

# MRO

Cockpit  
Avionics  
**Upgrades &  
Integration**

## Middle East MRO

Shifting sands  
amid a pandemic

## Lufthansa Technik

SOFIA 747SP  
checks in at Hamburg

## Swiss Precision

Swiss-AS expands  
in Asian markets



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## Aviation gears up for COVID vaccine transport

**T**he good news is that the COVID-19 vaccines are now gathering pace and initial results from the trials show that the two key vaccines under development from Pfizer and Moderna are over 90% effective. In the last few weeks various sectors of the aviation industry have implemented logistics and support services to ensure the distribution of the vaccines globally.

The Cool Chain Association (CCA) has launched a COVID-19 Distribution Change Management Matrix aimed at supporting airports to prepare their logistics for COVID-19 vaccines in a methodical way. The Matrix looks at adherence to temperature requirements, packaging, forecast and quantity, and timeframe across different stages in a vaccine's journey through an airport.

Air cargo operator AirBridgeCargo Airlines (ABC), has been aiming at 360-degree support of COVID-19 vaccine manufacturing, including through stable shipments of vial-producing equipment. As of October, a total of 840 tonnes of equipment enabling automation lines for the manufacturing of coated cyclo olefin (COP) polymer vaccines containers will be delivered from August till the remainder of the year from Frankfurt to Atlanta.

It is expected that more than 50% of COVID-19 vaccines will be transported by air with the major manufacturing regions being in India, China, UK, USA and Europe.

Distribution of the vaccines will no doubt be a logistical challenge. As noted by Air France KLM Martinair Cargo in recent weeks that in terms of volume, distributing the vaccines will be an unprecedented logistical operation. Initial expectations are that around 15 billion vaccines will need to be distributed worldwide. Many of these will also need to be distributed at exceptionally low temperatures. The Pfizer vaccine must be kept deep frozen (at -70 degrees Celsius).

Others will need to be distributed at a constant temperature of between +2 and +8 degrees Celsius. This means that logistical solutions will be essential to maintain quality throughout the vaccine distribution chain.

Air cargo will play a crucial role certainly, through well-established global time- and temperature-sensitive distribution systems. This capability will be crucial to the quick and efficient transport and distribution of COVID-19 vaccines when they are available, and it will not happen without careful planning, led by governments and supported by industry stakeholders as IATA highlighted in September.

The solutions are here, it's now time to deliver them. The first doses are expected to be distributed before the end of the year.

**Keith Mwanalushi**

Editor

The air cargo sector is gearing up for the logistical challenge.

Photo: CSafe



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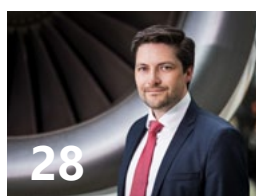
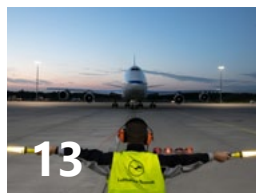
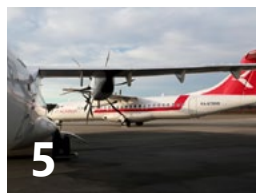
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## FLYdocs extends lease return services partnership with Brussels Airlines

Brussels Airlines, the flag carrier and largest airline of Belgium, has recently signed a contract with FLYdocs, extending their partnership for end-of-lease (EOL) return services for an Airbus A330 aircraft. For the two subsidiaries of the Lufthansa Group, this latest project includes a build and audit as well as a digital migration of the A330's records before delivery back to its lessor.

## EME Aero completes first series of Pratt & Whitney GTF shop visits

EME Aero, the engine services joint venture between Lufthansa Technik and MTU Aero Engines, has recently completed the first regular maintenance visits of Pratt & Whitney PW1100G-JM Geared Turbo Fan (GTF™) engines. Since January, when the first engine arrived in line with Pratt & Whitney's low-pressure turbine (LPT) retrofit program, a total of 21 engines were successfully delivered back to different customers. Moreover, EME Aero has now become an official member in the Pratt & Whitney GTF MRO network. After completing the LPT retrofit program, whose 15 engines were used to smoothly start-up operations in the facility, EME Aero has now already completed another six regular customer engine shop visits. "Despite all the obstacles and additional challenges due to the COVID-19 situation, we are still right on track with our ramp-up," said Derrick Siebert, Chief Executive Officer and Managing Director of Business at EME Aero. "The entire team is proud of reaching another important milestone by completing the first series of shop visits of GTF engines. This proves that EME Aero has now achieved full operational readiness." EME Aero is one of the most advanced and largest shops for the latest generation of commercial aircraft engines. With only 18 months from construction to entry into service, it was questionable if the challenging ramp-up program could be met. Yet, in December 2019 the state-of-the-art engine shop, including a fully operational test cell, was ready to start operations as an MRO facility.

## TAM delivers two ATR 72s to Siberian regional carrier KrasAvia

Täby Air Maintenance, TAM, has finished a major overhaul and refurbishment of two ATR 72 aircraft for Russia's regional carrier, KrasAvia, based in Krasnoyarsk, Siberia, some 700 km north-east of Novosibirsk. The two ATRs will be the first on the Russian register, complementing some 40 Russian- and Czech-built regional airliners like the Yak-42, An-24/26 and the Let 410. With more than three decades of qualified airliner maintenance experience, TAM has come to be a well-known provider of high-quality technical services for the worldwide fleet of Saab 340 and Saab 2000. This spring, TAM expanded its service portfolio to include the ATR 72-family, thus building a firm platform for continuous future expansion. With the first two ATRs coming into the workshops this spring, this current delivery of the two aircraft to KrasAvia is the first to a Russian airline.



TAM finished a major overhaul and refurbishment on two ATR 72 aircraft for KrasAvia

Photo: AFK

## Magnetic MRO signs new CAMO agreement with TrueNoord

Magnetic MRO, a Total Technical Care and Asset Management organization (CAMO), has signed a CAMO service agreement with regional aircraft leasing company TrueNoord. The agreement includes the re-delivery of two Mitsubishi Heavy Industries CRJ900 Next-Gen- (previously Bombardier CRJ900 NextGen series) type aircraft from a previous operator and all engineering services related to maintaining the aircraft in an airworthy and controlled environment. The general terms of agreement for CAMO services were signed at the end of September. Currently, both of the aircraft have been delivered to Tallinn and implementation into long-term storage is in the final stage. Before the ferry flight, the Magnetic MRO engineering department team visited the previous operator's facilities in Copenhagen Kastrup airport where they performed a detailed re-delivery inspection for exterior and interior including additional ground checks.

## TAG Aero and ITS to support 737 New Gen and A320 market with 131-9B and 9A APU solutions

TAG Aero and ITS have entered into an agreement to support the Boeing 737 New Gen and Airbus A320 aircraft market with 131-9B and 9A APU solutions. ITS's strategic fleet retirement solutions combined with TAG Aero's extensive APU repair and overhaul capabilities will establish reliable, global support for 737 New Gen and A320 operators. Together, TAG Aero and ITS will provide solutions for 131-9 series maintenance, leases, flat-rate exchanges and outright APU sales.

## Iberia converts first A330 into freighter to adopt to market

The first Airbus A330 aircraft that Iberia has converted into a freighter has arrived in Los Angeles from Madrid after four weekly cargo flights between the two cities had been scheduled for this month. In the early months of the COVID-19 pandemic, Iberia's flight operations were almost exclusively confined to repatriation flights and flights

carrying emergency medical supplies. This experience prepared Iberia for adapting to the new market situation and seize upon this opportunity. IAG Cargo, the cargo division of International Airlines Group (IAG), will service these flights. At the start of the pandemic, IAG Cargo was quick to develop tailored solutions for its customers' cargo needs,

including cargo-only flights using passenger aircraft and establishing a new charter team. With a wide network, IAG Cargo offers its services on more than 500 aircraft, to more than 350 destinations. This first Airbus A330/300 freighter conversion was already undergoing an inspection in Iberia's Madrid maintenance hangar in La Muñoza, where all Economy and Premium Economy seats, and crew rest stations, were removed, along with associated separation panels. Carpeting was reinstalled with lights indicating the 33 cargo positions. Cargo will be held in place with netting fastened to floor rails where the seats were previously anchored. This configuration yields additional carrying capacity of up to 105 m<sup>3</sup> or 18,000 kg of cargo. The conversion of the cabin has been carried out by Iberia MRO, which boasts extensive experience in aircraft retrofit operations and altering cabin configurations. The cabin conversion has been approved by Spanish Air Safety Agency, AESA



Iberia's first Airbus A330-300 freighter conversion.  
Photo: Iberia

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## Volaris selects Airinmar for warranty management services

AAR subsidiary Airinmar, the global independent provider of component repair cycle management and aircraft warranty solutions, has signed a new three-year support services agreement with Volaris, Mexico's leading domestic airline. The agreement covers the provision of new aircraft warranty services to augment and support Volaris' internal management team and maximize the recovery of warranty entitlements. The services will cover airframe, engines and components and entail warranty detection, claim management and benefit recovery.



Airinmar will provide warranty management services for Volaris  
Photo: AAR

**Mid-Canada Mod Center (MC2)** has completed the installation of a **Universal Avionics (UA) InSight** display system on a Citation VII aircraft. This marks the first Canadian installation of Universal Avionics' integrated flight deck solution. The work included an extensive flight deck upgrade, inflight connectivity, plus additional certification related to activities to obtain Transport Canada approval of UA's FAA Supplemental Type Certificates (STC). MC2's sister division, Avionics Design Services (ADS) helped smooth the way for application submissions and developed an STC for a software upgrade. With this completed installation and certification, the InSight Display System is now a solution for all Citation VII aircraft with existing Honeywell and Collins Nav/Comm packages.

