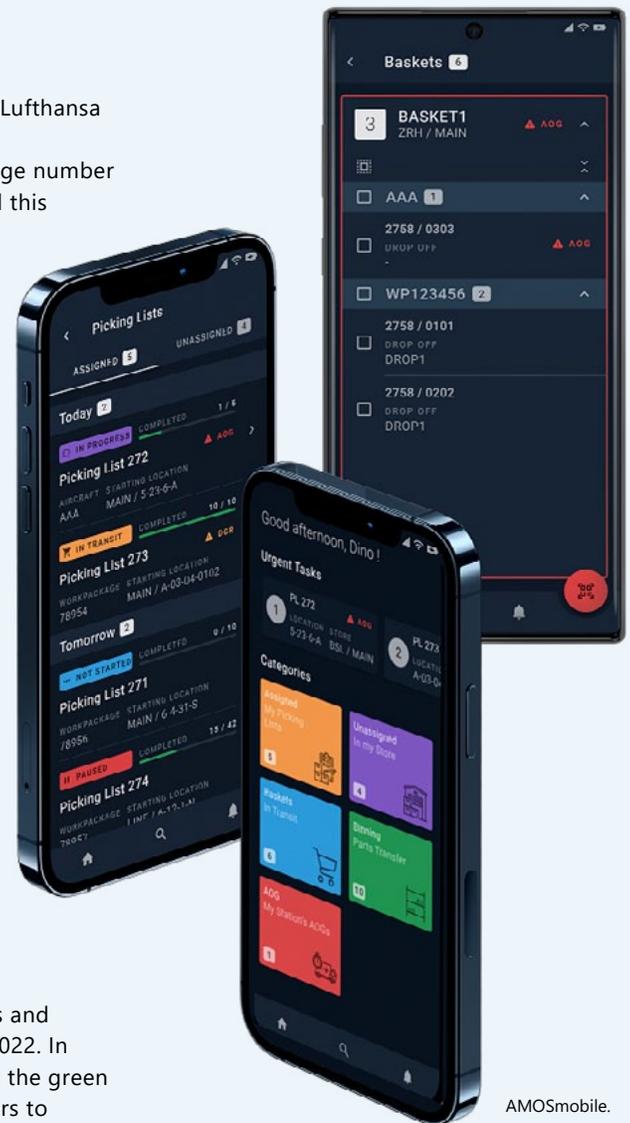
2013, also in cooperation with Lufthansa Systems.

We continue to receive a large number of enquiries from East Asia and this prompted us to ensure our presence in this very important market. The location also fits perfectly into our concept of being available around the clock for our customers. Though the Asian-Pacific region is currently preoccupied with combatting the pandemic, Swiss-AS is convinced that the Asian-Pacific aviation market will again become a driving force in the global aviation market; against this background, we consider our commitment to this market key to our continued long-term success.

What are your priorities for 2022?

Many of our existing clients still need a lot of support in coping with the impact of the pandemic. This will keep us and our customers busy well into 2022. In addition, we have just received the green light from our board of directors to

tackle important development projects for AMOS. The topic of digitalisation is still in its infancy for many of our customers, so we have to support them with the necessary resources. The topic of 'mobile everywhere' has us firmly in its grip. At the beginning of 2022, we will make various new mobile apps available, and this trend will keep us busy for the years to come. With AMOS, we feel ready to serve the world's largest airlines. Over the past few years, we have built up the necessary structures for this.



AMOSmobile.

COMPANY SPOTLIGHT: SOUTHERN CROSS INTERNATIONAL

"When once you have tasted flight, you will forever walk the earth with your eyes turned skyward, for there you have been, and there you will always long to return." – Leonardo DaVinci

As an international service provider specialising in ferry flights, repossession services, flight testing, training, and consultancy Southern Cross International (SXI) has the aforementioned quote in its DNA.

Southern Cross, consists of two companies. Southern Cross Aviation (SXA) founded by the Australian Peter Dickens, forty years ago in California and Southern Cross International (SXI) founded in the Netherlands ten years later. Initially SXI flew mainly Fokkers to and from the Fokker MRO in the Netherlands. Today, we are still specialised in ferry flights of Fokker aircraft, but in the meantime, we have also built-up expertise with numerous other aircraft types.

Apart from ferry flights, SXI is specialised in maintenance test flights and verification flights as part of transfer of title processes. These flights are performed on request by MRO's, leasing companies, financial institutes, airlines, and other operators.

To perform these services the Southern Cross team supports its customers to ensure a safe and efficient flight. SXI has qualified experienced test pilots, available for a wide range of aircraft types and our own Operation Control Centre (OCC) supports the flight from start to finish. We perform "Certification Flights" for design Organisations to approve modifications and alterations.

SXI strives to present its customer with a tailor-made turn-key solution. As an example, SXI recently completed an over the weekend back-to-back ferry flights taking one aircraft on a Friday from the MRO and ensured the next aircraft was delivered

early Monday morning allowing the MRO to start the next "C" check. This ensures that the airline only missed one aircraft from its fleet when C-checks must be performed and ensures that the MRO has a continuous flow of work once the week started.

This reduced the impact on the crew roster for the operator and allows the MRO flexibility in planning its post maintenance verification flights.

