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Harnessing big data in MRO software

Our cover story in this edition analyses the ins and outs of MRO software technologies and the ongoing push to drive digitisation in the sector. Interestingly, worth noting is the impact that big data will play.

Performing effective analysis of this data is difficult without the input from the OEM's. Experts at Rusada for instance told us they see this developing where the OEM's are receiving that health monitoring data from the aircraft in systems such as Airbus Skywise where the analysis is performed, and issues are identified. The resulting recommendations for maintenance action are then interfaced with an operator or MRO's M&E system, such as ENVISION, so that they can be resolved.

As a backbone system, MRO software will continue to be the source of data. At Ramco they are witnessing interests from OEMs for their big data tools. On the MRO side, they are also digitising the data to the maximum extent possible either by capturing it at the source. For example, Ramco's mobile application – Ramco Anywhere Apps, including Mechanic Anywhere and Warehouse Anywhere ensures velocity of data is protected. Ramco informed us that they are also leveraging OCR technologies and Smart PDF in the areas of task cards to run advanced analytics on the data captured. Their MRO lab at Singapore is actively working on IOT initiatives for real time data feed from the GSE equipment's usage through IOT sensors.

Happy reading!

Editor

The eMobility task control App
Photo: TRAX

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Jet Time Boeing 737-700
Photo: AJW Group/Erik Refner

Danish carrier Jet Time extends PBH contract with AJW Group

AJW Group has extended its decade-long power-by-the-hour (PBH) contract with the Danish airline Jet Time. The extension to the contract sees AJW continue to provide support for the airline's current fleet of B737NG aircraft, along with new additions to be introduced in the next 12 months. AJW's PBH offering guarantees the supply, repair and overhaul of rotable components with tailored programs, to all fleets and sizes. Jet Time is a Danish ACMI and Charter airline with its head office in Kastrup and bases at Copenhagen, Billund and Helsinki Airport, operating on behalf of tour operators and other airlines throughout Europe. Since the long-term partnership began, AJW has supported Jet Time during its restructure and fleet transition from the Boeing 737 Classic to the 737 Next Generation.

Avianor obtains A220 maintenance approval from Transport Canada

Avianor is pleased to announce that it has reached a highly important milestone and has received Transport Canada (TCCA) approval to add the Airbus A220-100 and A220-300 to its important maintenance capability list. With this approval, Avianor can offer post-delivery modification services to operators of the Airbus A220 family of aircraft. With this addition of the Airbus A220 heavy maintenance approval, Avianor is strategically placed for the future.

GA Telesis establishes ready-to-go landing gear lease pool with launch customer GAMECO

GA Telesis Component Solutions Group (CSG) has established a comprehensive landing gear leasing pool. Available assets for lease in 2019 include multiple ship sets of ready-to-go A320 family (enhanced gear), A330, 737-700, 737-800, 777-200ER, CRJ700 and CRJ900 landing gear shipsets. The Company has a plan to increase the pool size and to add additional sets and aircraft models with global commercial coverage of most single- and twin-aisle aircraft models by 2021. As a launch customer to the new business, partner MRO GAMECO has taken delivery of its first A320 family landing gear set provided by GA Telesis' CSG team. With its extensive product line and inventory leasing capabilities, GA Telesis was able to provide a win-win comprehensive solution to GAMECO to satisfy its customer's needs.

GKN Aerospace named key supplier for all-new Gulfstream G700 business jet

GKN Aerospace has been selected as a key supplier on the new Gulfstream G700 business jet that was unveiled at NBAA on October 21. GKN Aerospace is using its leading capability in design and manufacture of business jet empennages and thermoplastic components on the advanced aircraft. The rudder and elevators that are part of the empennage, as well as the floorboards, feature the latest thermoplastic technology. GKN Aerospace also produces the bonded fuselage panels for the new fuselage. A team of highly qualified GKN Aerospace engineers has collaborated with the Gulfstream team to take an active role in the design process. Production takes place in facilities in Hoogeveen and Papendrecht in the Netherlands.