## Embraer posts third quarter 2020 net loss of US\$148.3 million

Embraer has delivered seven commercial jets and 21 executive jets (19 light / two large) in the third quarter of 2020 (3Q20), and the company's firm order backlog at the end of the quarter was US\$15.1 billion. Excluding special items, adjusted EBIT and EBITDA were US\$(45.3) million and US\$(0.6) million, respectively, negatively impacted by weak commercial aviation results, yielding adjusted EBIT margin of -6.0% and adjusted EBITDA margin of -0.1%; The 3Q20 results include total net positive special items of US\$7.6 million: 1) restructuring expenses of US\$54.0 million related to the voluntary and non-voluntary dismissal programs announced in September, 2) negative provisions for expected credit losses during the Covid-19 pandemic of US\$13.0 million, 3) reversal of previous impairment in the executive jets business which positively impacted results by US\$15.9 million, and 4) reversal of previous impairment in the Commercial Aviation business which positively impacted results by US\$58.7 million; Adjusted net loss (excluding special items and deferred income tax and social contribution) in 3Q20 was US\$(148.3) million, with adjusted loss per ADS of US\$(0.81); Embraer reported Free cash flow of US\$(566.5) million in 3Q20, still affected by working capital increases (particularly higher inventories) largely in commercial aviation.

## Chorus Aviation reports third-quarter 2020 financial results

Chorus Aviation has reported net income of CA\$20.5 million for the third quarter of 2020, a decrease of CA\$3.7 million due to the impact of COVID-19 on its results, offset by a change in unrealized foreign exchange of CA\$24.9 million. Adjusted net income decreased CA\$18.2 million to of CA\$10.9 million and Adjusted EBITDA was CA\$85.9 million, a decrease of CA\$6.8 million over third quarter 2019 primarily due to the impact of COVID-19 on financial results. At the end of the third quarter the company had liquidity of approximately CA\$218.0 million, an increase of approximately CA\$30.0 million over the second quarter 2020. Chorus Aviation collected approximately 50.0% of lease revenue billed in the third quarter, excluding repossessed aircraft, a 22-percentage-point improvement over the second quarter of 2020. The company delivered the third of five new Airbus A220-300 aircraft to air Baltic of Latvia. (US\$1.00 = CA\$1.31 at time of publication.)

## Fly Leasing reports third quarter 2020 net loss of US\$8.1 million

Fly Leasing (FLY) is reporting a net loss of US\$8.1 million for the third quarter of 2020. This compares to net income of US\$51.7 million for the same period in 2019. The decrease in net income is primarily due to the non-recognition of revenue for certain lessees and no aircraft sales in the current quarter. Net income for the nine months ended September 30, 2020 was US\$39.6 million, compared to net income of US\$150.7 million for the nine months ended September 30, 2019. Adjusted net loss was US\$9.0 million for the third quarter of 2020, compared to adjusted net income of US\$59.8 million for the same period in the previous year. For the nine months ended September 30, 2020, adjusted net income was US\$45.9 million compared to US\$168.9 million for the same period last year. On September 30, 2020, FLY's

total assets were US\$3.5 billion, including investment in flight equipment totaling US\$3.0 billion. Total cash at the end of September was US\$307.5 million, of which US\$285.1 million was unrestricted. The book value per share was US\$29.28. FLY's net debt to equity ratio was 2.1x, compared to 2.3x on December 31, 2019. On October 15, 2020, FLY closed a new US\$180 million Term Loan to be secured by 11 narrow-body aircraft. The proceeds will be used for general corporate purposes, including the repayment of debt. FLY had 86 aircraft and seven engines in its portfolio at the end of September. The company's aircraft and engines are on lease to 39 airlines in 24 countries.

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## MAC Aero Interiors finishes Embraer Legacy 600 interior refurbishing program

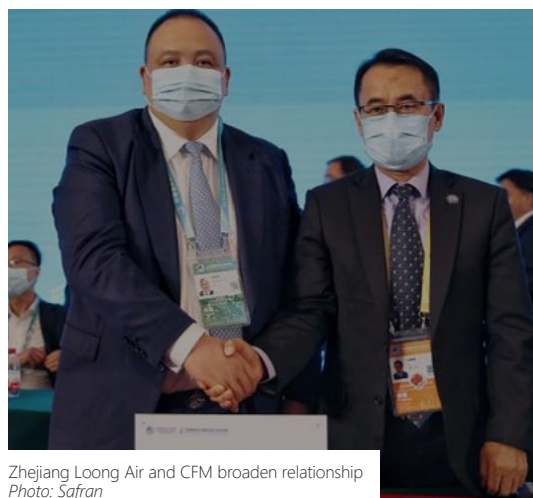
MAC Aero Interiors, a subsidiary of global provider of Total Technical Care for aircraft operators and lessors, Magnetic MRO, has successfully completed a full VIP aircraft interior refurbishment project for a private charter flight management company. The Embraer Legacy 600 aircraft has been delivered to Magnetic MRO hangars in Tallinn, Estonia, in September. The project scope followed "from concept to completion path" and included the refurbishment of the seats, divan covers and cushions, including armrests, shroud and fairing covers, in a design tailored specifically for the customer. In addition, it included lavatory refurbishments and carpet changes in the aircraft. New specially made perforated leather and fabric materials have been introduced and certified for this program to create a top-notch interior. Prior to the interior refurbishment, the painting design concept was prepared, and the aircraft has been fully repainted in VIP finish at the company's painting hangar.



Interior of finished Embraer Legacy 600 jet  
Photo: MAC Aero Interiors

## Zhejiang Loong Air and CFM sign Rate-Per-Flight-Hour agreement

Zhejiang Loong Air has signed a 12-year Rate-Per-Flight-Hour agreement with CFM International (CFM) for the LEAP-1A engines, powering the airline's leased fleet of 19 Airbus A320 and A321neo aircraft. Additionally, the deal includes an order for four spare LEAP-1A engines.



Zhejiang Loong Air and CFM broaden relationship  
Photo: Safran

This adds to the long-term service agreement signed last year at the Paris Air Show to cover 36 A320neo aircraft, powered by LEAP-1A engines. Loong Air has already taken delivery of 21 LEAP-1A-powered A320neos. RPFH agreements are part of CFM's portfolio of flexible aftermarket support offerings. Under the terms of the agreement, CFM Services guarantees maintenance costs for the airlines LEAP-1A engines on a dollar per engine flight hour basis. LEAP-1A engines are a product of CFM International, a 50/50 joint company between GE and Safran Aircraft Engines.

## VAS Aero Services to disassemble Airbus A330 aircraft for Hi Fly Airlines

VAS Aero Services and Hi Fly Airlines have announced an agreement for VAS to manage the disassembly of one Hi Fly A330 aircraft (MSN 262) and associated engines. The airframe teardown will be conducted by VAS' European services partner, Tarmac Aerosave, at the Tarmac facility in Tarbes, France. The aircraft's two Pratt and Whitney PW4000-100 engines will be disassembled by SR Technics (SRT) at the SRT facility in Zurich, Switzerland, and will support the two company's Exclusive Supply Program agreement.

## Bombardier eyes layoffs as it misses quarterly targets

The Canadian plane and train maker has announced that it has missed its quarterly operating profit forecast and, as a consequence, is now eyeing staff layoffs to reduce running costs. Like so many aviation-related businesses, Bombardier has been heavily hit by the widespread effects of the COVID-19 pandemic. Currently Bombardier is streamlining its business with the sell-off of its rail division to France's Alstom and in future will be concentrating solely on the manufacture of luxury business and private jets such as its Global and Challenger series. "In the weeks to come we will decide all the initiatives we need to do to reduce our cost base," Bombardier CEO Éric Martel told reporters, adding that "It's sure there will be layoffs that will come with this." Having delivered eight of its Global 7500 jets in the last quarter, the company anticipates this number will rise to 12 for the final quarter of the year, which it hopes will see it operating at break-even level for the second half of the year. Corporate jet deliveries dropped to 24 units compared to 31 for the same period in 2019, but business revenue rose 10%, mainly thanks to the Global 7500 making up one third of aircraft deliveries. Bombardier's margins and earnings before interest, taxes, depreciation and amortization (EBITDA) took a hit on higher initial production costs for the Global 7500 jets and lower deliveries. Bombardier reported adjusted EBITDA of US\$176 million for the third quarter as opposed to US\$255 for Q3 2019.

## Spirit AeroSystems posts third-quarter net loss of US\$156 million

Spirit's third quarter of 2020 revenue was US\$806 million, down from the same period of 2019, primarily due to the significantly lower 737 MAX production resulting from the grounding of the program and the impacts of COVID-19. Deliveries decreased to 206 shipsets during the third quarter of 2020 compared to 437 shipsets in the same period of 2019, including Boeing 737 MAX deliveries of 15 shipsets compared to 154 shipsets in the same period of the prior year. Spirit's backlog at the end of the third quarter of 2020 was approximately US\$40 billion, with work packages on all commercial platforms in the Boeing and Airbus backlog. Operating loss for the third quarter of 2020 was US\$(177) million, down compared to operating income of US\$206 million in the same period of 2019. Included in the 2020 operating loss were excess capacity costs of US\$72.6 million, forward loss charges of US\$(128.4) million, primarily driven by the lower production

rates announced by Boeing and Airbus on the 787 and A350 programs, and restructuring expenses of US\$19.5 million for cost-alignment and headcount reductions. In comparison, during the third quarter of 2019, Spirit recorded US\$(28.8) million of net forward loss charges. Spirit reported a third-quarter net loss of US\$(156) million and cash from operations of US\$(53) million, down from US\$255 million in the same quarter last year, primarily due to negative impacts of working capital requirements and significantly lower production deliveries, partially offset by favorable cash tax. On October 30, the company closed the acquisition of select Bombardier assets. Prior to the closing, on October 26, 2020, Spirit, Bombardier, Inc. and certain of their affiliates entered into an amendment to the purchase agreement that reduced the net proceeds purchase price payable to the sellers from US\$500 million to US\$275 million.