We, as SXI, are proud to be asked to take delivery of brand-new aircraft straight from the manufacturer to its new operator. As the delivery flights are the last part of the process, we provide full flexibility for all involved.

As a specialist, SXI is used to operate regional jets like the Embraer's, Bombardier, and other turboprop aircraft worldwide over long distances. For instance, we deliver ATR's and Dash 8s from Europe to Australia and Embraer's and Fokkers from Europe to the USA and far East.

Operating over these distances requires precise planning and operational support from our OCC as well as working together with airports, handling agents and local maintenance organisations in order to get the job done. Over the years we have built an enormous network of contacts.

As a result of the COVID crisis we have noticed an increase in transfer of titles and change of registrations. In order to provide our services Southern Cross is approved to operate aircraft under several registers like EASA Part SPO and Part NCC as well as 2-Reg, P4 Aruba, Bermuda, and many others.

All the above explains our slogan "Any Type, Any Place, Anytime, We Deliver!"



The SXI team.

All photos: SXI



Crossing Lines

»»»»→ on the move



Tony Whitty

AJW Group has announced the appointment of **Tony Whitty** as Director of Aircraft and Engine Procurement. Whitty who joined the business on November 29, 2021, will be responsible for aircraft and engine acquisitions across the AJW Group. Whitty will use his extensive and diverse experience in aircraft remarketing for airlines, banks and other aircraft owners to assist AJW Group in its aircraft and engine trading business. Whitty started

his career in aircraft remarketing in 1990 with Fortis Aviation. He has been based both in Europe and the USA and has achieved considerable success in aircraft remarketing on behalf of a variety of airline and financial sector clients. Whitty was one of the founders of Cabot Aviation in 1998 and subsequently worked for Air Partner since 2015. Whitty will be based at AJW's Headquarters in Slinfold, West Sussex, UK and will report directly to the Group President and CEO, **Christopher Whiteside**.

Accelya, a leading provider of technology solutions to the global airline and travel industry, has announced the promotion of Chief Product Officer **Jim Davidson** to President and Chief Strategy Officer. Additionally, John Johnston will be stepping down as CEO and will transition to the role of Special Advisor, with Davidson immediately assuming day-to-day operational oversight of Accelya during the company's search for its next CEO. Davidson was CEO of Farelogix for more than 15 years prior to its acquisition by Accelya and brings with him extensive experience and a track record of innovation and customer-centric strategies. At Farelogix, Davidson oversaw the building of its New Distribution Capability (NDC) solutions and has been accelerating Accelya's investment in NDC following the acquisition. The consolidated portfolio unlocks choice for airlines, enabling them to chart a path to retailing independence.

Effective January 1, 2022, co-founder and CEO **Peter Lyager** will step down as executive director of TP Aerospace and transition to a non-executive position in the company's Board of Directors. **Nikolaj Jacobsen**, who joined TP Aerospace as CFO in 2018, has been appointed new CEO of the company alongside President and

co-founder **Thomas Ibsø**. Jacobsen has been with the company since 2018, first as CFO, and for the last year as Group COO and CFO. Lyager will continue to be invested in TP Aerospace as continued co-owner and will transition to Non-Executive Director in the Board of Directors from where he will continue to be involved in setting the strategic direction for TP Aerospace.



Keiron McNeill

RAS aircraft completions and interiors – a subsidiary of JETMS and a family member of the Avia Solutions Group, has appointed **Keiron McNeill** as the company's Managing Director. He arrives at RAS from his previous role as Chief Technical Officer for Loganair in the UK market. At Loganair he was a member of the airline's leadership team charged with responsibility for the technical introduction of the Embraer 135/145 fleet along with the ATR 42/72 into the airline's

resources. McNeill brings with him extensive experience gained with regional and international airlines, VVIP operations, the aviation resource industries in Europe, the Middle East and Australia with such prestigious names as Virgin Atlantic, BHP Billiton and the VVIP Bahrain Royal Flight. He has also undertaken many engineering leadership roles which stem from his foundation in Engineering as a UK/EASA-licensed aircraft engineer.

Stratos, a leading aircraft investment specialist and asset manager, has announced the addition of two industry professionals to its team: **Hongtao Li** as Head of Greater China on various strategic marketing initiatives and based in Hong Kong and **Kevin Moynihan** as Lease Manager based in Shannon, Ireland. Li has accumulated over 20 years of experience with top OEMs and international airlines. He most recently held the role of Sales Director at Airbus (China) covering aircraft sales and after sales services. Prior to this, Li worked in maintenance management supporting airline operations for various airlines based in Shanghai. Moynihan is a chartered accountant and most recently worked at Phoenix American Financial Services and was responsible for leading various activities in ABS deals. He began his career in KPMG Ireland where he worked on audits in the manufacturing and production industry.



AVITRADER MRO

The leading industry publication linking aircraft maintenance, the aftermarket, and aircraft operators

Avitrader MRO is a monthly digital magazine providing news and senior level analysis on the global commercial aviation MRO industry. Over the past decade the publication has grown to be a leading source of insight and analysis on the key issues facing the aircraft maintenance and aftermarket sectors.

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