The Gulfstream G700
Photo: GKN Aerospace

A321neo Vietnam Airlines take off
Photo: Pratt & Whitney

Pratt & Whitney secures Engine-Wise® service agreement with Vietnam Airlines

Pratt & Whitney and Vietnam Airlines have signed a 12-year EngineWise Comprehensive service agreement for Pratt & Whitney GTF™ engine maintenance for the airline's fleet of 20 Airbus A321neo aircraft. Vietnam Airlines' first A321neo entered into service in late 2018. Pratt & Whitney's EngineWise service portfolio provides engine operators with a variety of aftermarket services to maximize engine performance and fleet availability.

StandardAero achieves FAA certification of San Antonio RB211-535 test cell

StandardAero has received FAA approval for acceptance testing of the Rolls-Royce RB211-535 turbofan engine at its maintenance, repair and overhaul (MRO) facility in San Antonio, Texas. This achievement, which followed a test cell correlation effort undertaken in partnership with the engine manufacturer, marks StandardAero's attainment of full capability on the RB211-535, in support of the life-of-type maintenance services partnership signed with Rolls-Royce in 2018. Under the partnership agreement, responsibility for RB211-535 in-service support is being transferred from Rolls-Royce's Derby, U.K. location to StandardAero's 810,000 ft² facility in San Antonio. StandardAero's RB211 team had already received FAA and EASA certification for engine disassembly, cleaning, inspection, repair, assembly and test, and correlation of the San Antonio facility's RB211 test cells now enables engine performance testing to be completed on-site, prior to engine redelivery to customers.

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CAS signs five-year contract with major cargo carrier

CAS Components division awarded five-year contract

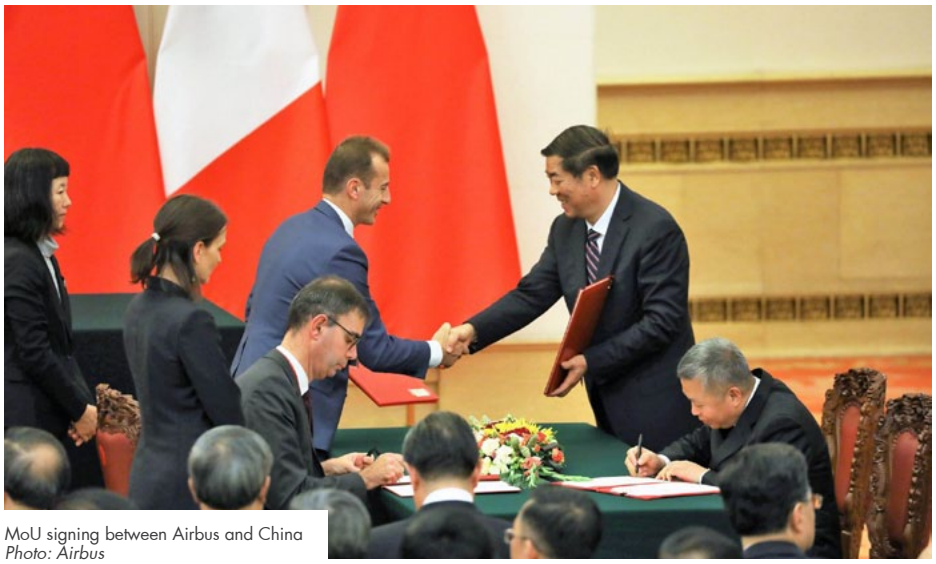
Certified Aviation Services (CAS) Components, a leading provider of component overhaul, has signed a five-year agreement with a major cargo carrier. Out of a competitive pool of approved vendors competing for the service contract, CAS was chosen by the air carrier as its preferred component repair shop. This extensive contract requires full coverage on repair and overhaul of high-flow pneumatics, air cycle machines and mechanical accessories. The agreement was specifically assembled to provide higher reliability and reduced turnaround time. In addition, CAS has internally designated engineering representative (DER) capabilities and a robust partnership with a parts manufacturer approval (PMA) house that will be utilized on this contract.