## DAE reports financial results for nine months ended September 30, 2020

Dubai Aerospace Enterprise (DAE) has reported its financial results for the nine months ended September 30, 2020. The company reported total revenue of US\$984.1 million, compared to US\$1,085.1 million for the same period in 2019. Net income totaled US\$167.3 million, compared to US\$260.5 million the previous year. During the third quarter of 2020, DAE signed agreements to acquire 31 aircraft with a total value of approximately US\$1.1 billion, of which approximately US\$0.2 billion was booked in the third quarter of 2020 and the remainder will be booked in the fourth quarter of 2020 and in 2021. DAE ended the period with available liquidity of US\$2.1 billion after repaying a US\$430 million bond in August. Furthermore, the company ended the quarter with strong capital levels – its Net Debt-to-Equity ratio was below 2.5x.



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# Beyond Swiss precision

Swiss-AS is solely owned by parent airline SWISS.  
All photos: Swiss-AS

Demand for MRO software continues to show resilience even in challenging times. **Keith Mwanalushi** looks at recent expansion by Swiss-AS in the Malaysian market.

**R**ecently, Sapura Technics, a Part 145 commercial aircraft MRO service provider based at Senai International Airport in Malaysia announced its "Go Live" status with the Swiss-AS AMOS MRO Edition following a six-month implementation period. The Malaysian MRO now plans to take advantage of the latest AMOS MRO features to manage its line and base maintenance activities for B737 and A320 family aircraft.

Chris Clements, Sales Representative at Swiss-AS says from an MRO perspective the benefits of implementing AMOS MRO are wide ranging – "Whether the biggest benefits are seen in engineering, supply chain and stores, production or the Commercial team all depends on the company in question and their current processes."

Following the six-month implementation phase, the completion of this milestone enables Sapura Technics' supply chain and commercial department to use AMOS productively in their day-to-day operations. It also opens the AMOS system to the engineering and planning end users for the definition of detailed customer require-

ments and work instructions, and the facility and resources planning operations, respectively.

Clements explains that one of AMOS biggest strengths is the integrated suite of application and modules that ensure the seamless flow of data, all the way from quotation to the delivery of a serviceable aircraft including the option to electronically export updates to the progress of the work package at regular intervals. "All steps of the process can be managed with an approval control logic ensuring that tight controls of the accepted quotation and scope of work is well documented and controlled, allowing the MRO provider to accurately manage the execution and delivery of the required services."

In an increasingly digital climate, airlines, MROs and vendors are acutely aware that

customers are demanding adaptability and connectivity from their MRO software systems. Clements explains that AMOS allows MRO users to digitalise their process where perhaps they were previously stuck in a paper-digital-paper cycle which not only costs money in terms of paperwork and its processing but allows the possibility of incorrect data when these transactions are performed. "When selecting a solution such as AMOS the customer has the possibility to handle the customers' requests digitally regardless of how they are received."



Chris Clements, Sales Representative at Swiss-AS

Following a period of stabilisation, Sapura Technics will launch the implementation of AMOSmobile to equip its mechanics with a functional platform that supports daily line and base maintenance paperless activities. With this fully integrated AMOS add-on, staff have access to live data and are given the





Sapura will use the AMOS software to manage its line and base maintenance activities.

as a standard MRO customer, as their range of services can vary widely, however AMOS has the functional scope to cover virtually all of the requests made of it."

He further states that once the final process definition has been achieved the remainder of the data migration (reduced in scope compared to airline customers generally) can be planned and executed in line with the training plan in preparation for Go Live.

In the current environment, Clements admits that it is a tough time for both customers and potential customers while being in the middle of a pandemic. He says AMOS has several functions and standard processes that provide solutions to the challenges that customers are facing.

"Our services have adapted to be able to offer for instance, consulting, project management, training remotely whilst ensuring the maximum benefit to the customer. Indeed, we have several implementation projects ongoing and several more on the verge of starting."

Several big players on the MRO market have trusted Swiss-AS software to support and enhance their business such as EGAT, EGME, LOTAMS, SEPANG, as well as start-ups such as Sapura, and with an implementation ongoing with HAECO in Hong Kong it is clear that the AMOS product and community is strong in the MRO sector.

Sapura Technics are expected to carry out the first aircraft heavy checks imminently dependant on COVID-19 related restrictions.

chance to record all activities directly at the aircraft, without having to go to the office for reporting.

Clements confirms that by year-end, the AMOSmobile/STORES solution will become available to users which also sits on a new tech stack, Google Flutter. "This will allow the mobile benefits already seen by the maintenance staff to be exploited in the stores environment including daily stores tasks being performed throughout the store, accessing and updated AMOS with-

out having to return to a desktop."

The implementation of AMOS for MRO's can be managed by the in-house team at Swiss-AS following several years of experience implementing AMOS successfully. Clements attests to Swiss-AS' well-defined implementation strategy that ensures the best results. He says each implementation has its own challenges and the primary process review provides the backbone for the rest of the project scope.

"It's fair to say that there is no such thing



AMOSmobile STORES solution is available from year end.

# Special delivery



The modified SOFIA 747SP arriving for C-Check services.  
All photos: Lufthansa Technik

The flying observatory SOFIA Boeing 747SP landed at Hamburg Airport recently for a routine C-check. **Keith Mwanalushi** talks to Lufthansa Technik about this unique special aircraft service.

**T**he SOFIA (Stratospheric Observatory for Infrared Astronomy), modified Boeing 747SP (Special Performance) made a pit stop at Lufthansa Technik (LHT) in Hamburg for its routine C-Check and understandably the arrival of the now very rare 'SP' was met with plenty of eagerness.

The flying observatory of the US space agency NASA and the German Aerospace Centre (DLR) landed at Hamburg Airport on 30 September 2020. Sven Hatje, the Project Manager Operations, VIP and Special Mission Aircraft Services at Lufthansa Technik says for the SOFIA project, LHT was commissioned with a work package by NASA and that a "NASA C-Check" must always take the needs of the telescope into account. "Most tests can only be done together with the DSI (German SOFIA Institute) and NASA, because the telescope

influences the aircraft systems."

LHT started planning the check at the beginning of this year. "The check includes the routine controls, Service Bulletins (SBs') and if necessary, also Airworthiness Directives (ADs') . Another special feature is the release of the aircraft for flight operations is done exclusively under the responsibility of NASA as the competent authority and not by us. Independent of the current check, we have already carried out some maintenance work at the home base of the aircraft in Palmdale," Hatje explains.

In the special case of SOFIA, the aircraft is repaired in accordance with NASA regulations, which also defined the exact work packages for this layover. During the extended maintenance visit the aircraft structure undergoes extensive inspections

before necessary repairs are carried out. Engines and cabin features , including the panelling and floors, are removed to carry out the test and maintenance work and to check all cabling and ducts. In addition, the air conditioning system is given an upgrade.

The telescope on board of SOFIA is also put through its paces and thoroughly overhauled while in Hamburg. This work is carried out exclusively by the staff of the DSI at the University of Stuttgart, who are familiar with this globally unique system.

Presently, more than 10,000 working hours are already earmarked for the scheduled work alone. "In 2014 and 2017 we already experienced an exceptionally good cooperation with our colleagues from DSI, DLR and NASA and we are now looking forward.





to continuing this cooperation," Hatje recalls.

Speaking of engine work, Hatje says they received a comprehensive condition check at the beginning of the layover. "The performance settings and safety systems have been fully tested. We will then routinely perform normal service work as well as detailed structural checks. Should problems occur, we have the opportunity to rectify them during the layover without jeopardising the delivery."

Unlike SOFIA's other visits to Hamburg, this time its scientific instrument (GREAT - German Receiver for Astronomy at Terahertz Frequencies) is mounted on the telescope which is disassembled after landing and

brought to the Max Planck Institute for Radio Astronomy in Bonn for maintenance and optimisation.

Both Lufthansa Technik and NASA have developed and coordinated comprehensive procedures for working in and around the aircraft considering the safety precautions due to the COVID-19 pandemic. To implement the mandatory social distancing measures for employees, in the VIP and Special Mission Aircraft Services product division LHT switched from a two-shift-schedule to a three-shift-schedule. Hatje explains: "This means we have fewer people working on the aircraft at the same

“The check includes the routine controls, Service Bulletin's and if necessary, also Airworthiness Directives.”

*Sven Hatje, Project Manager Operations, VIP & Special Mission Aircraft Services at Lufthansa Technik*

time and therefore we make more physical distancing possible. During shifts, our colleagues split by working on either the front or the back of the aircraft and only two people are involved in the shift handover. In addition, our staff were provided with nose and mouth masks for tasks or working situations where social distancing cannot be guaranteed, for instance cockpit checks."

Special hygienic measures at the aircraft included a complete surface disinfection at the beginning of the layover. "Further disinfections are carried out at regular intervals and the aircraft is also continuously ventilated through the doors and, if necessary, with external fans."

A requirement from NASA limits the number of people staying on board of the aircraft in parallel. No more than 15 people are allowed in the cabin at the same time.

The maintenance work should be completed by the beginning of February when the SOFIA 747SP is expected to resume scientific missions.



Sven Hatje, Project Manager Operations  
Photo: Lufthansa Technik AG – Jan Brandes

# WHAT'S YOUR EXCUSE FOR CHOOSING COMPLEX?

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IT'S THAT SIMPLE**





The investment for any retrofit upgrade will depend on the value to each airline.  
Photo: CSAT

# Checklist: Avionics Integration

**Keith Mwanalushi** examines the cockpit upgrade and maintenance sectors, the progression towards integrated avionics and the impact of COVID-19 on retrofit programmes.

The commercial aircraft avionics market is primarily dependent on the demand for new aircraft and upgrades of avionics for existing aircraft. The market is highly consolidated, with much of the share occupied by a handful of players. Collins Aerospace capabilities for example cover a wide scope of communication, navigation, surveillance, displays and connected aircraft systems. One of the key systems they provide today is the Head Up Guidance System (HGS) - this is now available in dual configuration on a wide range of aircraft, B777X, B787 as standard, B737MAX and the Airbus A220. The HGS displays critical flight information in the pilots' forward field of view and keeps their attention focused on the outside world,

enhancing overall situational awareness and safety.

On top of that capability Collins Aerospace are advancing in the certification of Enhanced Vision, with the EVS-3600 - recently certified on B737NG, and more platforms are in view for the future, tells Jean Pierre Rivet, Marketing Director Commercial Avionics Europe, Middle East and Africa at Collins Aerospace

Enhanced Flight Vision Systems (EFVS) are unique in the situational awareness capabilities they provide pilots. "Using multiple cameras combined into a single image for the pilots, the EFVS systems see through poor visibility conditions, and can offer re-



Jean Pierre Rivet, Marketing Director Commercial Avionics EMEA, Collins Aerospace.





Supporting the maintenance processes in the cockpit is vital.  
Photo: SCAC

duced minima for approaches, making the business case compelling for airlines that wish to ensure on time arrivals in difficult conditions," Rivet states.

Complementing the vision systems with powerful navigation capabilities is important, Rivet notes saying the latest Multi-Mode Receiver (MMR), the GLU-2100 encompasses a wealth of new capability for airline flight decks. It's not all about the approach though – Multiscan Weather Radar is a key tool for crew to avoid difficult

conditions in all phases of flight and also, communication is a key part of Collins Aerospace capabilities, and they are currently developing a number of new capabilities for the flight decks of the future.

Back in April, Thomas Global Systems announced it received European Aviation Safety Agency (EASA) Supplemental Type Certificate (STC) approval for its TFD-7000 Series plug-and-play LCD flight displays for Boeing 757 and 767 cathode ray tube (CRT)-equipped aircraft.

"Our displays, and custom avionics and electronic solutions are installed in the flight decks of major airlines, and regional and corporate commercial fleets, as well as military aircraft and other military land, air, sea, and training platforms globally," Angus Hutchinson, Thomas Global Systems' CEO tells *AviTrader MRO*.

Hutchinson says Thomas Global has cultivated an engineering and technology skill set comparable to larger avionics OEMs and MROs, a proven systems engineering and processes approach to aerospace programmes, a customer base of over 70 airlines, and strategic alliances in the U.S., Australian and New Zealand defence organisations. "Our team has leveraged our expertise in display technology optonics

and graphic and video processor design to successfully integrate legacy and cutting-edge display technology to develop a line of plug-and-play LCD solutions to address CRT obsolescence for business, commercial air transport, and regional aircraft."

In 2019, Thomas Global introduced the TFD-7000 Series plug-and-play LCD for the Boeing 757/767 and 737-C.

#### Challenges for retrofit upgrades

Hutchinson observes fluctuations in demand for retrofit upgrades on legacy fleets (like the 757/767) due to the early retirements of older aircraft and says the global air travel and tertiary businesses is unprecedented – "The commercial aviation supply chain from airlines to manufacturing OEMs and MROs to supporting businesses has taken dramatic steps to conserve cash and manage supply. Operators are retiring primarily widebody (international route) fleets, putting a significant portion of their fleets in storage, deferring or cancelling deliveries of new aircraft and equipment, and deferring discretionary investment in the current fleet."

However, Thomas Global TFD-7000 Series plug-and-play LCD display upgrade for the B757/767 and 737-C has attracted strong interest and uptake since the launch in 2018, affirms Hutchinson. "In today's envi-



Angus Hutchinson, CEO, Thomas Global Systems





HGS actual flight over Washington State.  
Photo: Collins Aerospace

ronment, we are seeing a growing interest in the practical nature of our plug-and-play technology, which avoids a major flight deck modification and its associated aircraft downtime and crew retraining costs."

Hutchinson stresses that operators are focused on cash conservation and ensuring expenditure delivers the most practical and efficient outcomes. "Cargo carriers have continued to do well, and declining passenger air travel has reduced belly cargo supply, driving additional demand for cargo lift. Further, as travel demand recovers, we believe current fleets, particularly narrowbodies will compete well against investment in new aircraft. Thomas Global is continuing to support our customers as they evaluate solutions for their CRT-equipped flight decks."

Interestingly, Taavi Karniol, Line Maintenance Licenced Technician at Magnetic MRO says they do not see any fluctuations in the demand for the retrofit upgrades due to early retirements. "Of course,

the number of older aircraft have decreased due to aircraft groundings as well as decreased air travel, but it hasn't shifted the demand for the retrofit upgrades yet. However, if the situation continues, we are expecting changes alike."

With testament to that resilience in the market, early in October, C&L Aerospace signed an agreement with Thomas Global Systems to distribute their TFD-8601 upgrade solution for legacy EFD-86 CRT displays. The solution is available for many regional and business jet aircraft platforms including the Saab 340 and EMB 120.



Taavi Karniol, Line Maintenance Licenced Technician at Magnetic MRO

#### Keeping a lid on maintenance costs

As with anything, prevention is better than cure - this is the approach Collins Aerospace are taking for the reduction of maintenance costs. "We are a market leader in solutions that support big data and artificial intelligence, supporting the maintenance processes at an airline operator," Rivet indicates. Their FOMAX

system which is line fit on Airbus single aisle and long-range aircraft, is a key supporting element of the Airbus Skywise predictive maintenance system, and Collins also offers maintenance prognostic systems.

The IntelliSight system is the Collins aftermarket solution to support flight operations and maintenance quality programmes, for every platform and customer. Both FOMAX and IntelliSight systems support operations enablement programmes which enhance operational efficiency.

Rivet explains that the objective is to assist the customer and support any solution available on the market. "With Collins analytics services, airline operations can take advantage of our unique systems expertise and data intelligence to make strategic maintenance decisions on Collins Aerospace products."

At Thomas Global, CRT flight deck displays have been at the core of their capabilities for over 30 years. That experience has been fundamental to the design innovation in the TFD-/EFI-Series family of plug-and-play LCD flight display upgrades, including the TFD-7000 Series for the B757/767 and 737-C.

"LCD display technology has given us lighter displays with lower power and cooling re-

quirements," says Hutchinson. "These improvements increase reliability and reduce MTBUR, which drives down maintenance cost by reducing event frequency. They also improve the ease of maintenance from an occupational safety and health administration standpoint."

Hutchinson further explains that the TFD-7000 Series is designed to resolve CRT obsolescence and maintenance challenges and includes a growth platform to add functionality without the expense of a full flight deck modification with aircraft installation and crew retraining costs. The TFD-7000 Series incorporates AMLCD technology, eliminating high-MTBUR electromechanical components, and leverages a breakthrough A-D software core to integrate into the installed Boeing EFIS infrastructure, he says. "The result is a plug-and-play LCD solution that captures all the [maintenance] benefits of LCD technology, with a growth platform for Next-Gen and other evolving requirements."

#### Installation of ADS-B capability

Just prior to the onset of the Coronavirus pandemic the aviation industry was well on its way to achieving ADS-B Out (Automatic Dependant Surveillance – Broadcast), which requires that the aircraft transmits its own GPS position via the Mode S transponder, regardless of whether the aircraft is being interrogated by a ground radar or

by other aircraft's TCAS.

The ADS-B Out system should have become mandatory in 2020 in Europe, USA, and other countries but due to limitations caused by COVID the mandate for installation has been extended by some regulatory authorities.