New King Aerospace-Thurmond Group alliance supports both government and corporate aircraft

Texas-based King Aerospace Companies and Pennsylvania-based The Thurmond Group have formed a strategic partnership that unites two reputable names in aviation. The alliance will enable both companies to grow their support for intelligence, surveillance and reconnaissance (ISR) specifically, and aircraft modifications in general. The Thurmond Group has built strong relationships with both ISR-focused government and private industry by providing integration services that include but are not limited to sensors, networking, operation systems and the Federal Risk Management Framework (RMF). Both it and King Aerospace are known for their ISR quick reaction capability (QRC). Maintenance, engineering and FAA-certified modifications will be handled at King Aerospace's facility in Ardmore, OK, just 90 miles north of Dallas. The AS 9110-certified operation accommodates the most common turboprop and jet aircraft for commercial and military/government commercial-derivative applications. This includes Dash 8, King Air, Boeing 737, Citation, Gulfstream and Challenger aircraft. The King Aerospace facility includes a 9,000-foot runway and encompasses four hangars with more than 200,000 ft² of space. It offers a highly skilled workforce that operates on a no-excuses philosophy.

Airbus and China reinforce long-standing partnership

Airbus and China have signed a Memorandum of Understanding on the further development of industrial cooperation. According to the MoU, both sides have agreed to take practical and effective measures for new initiatives regarding both Airbus single-aisle and wide-body aircraft. As part of Airbus' objective to reach a global A320 Family production rate of 63 aircraft per month in 2021, the Airbus Tianjin A320 Family Final Assembly Line (FAL Asia) remains on track to ramp up its production to six aircraft per month by the end of 2019, which is a 50% increase compared to its original design. A350 XWB capabilities will be extended into the Airbus Tianjin wide-body Completion and Delivery Centre (C&DC) from the second half of 2020. The C&DC is scheduled to deliver its first A350 aircraft by 2021 from Tianjin. The potential of China's aviation market is huge: while China's domestic demand is set to become the world's largest market, international traffic to and from China has nearly doubled over the last 10 years. According to the Airbus Global Market Forecast, China is expected to require some 7,560 new aircraft over the next 20 years.


MoU signing between Airbus and China
Photo: Airbus

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MTU's engine assembly line
Photo: MTU

MTU Aero Engines develops and operates unique engine assembly system

With the geared turbofan (GTF), Pratt & Whitney and MTU Aero Engines are building the most eco-efficient propulsion system currently available in the marketplace. MTU not only contributes key turbine and compressor technologies to this highly advanced family of engines, the company is also responsible for final assembly of one third of the PW1100G-JM geared turbofans that power the Airbus A320neo. "To gear up for these engines, MTU has developed an innovative floor-based line assembly system and built it up and put it into operation at the company's headquarters in Munich," explains MTU Chief Operating Officer Lars Wagner. "The system, which is unparalleled worldwide, meets the highest technological standards and also satisfies ergonomic needs." The core of MTU's GTF production assembly line is a highly innovative, remotely controlled floor-based transportation system that – thanks to its modular design – can be flexibly adapted to accommodate the individual build stages of the engine. "The system was integrated into an existing building," says Ulrich Peters, Senior Vice President, Production. The system provides for PW1100G-JM engine assembly to be performed in several work steps and allows several engines in various stages of completion to be assembled concurrently. Peters adds: "Once the final expansion stage has been reached, 80 employees will work at the line and assemble one engine per day." For MTU, this geared turbofan is the first commercial engine ever assembled by the company in its 85-year history. The line has been up and running since late 2016, and around 300 engines have meanwhile left the MTU shop. On average, 20 engines are completed every month.