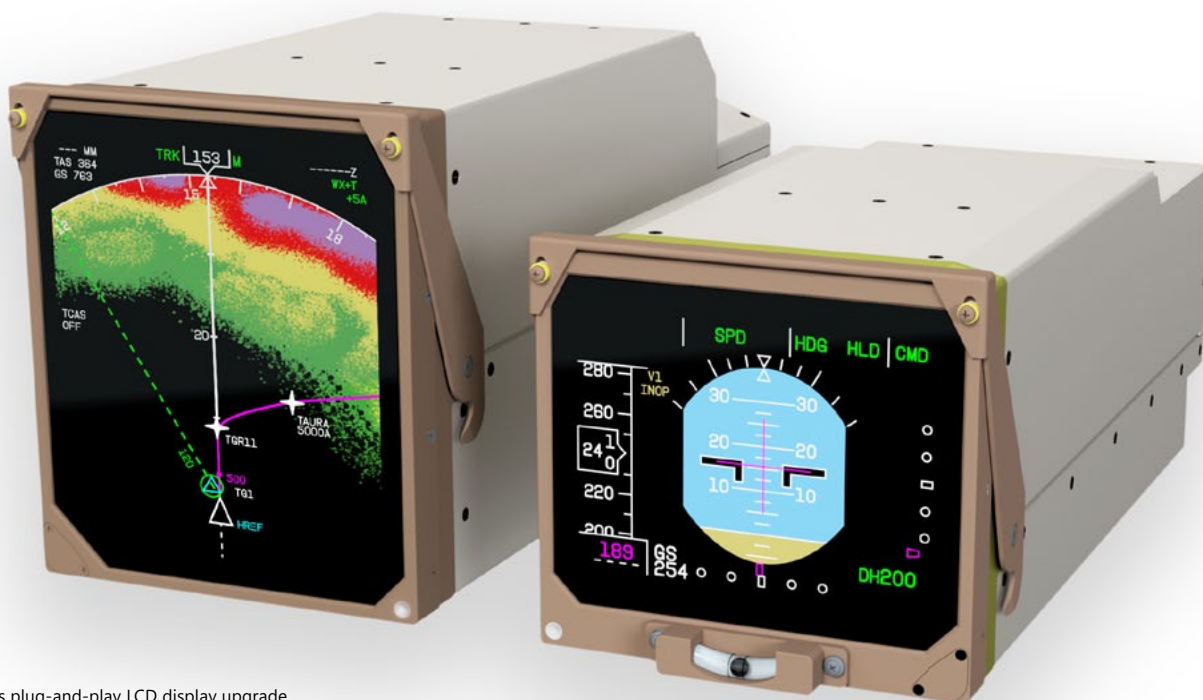
Rivet has seen airlines step up actively and address the need to implement mandates on their fleet for the variety of mandate deadlines around the world. "Collins has been discussing the different requirements and appropriate solutions with our customers for many years. The airborne segment is now equipped to a large extent, and it is time for the airlines to reap the benefits of their investments, as the wider surveillance and datalink systems come online to leverage these new technologies. In particular for the case of ADS-B Out, as more aircraft are equipped with this technology we can start to look at ADS-B In applications, using ADS-B to help improve airport throughput and more efficient separation on approach."

ADS-B Out is now required in virtually all controlled airspace worldwide, and as Hutchinson remarks, although the pandemic has prompted some schedule relief for implementation, for instance in Europe, this should help operators focus on remaining viable through the market downturn. In the U.S., operators had until January 2020 to

equip for ADS-B OUT. In Europe, the deadline has been extended to December 2020.

Hutchinson says currently, the B757/B767 ADS-B Out FAIL annunciation is being implemented on the ATC Control Panel. "Should an airline or operator be interested in having ADS-B Out FAIL annunciation in the forward field of view, the TFD-7000 has the growth provisions to allow us to provide that additional functionality."

Where mandates are concerned, Rivet feels the COVID-19 crisis has invariably affected airlines' plans and modification schedules, however many of the older aircraft being retired were also exempted from the ADS-B and ATN-CPDLC mandates in Europe, therefore the variance is not directly correlated with the number of aircraft being retired, he clarifies. "Beyond those mandatory upgrades the return on investment for any retrofit is considered on a case by case basis and Collins strives to provide value to airlines to improve efficiency - we expect the operators to continue to look at investments that make sense to improve their operations. We are also seeing operators continue in their objectives to ensure their operations are sustainable and more environmentally friendly, Collins Aerospace solutions are designed to contribute to those targets through reduced fuel burn and enhanced operational efficiency."



TFD-7000 Series plug-and-play LCD display upgrade.  
Photo: Thomas Global





Regional MROs must adjust their manpower costs in line with their workload.  
Photo: Joramco

# Sitting at the crossroads

The Middle East is at the global crossroads of aviation. **Keith Mwanalushi** gathers insight on the impact of the COVID downturn on aircraft maintenance in the region.

In February, just prior to the onslaught of the Coronavirus pandemic, industry figures suggested that the aircraft MRO market in the Middle East region was expected to show a compound annual growth rate of 2.9% between 2020 and 2025.

Fraser Currie, CCO at Jordanian MRO provider Joramco tells *AviTrader MRO* that the effects of the pandemic have lasted longer than anyone could have accurately predicted. He says the affects have seen several of the MRO's customers placing aircraft into long term parking and storage. "We have also seen maintenance inputs postponed due to maintenance extensions granted by the OEM's. Therefore, we have worked with our customers to support them with their new requirements such as parking and end of lease checks. As far as the wider Middle East market is concerned, we see many of the airlines with significant aircraft parked in

long term storage programmes of at least 12 months," observes Currie.

Looking at the region, Tim Butzmann, Head of Corporate Sales Africa and Middle East at Lufthansa Technik says demand for MRO services has decreased in proportion with aircraft utilisation in areas that are directly related to that aircraft such as component services and line maintenance. He notes that engine MRO is slowing down substantially.

"Some small workscopes remain but that does by no means make up for overall loss in demand," Butzmann com-

ments. "Base maintenance remains relatively steady, regular checks are still being done to maintain aircraft airworthiness and some operators even use the period of low utilisation for doing certain worksopes while the capacity is not needed. Especially the large and dominant operators in the region seem to be maintaining a strategic view despite the uncertainties of the current situation and this is reflected also in the way they are maintaining their aircraft."

In times of temporarily low demand (especially component services and power-by-the-hour, PBH agreements) Butzmann says



Tim Butzmann, Head of Corporate Sales Africa & Middle East, Lufthansa Technik



Joramco welcomed the new winter MRO season for the Lufthansa group.  
Photo: Joramco

Lufthansa Technik are offering well balanced solutions for operators that reflect the low aircraft utilisation – “We are also offering new concepts for covering these low utilisation periods for our non-PBH customers combining security of supply with low fixed costs.”

Phil Seymour, President and Head of Advisory at aviation consultancy firm IBA weighs in on the impact of COVID on the regions as “significant”. He says for many



Phil Seymour, President and Head of Advisory of IBA

years, the region benefitted from a relatively young average age of aircraft, but this has obviously changed in recent years. “This had meant that the number of heavy maintenance checks was increasing, especially for widebody aircraft such as the B777, A330 and A380 fleets. It would seem logical to suppose that the MRO industry was looking forward to increasing business in the coming years, but that has undoubtedly been negatively impacted with the expectation that the A380 fleet will have significant reductions or cancellations of their 12-year checks as the airlines consider their future use.”

Seymour notes that there may be some improvement for the MRO market with respect to the B777. “There is no firm evidence yet, but it is possible that some B777s that may have otherwise been returned to their lessors in the next two or three years (with the arrival of the 777X) will remain in service for longer, especially as A380s will be considered too big to keep them in profitable operation.”

With respect to engines, Seymour says the region is considered “harsh” given the temperature, sand and in some cases coastal airport locations. “In general, the time between refurbishments is shorter than it is

for engines operated in more temperate climates. Meanwhile, most airlines have deferred expensive shop visits to preserve cash, so this has the effect of delaying planned shop visits.”

Also, he adds that the focus is on using as much engine time as is available, moving engines around the fleet, taking them off stored aircraft and placing them on utilised aircraft to use every last hour and cycle – the so called green time.

“In summary, the short-term outlook for previously planned engine shop visits is bleak, with repairs and fixes being made rather than full module overhauls,” states Seymour.

### Widebody vs narrowbody

Data from ICF shows that 50% of the Middle Eastern fleet is composed of widebody aircraft versus 20% at the global level. With the long-haul international market being the most impacted segment of the industry and the slowest one to recover, a significant number of widebody aircraft are still either parked or operating at lower utilisation. “A number of Middle Eastern MROs are highly competitive players in the market and have captured workload coming from other regions such



as Europe and Africa,” notes Yann Cambier, Director, Aviation – ICF. “Though, as airlines in Europe and Africa have faced significant reduction in their activity, the resulting MRO workload has drastically reduced too. In addition, airlines are all in cash conservation mode and striving to defer any significant maintenance events if they can.”

Cambier sees that the fleet mix in the Middle East is currently unfavourable. ICF anticipates most markets between the Middle East and other regions will take between four and five years to return to 2019 levels – “This is a driver behind the local airlines reviewing their fleet plans and announcing some premature retirement.”

Middle Eastern carriers operate a major chunk of the global A380 fleet and the type is significantly at risk due to the ongoing restrictions to international long-haul air travel. This is especially an issue for airlines in the region that rely upon transit traffic. This has forced carriers like Emirates to introduce innovative solutions by deploying its A380s as ‘mini-freighters’ on select cargo charter operations to transport urgently required cargo across its network.

“There can be little doubt that MRO for long-haul aircraft will recover slower than that for short-haul especially in the areas directly related to aircraft utilisation,” Butzmann from Lufthansa Technik says. “However, considering that major long-haul carriers in the region have a particular interest in reactivating their fleets quickly as they have less opportunities to compensate for losses in the long-haul sector by short-haul operations they will place particular efforts and will therefore presumably be faster in doing so. This might mitigate the effect to some extent.”

In Amman, Joramco’s MRO business has an extensive widebody and narrowbody capability including but not limited to: B787, B777, B737 NG/MAX, A320 Family (including NEO), A340, A330, and others. In August, the MRO provider announced it was continuing MRO services on Ryanair 737-800s for a new season after successfully completing its first-time base maintenance agreement with the Irish budget airline.



Emirates is deploying its A380s as ‘mini-freighters’.  
Photo: Emirates

“We remain busy with both widebody and narrowbody but for sure we see the largest impact on the pandemic on the widebodies,” Currie mentions. “We are delighted to be working with Ryanair and our agreement covers group operators too.”

### Switching strategies

With some operators expecting to freeze non-essential maintenance, seemingly, MRO organisations will need to quickly adapt as customers weigh up their options.

Cambier at ICF reckons a key consideration for MROs is whether they can adjust their

manpower costs in line with their workload. “MRO organisations will be highly active in reviewing their employment agreements and identifying the levers they can use to make their workforce costs more variable. In addition to identifying levers to align costs with workload, MROs need to identify ways to adjust their service offering. For example, the leasing community will see an increase in premature aircraft returns. MROs need to be able to offer adequate support to the lessors who may not have a lessee ready straight away to take the plane on and therefore the lessors may want to tailor the maintenance in line with such a situation.”



Yann Cambier, Director, Aviation – ICF

Seymour identifies the need for more flexible maintenance programmes. He then describes a typical scenario: The Airbus family is built upon a 6/12-year heavy maintenance plan. Let us use a 12-year check cost of an A330 as a \$4m cost. That would release the aircraft for a further 6 years. How about performing key aspects of that check but not all of it? It will need the OEM,

regulator, MRO and airline to devise a “flex check” and it will mean that the aircraft may need further inspections at, say 36 months, but it may result in a \$2m rather than \$4m check cost. At 36 months it may need a further \$2-3m spend, but in the short term cashflow has been improved. Longer term, the cost per fh/cyc will be higher but right now the need is to preserve cash.

He adds that such a stance could be taken with regards to the engines. Instead of full refurbishment/overhaul of all modules, a flex plan where the hot section is refurbished (combustor/HP compressor and turbines are repaired) could be devised.

“We have been brainwashed into thinking it is all about keeping an engine on wing for as long as possible, creating high cost shop visits but benefitting from long on wing times. For now, let us preserve cash. It may mean higher costs in the long term, but if all the cash is spent now, for many airlines there will be no long term,” Seymour warns.

#### **Investment and opportunities for growth**

As the aviation industry grapples with the realities of the pandemic it has become ever more necessary to identify any opportunities for growth. Some trends in the aviation industry will not be delayed by the Corona crisis but probably rather ac-

celerated, feels Butzmann. “I see digitalisation and sustainability among these. Both are important pillars of Lufthansa Group’s strategy. Both will be contributing crucially to increasing cost effectiveness of airline operations which is important to make the airline business commercially viable again after the huge financial hit we have taken in this crisis.”

Consequently, investment in Aviatar, Lufthansa Technik’s platform for digital fleet services, will continue. “We have every intention to make use of the potential of this initiative within the airline group and we see the same strategic ambition in our customers who are using the platform already,” Butzmann adds.

In 2019, Kenya Airways outsourced B787 C-Checks to Joramco. These next-gen aircraft have become increasingly “digital” as Currie sums up – “We are extremely pleased with the development of our next-gen aircraft inputs. Our processes and procedures are constantly under review as we seek to be as efficient as we can be. We work closely with our customers and partners to stay up to date with new technology. To date the changes have not been that significant in direct regard to the next-gen aircraft, except for adding new capability for the composite repairs.”



Joramco does heavy checks on Ryanair’s 737 NG fleet.  
Photo: Joramco



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- B777-200/300



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- E170
- E190
- E175
- E195



**AIRBUS**

- A300-600
- A330
- A310-200/300
- A340-200/300
- A320 Family
- A320neo



## Multi-platform Aviation Services

Reclamation services at Ascent.  
All photos: Ascent

**A**scent Aviation Services (Ascent) is one of the largest aircraft maintenance operations in the world providing fully integrated aviation maintenance, repair, and overhaul (MRO), line maintenance, storage, reclamation, paint, and interior services to owners, operators, and lessors of wide body, narrow body, and regional aircraft. With outstanding reliability and service that delivers, Ascent is ideally situated as a one-stop-shop for all aircraft fleet service, storage, and end of life needs.

Ascent Aviation Services is privately owned and operates in multiple facilities across the arid southwestern United States, providing an ideal year-round climate for aircraft maintenance, repair, overhaul, and storage. With an average of 350 days of sunshine annually and very low humidity, there is no better location

in North America, and possibly the world, for storing and maintaining your aircraft. Ascent operates two facilities located just 40 miles apart and near vibrant Tucson, AZ with expansion planned to Roswell, NM in 2021 incorporating additional hangar and storage space to support their growing customer base.

### Solutions

Ascent is located on more than 1,200 acres of land between two sites on Tucson International Airport (TUS) and Pinal Air Park (MZJ) and occupies over 300,000 sq. ft of enclosed hangar, shop and storage space. The large footprint and flightline area make Ascent one of the largest lease transition, storage, and reclamation facilities in the world.

With more than 40 years in continuous operation and over 1,000 maintenance

visits to date, Ascent specializes in heavy maintenance of nearly every commercial aircraft type. Ascent has heavy check capabilities for most major aircraft in operation from Boeing, Airbus, Embraer, and Bombardier. The hangars and experienced team can accommodate anything from an ERJ to a B777 and most everything in between. Ascent is a Class IV 14 CFR Part 145 certified Repair Station and maintains approvals & certifications from regulatory authorities globally, including FAA, EASA, BDA/AMO, TCCA, NCAA, and 2-REG to offer customers multiple solutions.

In September 2020, Ascent announced it had signed a Letter of Intent with the State of New Mexico to build a hangar at Roswell International Air Center. The new hangar will be capable of housing a B777x and is estimated to be completed in Q3 of 2021. Ascent is investing significant fi-





MRO services on various aircraft types including 747s.

nancial and management resources and is partnering with local and state agencies to bring more than 360 new jobs to Roswell by 2026. "The Roswell Airport is an incredible facility with a large volume of aircraft already stored there as a result of COVID-19 and other factors limiting operations. Sometimes those planes have limited options for heavy maintenance and service and must be ferried out. This facility will provide an option to keep those jobs and revenue in New Mexico," said David Querio, President of Ascent Aviation Services.

#### **P2F Conversion**

In October 2020, Sine-Draco announced their selection of Ascent Aviation Services in Tucson for the modification and completion of its prototype A321 passenger to freighter conversion. FAA approval of the A321-200 SDF is anticipated for late 2021 / early 2022.

"The selection and partnership with Ascent Aviation Services to perform the conversion of Sine-Draco's prototype A321-200 airplane is a significant milestone for our conversion program," said Sine-Draco's Chief Executive Officer, Alex Deriugin in

their press-release. "Ascent Aviation Services is known as an international leader in aircraft modification, repair, and overhaul and we are excited to add their expertise to our global team."

Ascent Aviation Services will be performing the modification of the aircraft by completing the touch labor, modification planning, and inspection requirements. Ascent will also be completing a heavy check during the modification, painting the new customers' livery, and providing maintenance support during the ground and flight test program following conversion.

#### **COVID-19**

While the COVID-19 global pandemic has proven especially devastating for the aviation industry in 2020, Ascent has been able to weather the storm, and even expand, during the crisis. Attributed to its long history and large footprint in the storage business, Ascent proved an ideal location for storage and transition of aircraft in the Western Hemisphere.

Ascent offers a one-stop-shop for lessors' aircraft as it adds heavy maintenance,

paint, interior reconfiguration, and back-shop capabilities to its vast storage and reclamation space. The COVID-19 crisis has expanded this offering and Ascent currently maintains aircraft from over 40 countries and 6 continents for dozens of customers.

"While there's great uncertainty in the current environment, our customers are looking for proven solutions and commercial options to better position themselves as the recovery continues," said Scott Butler, Chief Commercial Officer at Ascent. "Our significant heavy maintenance capabilities, end of life solutions, and over 400 mechanics give our customers a lot of options while they focus on their fleet strategies. We're able to quickly accept aircraft for storage and transition them to new operators, heavy maintenance, or reclamation when the market permits."

Ascent has hired more than 100 additional mechanics at a time when Airlines and MROs are shrinking the sizes of their workforce. "We've been able to transition dozens of highly skilled team members straight from the airlines and in turn, of-



## COMPANY SPOTLIGHT: ASCENT AVIATION SERVICES



SineDraco selected Ascent for A321 freighter modification and completion.

fer our customers seamless service with mechanics who are already familiar with their aircraft and maintenance programs," Butler said. "It feels good to be a beacon of light in this dark time for our industry."

### New Frontiers

Ascent continues to expand its offerings to serve their large customer base. "We're always interested in expanding our back-

shop capabilities by offering solutions for all areas of the aircraft," said Butler. "The more components we can keep on the airfield, the more cost-effective it is for our customers."

Ascent is looking towards the future of aviation maintenance by partnering with robotics and artificial intelligence start-up Rizse. The Rizse drone platform will bring

safer, consistent, and more efficient automated aircraft inspections allowing Ascent to deliver actionable analytics to our customers in 2021.

Ascent Aviation Services is dedicated to embracing the highest standards of safety. Ascent was one of the first MROs to voluntarily enter into SMS program in North America. Their Safety Management System (SMS) is the formal, top-down, organization-wide approach to managing safety and assuring the effectiveness of safety risk controls. It includes systematic procedures, practices, and policies for the management of safety risk. SMS introduces an evolutionary process in system safety and safety management and is a structured process that obligates Ascent Aviation Services to manage safety with the same level of priority that other core business processes are managed. This applies to both internal (FAA) and external aviation industry organizations. Ascent is in development of their SMS processes with full implementation of the program scheduled for 2021.

President David Querio commented "The safety of our people, and the safety of our customers' assets is always our top priority and we are committed to this at all levels in Ascent."





A portrait of Pavel Hales, a man with dark hair and a light beard, wearing a dark blue suit, white shirt, and red tie. He is looking directly at the camera with a slight smile. The background is blurred, showing what appears to be an airport or aircraft.

# Q&A

In the hot seat.....

## Pavel Hales

Chairman of the Board of Directors  
Czech Airlines Technics

All photos: CSAT

### ***What attracted you to this business?***

When the opportunity to join Czech Airlines Technics (CSAT) presented itself, I did not hesitate to accept this new career challenge. Thanks to great synergies, namely its base in an ideal location in Central Europe and a very well-established cooperation with Prague Airport, I saw that CSAT had huge potential on the MRO market. Moreover, the potential is even bigger because of the very experienced and motivated teams of employees at all levels of our company. Based on these factors, in previous years, we have managed to expand in several main divisions.