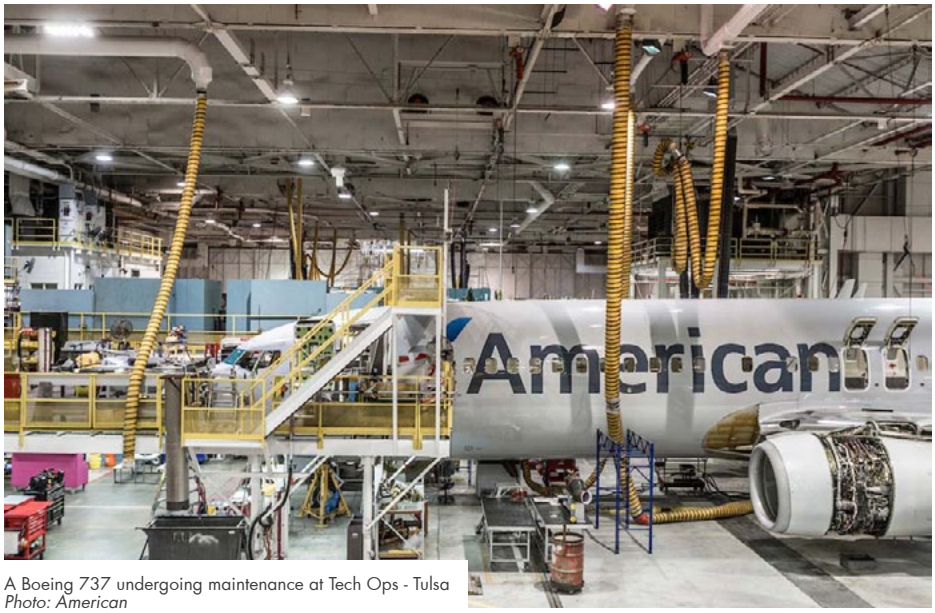
GA Telesis (GAT) is opening a new sales and customer care center based in Taipei, Taiwan.

The newly established "GA Telesis Taiwan" office will provide localized aircraft and engine parts, services, and support to GAT's growing customer base in the Asia-Pacific region. Lynda Cheng, Vice President of Asia Pacific Sales, will be responsible for developing business opportunities and growing sales, repairs, leasing, and MRO operations for commercial aircraft operators in the region. Her ability to navigate the unique multicultural aviation landscape throughout the Asia Pacific region has resulted in rapid sales growth for GA Telesis.

Liebherr-Aerospace to provide pneumatic valves for new Rolls-Royce business jet engine

Liebherr-Aerospace has been selected to supply the pneumatic component package for Rolls-Royce's next-generation business jet engine Pearl 700: Both the pneumatic valves and the actuation devices that control pneumatic power around the engine have been designed, are manufactured and serviced by Liebherr-Aerospace Toulouse SAS, Toulouse (France). Liebherr-Aerospace Toulouse SAS provides Rolls-Royce with lightweight, high-reliability valves and actuation devices that match the requirements of the Pearl 700 engine program, the most powerful in the Rolls-Royce business jet propulsion portfolio. The Pearl 700 is the latest member of Rolls-Royce's Pearl® engine family and the exclusive power plant for the new Gulfstream G700. The new contract is another important step in the relationship between Rolls-Royce and Liebherr-Aerospace: In 2015, both companies established a 50:50 joint venture called Aerospace Transmission Technologies GmbH. It is based in Friedrichshafen (Germany) and develops manufacturing capability and capacity for the power gearbox for Rolls-Royce's new UltraFan™ engine. In addition, the engine manufacturer has selected Liebherr-Aerospace to supply a pneumatic valve for the Trent 7000 engine.

Pearl 700 engine assembly
Photo: Rolls-Royce



A Boeing 737 undergoing maintenance at Tech Ops - Tulsa
Photo: American

American Airlines to add 165 Tech Ops positions in Tulsa

American Airlines is hiring an additional 165 aviation maintenance technicians (AMTs) and support positions in 2019, resulting in more than 1,000 new Tech Ops positions added to the company in 2019. The newest positions will be at the airline's maintenance base in Tulsa, Oklahoma, called Tech Ops — Tulsa. American has recently announced 400 new Tech Ops positions to assist with additional work coming to the base. The new team members, primarily Federal Aviation Administration-licensed mechanics, will focus on interior modifications to Boeing 737-800 and Airbus A321 aircraft to drive operational reliability and create a consistent product across American's fleet. "The work we do in Tulsa is an important part of maintaining and delivering safe and reliable aircraft for American's customers and team members," said Erik Olund, Managing Director of Base Maintenance for American. "With these additional positions, we'll be situated to provide the best operational performance and consistent experience that our customers expect and deserve."