### ***What does a typical day's work entail in your job?***

My typical day at work begins with a cup of a good tea and with regular morning operational reports. If necessary, we discuss these reports with the responsible management team daily. We follow very thoroughly quality and safety reports and ensure daily targets are met. Furthermore, we observe deadlines for the completion of each individual project in every division. As a CEO, I am also responsible for all current and future business deals. Therefore, I am in daily contact with our sales team. Together, we work closely, reviewing all priorities for the following period, discussing customer feedback,

setting up input parameters and assumptions for individual tenders. Moreover, I am also informed about most important updates and about the progress of our large-scale projects performed by our CSAT team. I have daily contact with employees at all levels which is important to me. Since the beginning of the pandemic in spring this year, my daily routine has also changed. We have implemented a business continuity plan to summarise and define information, guidelines and rules of conduct to minimise the potential negative impact on the company's operations. The one of the main goals has been to keep the business running, maintain the capacities needed to fulfil the valid contracts previously concluded and deliver our customers what we have promised. Moreover, for many months, our focus has been on the safety and protection of both employees and business partners based in Prague.

### ***Briefly, tell us about the range of MRO services that CSAT provides?***

Czech Airlines Technics, as an independent MRO, provides customers with a full range of services from the maintenance of each individual component to the base maintenance level. We are proud to carry on the heritage and tradition of maintenance ser-



Base maintenance is the largest business segment.

VICES provided since 1923. Based on this long-term tradition, our employees have the know-how, expertise and experience comprising different types of aircraft and many special projects. One of our main advantages is also our location. Prague is in Central Europe and our facilities at Václav Havel Airport Prague can easily be reached by our clients. It is logistically beneficial in cases where airlines need to deal with unexpected circumstances. We also focus on taking a flexible approach towards our clients and on delivering

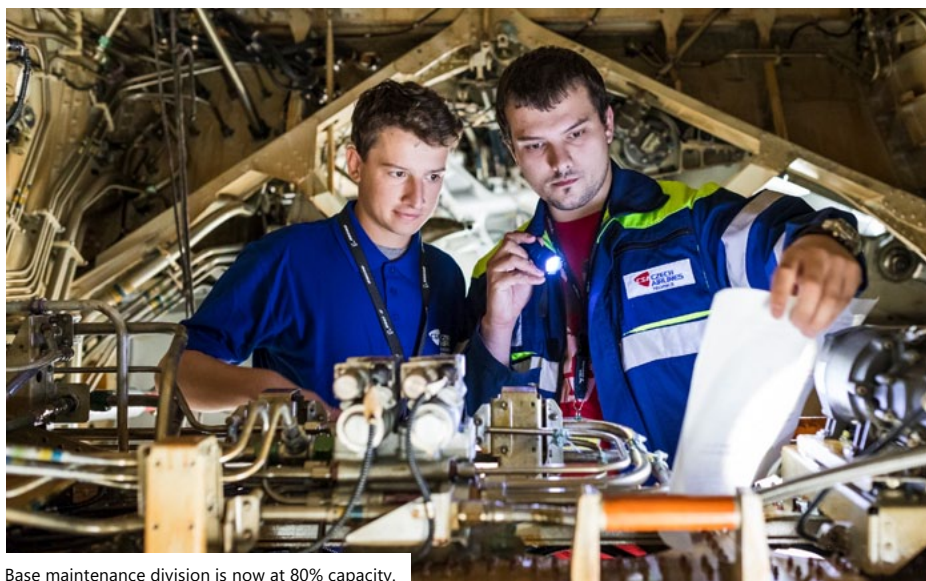
high-quality work while strictly complying with safety standards. Czech Airlines Technics also holds key maintenance certificates issued by EASA, FAA, TCCA, BCAA, ECAA and CAAC, which is another of our advantages on the MRO market.

CSAT focuses on five key business segments, with base maintenance being the largest. In this division, we can perform work on five narrow-body aircraft (Boeing 737CG/NG, Airbus A320 Family and ATR42/72) in parallel, concurrently using our extensive in-house workshop capabilities. We can

also offer to our customers a complete portfolio of NDT inspections which saves not only additional costs but also time. The second division is landing gear repairs and overhaul where we focus on the B737CG/NG aircraft type. In the future, we plan to offer B737MAX landing gear checks. We are also able to repair some landing gear parts of the A320FAM and Embraer aircraft. In the next division, we provide complete engineering and CAMO support to airlines and aircraft lessors, planning services utilising the AMOS system. In the line maintenance division, we cover approximately 85% of the market in terms of the number of movements at Prague Airport. Moreover, in the component and spares division, we perform repairs and overhauls on individual aircraft components and further expand the sales of consumables and rotables on the market.

### ***How has Covid-19 affected the business?***

During this spring, we faced a challenging situation, and even though the Czech Republic closed its borders, we did not interrupt operations in any of CSAT's five divisions. Because of our prepared crisis scenarios and management decision policies, we could continue offering the full scale of our services. Our level of inventory, including spare parts and materials, and remote



Base maintenance division is now at 80% capacity.



communication with our customers also helped us a lot to ensure smooth transition while operations were not intact but continued under strict protective and hygiene measures. For the component and spares division, there was a more significant drop in projects in the first half of the year but in the second half of the year we are seeing an increasing demand. In contrast, in the landing gear repair and overhaul division, we have not perceived any negative effects so far and we continue to work at full capacity as in the pre-coronavirus period. On the other hand, the situation has motivated us to accelerate several planned development projects. I believe that most of them have been completed or will be completed by the end of this year.

***What impact are you seeing in terms of base maintenance services during this pandemic and what is your outlook in the months to come?***

Our base maintenance division is now at 80% in terms of capacity and planned projects compare to the level before COVID-19 and the current impact on aviation. Our predictions for the following months copy the existing state. Therefore, we currently negotiating with additional ad hoc customers, including airlines and aircraft lessors, offering them the remaining 20% of capacity in this division. We are mainly based on the composition of the portfolio of our long-term customers and repeat-ers. I would like to take this opportunity and thank them for the co-operation and mutual support, namely Transavia Airlines, Finnair, NEOS and Czech Airlines. In addition to our long-term customers, we also successfully provide services to completely

new customers. We can also see a current trend where market demand is affected by the fact that airlines, which are a part of big aviation groups with own MROs, now plan 100% base maintenance checks in-house and not at independent MROs.

***How is the maintenance and parking services agreement with FlyTec Aviation?***

Building on our long-term experience and expanding the project in the segment of short-term and long-term aircraft parking has been confirmed as a highly appreciated service from our customers. We have gained experience with this segment with Czech Airlines in the past. In light of the current situation and with regard to free capacity, Finnair, one of the major and long-term customers of CSAT, will relocate half of its fleet of narrow-body aircraft to Václav Havel Airport Prague for the entire winter season. Aircraft relocated to Prague, where we have all the facilities, will be parked in milder weather conditions and at the same time receive complex technical support. Transavia Airlines has decided to place two its aircraft for storage in Prague also.

In cooperation with FlyTec Aviation Services and other airports in the Czech Republic and Slovakia, we have managed to expand the offered capacity up to the level of over 200 parking stands for long-term storage of both narrow-body and wide-body aircraft with parking and maintenance services. We are currently negotiating several other projects with both airlines and aircraft leasing companies to achieve the most suitable conditions for our customers.

***How is the landing gear maintenance business performing?***

In the period from May to September 2020, the planned reconstruction of the plating shop was successfully completed while the operation of the entire division had to be interrupted. Therefore, we had to reduce the total capacity available compared to the last years. Based on the market research and current customer demand, we expect a minimal negative impact on our projects. During the planned period of interruption of operations in this division, we have completed investments in a new painting and drying box and investments in a new hydraulic equipment. These investments and the overall change in the environment will result in, among other things, an increase of quality and efficiency and a reduction in downtime. This will allow us to offer our customers the additional capacity in this division in the future.

***What are your hopes for the business in 2021 and beyond?***

For the aviation business, mutual well-For the aviation business, mutual well-managed coordination of the current situation at IATA and other institutions involved. Mainly on the EU and governmental levels to define unified and simple rules and conditions for travelling and flying in general. This should create a more stable environment as soon as possible and result in a higher demand for travelling. Since we are all members of one family in aviation, I would like to wish everyone in the aviation community good health and success in the following challenging months. Take care and stay safe!



Finnair will relocate some aircraft to Prague for storage this winter.

## It's strictly business

An estimated \$32bn is spent annually on aircraft services for business jets.  
Photo: Avia Solutions

**Ben Hockenberger**, President of JSSI Parts & Leasing looks at the changing aviation aftermarket for parts and leasing in the business aviation sector.

As a division of Jet Support Services, Inc. (JSSI), the team at JSSI Parts & Leasing keep a close eye on the aftermarket ecosystem, particularly in business aviation. Supporting over 10,000 aircraft maintenance events annually worldwide, we can quickly spot even the slightest changes and trends in aviation.



Ben Hockenberger, President of JSSI Parts & Leasing

And in the case of COVID-19, buyer behaviour is shifting rapidly.

The story of business aviation and COVID-19 began much like that of the much larger commercial industry, with a precipitous drop in utilisation. Flight hours were down 76.1% year-over-year globally in April 2020, according to the quarterly JSSI Business Aviation Index. Those were dark times as we all sheltered in place; however, each subsequent month saw an incremental improvement in utilisation. The health benefits and flexibility of private air travel made it a practical substitute for those who were able to use it. At this point in the year, we are seeing flight hours down 19.9% in the United States versus last year. While this is still a significant decline, it's a big improvement over our worst fears from the start of the pandemic.

### **Impact on MRO spending and the aftermarket**

An estimated \$32bn is spent annually on aircraft services, maintenance, and fees for 22,000 business aviation jets worldwide. Recent industry forecasts predict that the com-

ponents MRO segment is expected to grow rapidly, fuelled in part by a noticeable shift we are seeing in how private aviation is being utilised in recent months. This will, in turn, influence the way maintenance events are realised in the next few years.

The most visible example of this is leisure usage overtaking business usage. Overlapping this development is the higher utilisation of Part 135 operators picking up the slack of Part 91 operators. This means that maintenance spending will be pushed out by many of the single operators and fleet utilisation will be higher.

We did record an uptick in maintenance activity at the beginning of the pandemic. Even when business jets were grounded, smart operators brought scheduled maintenance work forward to take advantage of the inactivity and address upcoming requirements during the downtime. We moved to a 24/7 work pattern at our warehouse in Cincinnati, Ohio, enabling us to provide around the clock aircraft-on-ground (AOG) maintenance support to meet the increased demand.



### Increasing availability of used parts

The utilisation trend patterns we have observed are having an impact on aircraft maintenance and ultimately the parts that are in demand. For example, we have seen retirements of jets where the maintenance cost outstrips the value of the aircraft. This drives teardown activity and an increase in used serviceable material entering the market. The increase in available parts will help operators and MROs keep repair costs down and make pricing much more competitive. It should therefore not be a surprise to see parts providers pursuing the opportunity for strategic bulk inventory purchases at attractive prices in the months ahead. Part 135 operators have also gravitated toward certain later life cycle platforms that offer attractive purchase and operating economics for charters. In turn, this creates demand for parts to maintain these platforms.

Across the aviation industry, rising availability of used parts will support the shift in buyer behaviour we are seeing at JSSI. An increasing number of customers looking to drive down parts-related costs are now exploring aftermarket options and used parts.

Operators are increasingly not only looking to save costs on parts but also rethinking their entire procurement function. Companies that offer supply chain solutions can consolidate parts procurement, logistics, tracking, vendor agreements and billing support into one package. Doing so can help with cost projections and planning, and ultimately the bottom line of any MRO budget. Standardising



All warehouse photos: JSSI Parts & Leasing

procurement processes in house and setting KPIs for efficiency can also lead to long-term gains, as can ensuring that all procurement staff regularly receive training updates on the purchasing process.

### Transparency invaluable

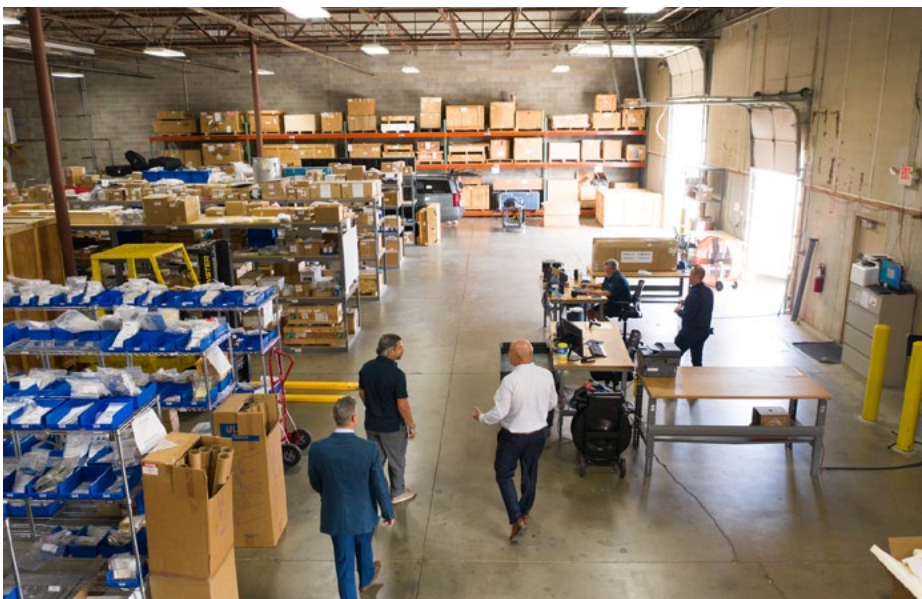
If the business aviation sector, including MROs, wishes to make the most of new market opportunities in a post-coronavirus world, the transparent sharing of information will be essential. In an age when you can find out almost anything online, data transparency means digitisation. Coronavirus has only intensified and accelerated the move, across aviation, to digitisation, virtualisation and, indeed, remote working.

Parts and leasing companies are investing in new technologies to support the greater demand for aftermarket material and to meet customer expectations. Moving from telephone orders to providing online inventory and mobile-friendly parts request tools takes the hassle out of sourcing aircraft components, while speeding up processes. Since the explosion of MRO parts marketplaces, digitisation and the transparency that come with it have become paramount to the way buyers look for purchasing or leasing opportunities. Technology partnerships have formed across the industry, minimising friction throughout the supply chain.

Alongside operational matters, marketing in the parts and leasing industry is also moving online faster than ever before. Perhaps there is no substitute for face-to-face meetings but, in the current absence of trade shows and customer visits, alternative channels are being used and developed to connect with the market.

### Optimism but not complacency

While there may be a normalisation as there are medical solutions for the virus, we believe that business aviation will exit this period in a stronger position than before. However, it will be incumbent upon the industry to continue to improve if we want to maintain the new customer base that arrives at our doorstep. Pent-up demand is high. There is never room for complacency but there will be opportunities ahead for aviation, MRO and the providers of aftermarket solutions. Our industries will recover and thrive again.



# PEOPLE

## »»»»→ on the move



Katy Zhao

GA Telesis (GAT) has named **Katy Zhao** as Director of Business Development China with the Engine Strategy Group. Zhao is one of several industry pros recently to join the Engine Strategy Group as the scope of Turbine Vision 2020 grows. Zhao gained wide-ranging experience in the aviation jet engine business through her 20 years in China with General Electric Aviation and CFM International. She began her career as a GE field service representative and later moved to the CFM leasing division. Her most recent positions included sales and services responsibility with the airlines and MROs in the South China region.



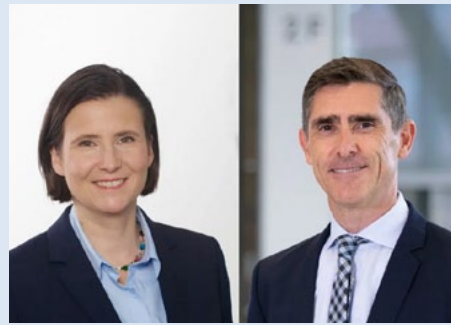
Paul Charles

TGIS Aviation Management continues to grow its aviation expertise with the addition of **Paul Charles** who joins TGIS as Head of Powerplant. Having had 31 years working in the aviation industry, Paul's particular expertise lies in engine asset management, engine overhaul and on wing support services. New starter, Paul Charles commented, "I'm pleased to have joined the team at TGIS Aviation. We've previously collaborated on a number of occasions, so being a permanent member of the business feels like organic growth for all parties."



Joseph O'Brien

**Joe O'Brien** will retire at the end of this year as Deputy CEO and Chief Commercial Officer of Engine Lease Finance (ELFC). O'Brien joined the company in September 2006 after sixteen years with the then parent company, BTMU Capital Corporation, including serving as a Board Member of ELF from 2000. Since joining the company as EVP Sales and CCO he led the sales team to more than US\$3 billion in engine acquisitions through sale and leaseback, OEM orders and various collaborations. **Julian Jordan**, Executive Vice President and Head of New Business has assumed responsibility for all engine acquisitions and management of the sales and marketing team. **Joe Hussar**, Executive Vice President and Head of Portfolio has assumed responsibility for all remarketing efforts in addition to his roles managing engine sales, collaboration with INAV and capital markets.



Constanze Hufenbecher and Antonio Schulthess

As part of the restructuring program RISE, Lufthansa Technik AG will change the structure of its Executive Board responsibilities. In future, the Executive Board will consist of a Chief Executive Officer (CEO), a Chief

Operating Officer (COO) and a Board member for Finance and Human Resources. The COO will then carry responsibility for all operating divisions. As part of this reorganization, **Constanze Hufenbecher** (currently Chief Financial Officer and responsible for the VIP & Special Mission Aircraft Services business unit) and **Antonio Schulthess** (currently responsible for human resources, lean and process management and the Engines and Aircraft Systems business units) have decided to leave Lufthansa Technik at the end of the year to pursue new entrepreneurial challenges. The Supervisory Board will soon decide on the appointment of the new Executive Board member for the Finance and Human Resources departments. **Dr Johannes Bussmann** remains CEO of Lufthansa Technik, while Soeren Stark will continue in his responsibility for the operational business as COO.



Jinnah Hosein

Boeing has appointed **Jinnah Hosein** as the company's vice president of Software Engineering, effective immediately. In this newly created role, Hosein will report to **Greg Hyslop**, Boeing chief engineer and senior vice president of Engineering, Test & Technology, and will focus on further strengthening Boeing's focus on software engineering across the enterprise. Hosein will lead a new, centralized organization of engineers who currently support the development

and delivery of software embedded in Boeing's products and services. The team will also integrate other functional teams to ensure engineering excellence throughout the product life cycle. Hosein brings extensive experience as a software engineering leader across several innovative, high-tech companies. He joins Boeing after serving as vice president of Software Engineering for Aurora, a self-driving vehicle company, in Palo Alto, California. He led the company's software organization for the development of those vehicles and developed Aurora's high-integrity software life cycle to deploy autonomous architecture to on-road vehicles.