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S7 Technics to produce leather seat covers for the SSJ 100 aircraft
Photo: S7 Technics

S7 Technics' Novosibirsk base gears up for component production for Superjet 100

S7 Technics' production facility at Novosibirsk's Tolmachevo airport has successfully completed its latest audit by Sukhoi Civil Aircraft Company (SCAC), manufacturer of the Superjet 100 (SSJ100). Based on the results of the inspection, S7 Technics' Novosibirsk site was granted approval for the design and production of leather covers for passenger seats on the SSJ100. SCAC conducts regular annual checks of S7 Technics' Tolmachevo base. Previously, in 2017 and 2018, the manufacturer's experts approved the site for the design and production of a variety of articles from plastic, textile and leather materials, as well as placards for the Superjet 100. Under its own EASA (Part 21G, Part 21J, Part 145) and FAP-285 approvals, S7 Technics' staff are authorized to design a required component, issue the relevant approved designer documentation, approve installation of that component on an aircraft, and produce the designed component supplying it with European-standard passport (EASA Form 1) – before finally installing it on an aircraft. The positive results of SCAC's series of audits have paved the way for S7 Technics to launch a competence center for elaborating designer documentation and producing components for Russian-made SSJ100 regional jets.

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Boeing and GAMECO agree on partnership for 737-800 Boeing Converted Freighter production line
Photo: GAMECO

GAMECO, Boeing sign partnership agreement on 737-800 Boeing converted Freighter

Guangzhou Aircraft Maintenance Engineering Company (GAMECO) and Boeing have announced plans to launch a 737-800 Boeing Converted Freighter production line at GAMECO's Guangzhou Baiyun International Airport hangar, as the 737-800BCF program responds to growing demand. Boeing's newest freighter has achieved 130 orders and commitments since it was launched in 2016. The program is on pace to deliver 17 737-800BCFs in 2019, more than doubling last year's output. Alvey Pratt, Boeing Global Services' director, Boeing Converted Freighters said, "This partnership is great news for our customers. GAMECO is a world-class MRO provider with the proven ability to complete complex modifications on schedule, with the highest quality."

Pattonair Japan strengthens presence with new office in Nagoya

Pattonair Japan has strengthened its presence in Japan's aerospace industry with the official opening of a new office on October 30, 2019. Pattonair Japan's new permanent location in Nagoya signifies the global aerospace and defence supply chain service provider's commitment to local support for its growing customer base. The move follows on from the establishment of Pattonair Japan as a Japan Trading Company in November 2018. This represented a key development in the company's global expansion strategy, extending Pattonair's footprint in Asia where it also operates a facility in Singapore and an office in China. Pattonair Japan supplies both OEM and MRO customers with supply chain services primarily in support of civil aircraft engines. Over the last 12 months, Pattonair Japan has signed new contracts with three major OEM sub-contractors to expand its existing customer base.

AES Global awarded Zero Passenger Configuration STC

Aerospace Engineering Solutions (AES Global), a U.K. and EU aerospace design and certification organisation, has been awarded EASA Supplement Type Certificate (STC) for Zero Passenger Configuration. This latest STC (No.10070986) issued by EASA applies to Boeing 737 and Boeing 757 variant aircraft types and allows the operator and lessors to fly aircraft legally with a zero passenger configuration. This STC is based on the latest EASA guidance regarding the approval of Incomplete Passenger Cabins as detailed in proposed EASA Certification Memorandum CM-CS-010-001.

Inflite The Jet Centre to house Embraer executive jets' European demo fleet

Inflite The Jet Centre, part of the Inflite group of companies, has announced that its London Stansted Airport FBO will become the new European home of Embraer's business jet demo fleet. With immediate effect, Inflite will look after the manufacturer's demo fleet, including both Phenom and Legacy demonstrators (and eventually the new Praetor 500 and 600), under dedicated terms, inclusive of handling, maintenance and hangarage. Inflite will oversee the full preparation of the demo fleet, including aircraft detailing, cleaning and presentation. Inflite Head of Customer Service Alan Barnes will be overseeing the integration of the Embraer fleet into The Jet Centre's care and will manage the interaction with the Embraer EMEA Sales Team, as well as Embraer's Flight Operations Department, which is based in Melbourne, Florida. The Embraer Executive Jet Sales team in EMEA, headed by Peter Griffith and recently bolstered with the appointment of U.K.-based Craig Lammiman as Sales Director, Northern Europe, has a dedicated office at Inflite.

The Embraer demo tour fleet set for Inflight the Jet Centre
Photo: Inflite

Azul signs Repair Management Program contract with Embraer
Photo: Embraer

Embraer and Azul sign Flight Hour Repair Management Program contract

Embraer has signed a multiyear Flight Hour Repair Management Program contract with Azul Linhas Aéreas Brasileiras to provide materials support for the carrier's fleet of first-generation E-Jets of commercial aircraft E190 and E195. Through Embraer's TechCare portfolio of solutions, the multi-year agreement covers more than 300 repairable part numbers and includes both materials and engineering services supported from Embraer's spare parts facility in Ft. Lauderdale, Florida, USA. With this agreement, Azul now secures the OEM state-of-the-art support for its entire Embraer fleet, including the airline's new E2 fleet, the new generation of the E-Jets family, which is already covered by Embraer Pool Program. Azul has relied on Embraer for its materials requirements since 2008, when it began operating their first generation of E-Jets, supported by Embraer materials solutions.

Daniel Soltani (r) and Benoit Defforge
Photo: ACJ

ACJ and Sabena technics to co-operate in self-protection systems

Airbus Corporate Jets (ACJ) and Sabena technics are to co-operate in proposing self-protection systems (SPSs) for Airbus corporate jets. Each SPS will combine an existing, state-of-the-art, directional infra-red countermeasure (DIRCM) system with installation on an Airbus corporate jet. SPSs will initially be offered for the ACJ320 Family. An SPS offers protection against missiles fired from man-portable air defense systems (MANPADS), which are the most widespread missile-threat today. Self-defense systems are already in service on some Airbus corporate jets. The co-operation agreement was signed at the NBAA show, by Sabena technics Senior Vice President Sales and Business Development Daniel Soltani and ACJ President Benoit Defforge.

StandardAero to provide PT6A MRO services for Cape Air

Cape Air, a U.S. regional airline based in Hyannis, MA, has selected StandardAero to provide engine support services for its fleet of Cessna Caravan aircraft. Under the agreement, StandardAero will provide Cape Air with Pratt & Whitney PT6A turboprop engine maintenance, repair and overhaul (MRO) services from its network of overhaul facilities and service centers in North America. StandardAero is an independent Pratt & Whitney-authorized PT6A Designated Overhaul Facility (DOF) with distribution rights on certain engine models. The company supports the global PT6A operator community from four DOFs located in North America, Europe, Africa and Australasia, backed up by a global network of seven service centers and over twenty dedicated mobile repair technicians.

HAECO ITM expands technical management support to Air Hong Kong's A330-300F fleet

HAECO ITM (HAECO ITM), a member of the HAECO Group, has signed an agreement with Air Hong Kong (AHK) to provide its Airbus A330-300 freighter fleet with inventory technical management support. The contract covers component MRO, repair management, component pooling, component engineering support services and AOG support. In addition to the Airbus A330-300F, HAECO ITM also provides inventory technical management support for AHK's A300-600 freighter fleet.

Air Astana extends PBH contract with AJW Group

AJW Group, the independent specialist in the global management of aircraft spares, has extended its power-by-the-hour (PBH) contract with Air Astana. AJW has provided its PBH support to Air Astana, the flag carrier of Kazakhstan, on an ongoing basis since 2006. The extension to the contract sees AJW continue to provide support for the airline's Boeing aircraft. In addition to PBH support, AJW is providing a lease package to Air Astana which will give the carrier immediate access to high-priority aircraft parts.

Tigerair expands PBH-contract with AJW Group

AJW Group, the independent specialist in the global management of aircraft spares, has strengthened its long-term partnership with Tigerair in Australia with an extension to its Power-by-the-Hour (PBH) contract. AJW Group has been providing an integrated component pooling, repair and logistics support program to Tigerair since 2014. During this time, it has delivered improved operational efficiency and cost savings, which continue to be key focus areas for the airline. The PBH agreement covers Tigerair's fleet of A320 aircraft. Under the support program, AJW will satisfy the airlines material requirements across a variety of component groups including airframe and engine LRU's, major assemblies, wheels and brakes, auxiliary power units (APU), thrust reversers and consumables. Tigerair is an Australian low-cost airline headquartered in Melbourne with two additional established service bases at Sydney and Brisbane Airports and operates a fleet of Airbus A320 and Boeing 737 aircraft, across 21 domestic routes out of 12 destinations around Australia.

Tigerair
Photo: AJW

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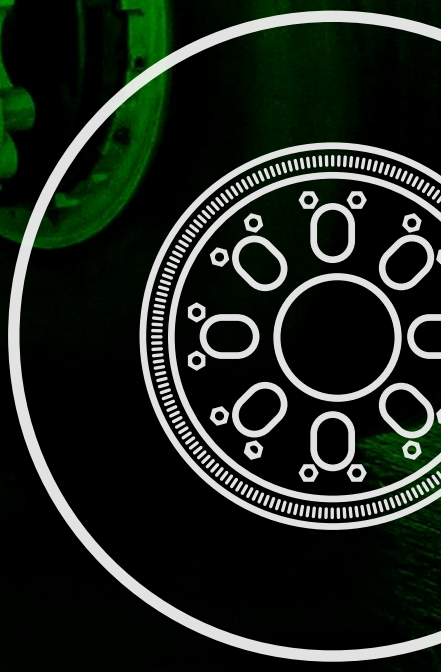

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RTM midsize demonstrator tool
Photo: GKN Aerospace

GKN Aerospace breaks new ground in large composite wing structure technology

GKN Aerospace has reached a major milestone in the 'Wing of Tomorrow' program after designing, manufacturing, and delivering a mid-scale demonstrator tool to the GKN Aerospace Filton facility. This tool provides a fully functioning automated low-pressure RTM system for the Airbus-led program's composite wing spar. The spar is considered one of the most challenging aerospace components to design and manufacture, and this will be one of the first times that RTM technology has been used on this scale. GKN Aerospace engineers have used proven tool-making knowledge from the automotive industry in developing the demonstrator. The four-meter development testbed will deliver a rate 60 automated manufacturing solutions and significantly improve the productivity of the composite manufacturing process, by removing one third of the production steps involved. Technology will be moving from traditional, pre-impregnated resin material to dry composite fibers that are injected with resin as part of the initial manufacturing process for the wing spar. This will result in significant weight savings. GKN Aerospace is using its world-leading capability in design and manufacture of composite Wing Spars and assembly of Fixed Trailing Edges – as proven on the A330, A400M and A350 – to mature the key technologies. The development work will stretch into 2021.

PPG AEROCRON aerospace electrocoat primer qualified by U.S. Air Force

The U.S. Air Force has qualified PPG AEROCRON™ aerospace electrocoat (e-coat) primer to provide corrosion resistance and enhanced topcoat adhesion for aircraft parts. The Air Force initially will coat test parts on a PPG e-coat system that it installed at its Advanced Technology and Training Center in Middle Georgia. The Air Force has issued Airworthiness Circular AC-19-02 to announce the primer's qualification for coating parts used on the outer surface of aircraft. The PPG e-coat primer will be added to Air Force Technical Order 1-1-8 – "Application and Removal of Organic Coatings, Aerospace and Non-Aerospace Equipment" – which will provide more detailed guidance when it is published. "The U.S. Air Force, in collaboration with PPG, is conducting field evaluations at multiple base locations of aircraft parts coated with PPG Aerocron primer," said Terry Gabbert, U.S. Air Force government lead for the project. "We are seeing firsthand that PPG e-coated parts are performing as well as or better than spray-primed control parts. With that knowledge and our experience, the Air Force made the decision to qualify PPG Aerocron primer and install the first U.S. Department of Defense e-coat system." During the e-coat process, aircraft parts are immersed into a PPG Aerocron primer bath after pretreating. An electric charge is applied to attract the non-chrome, water-based primer to the charged parts, which are then rinsed and cured.

Airinmar secures Value Engineering contract with JetBlue

AAR subsidiary Airinmar, the global independent provider of component repair cycle management and aircraft warranty solutions, has signed a three-year agreement with JetBlue to provide component Value Engineering cost oversight services for the airline's Airbus and Embraer fleets. The agreement covers the provision of Airinmar's unique Value Engineering knowledge and expertise, along with in-house support systems across a wide range of JetBlue's aircraft components. Under the scope of the services, Airinmar will assess repair costs to assure compliance with JetBlue's contracted pricing terms, under either component flight-hour or fixed-pricing terms, as well as the cost evaluation of time and material quoted repairs.

Aery Aviation to install Fans 1/A and ADS-B for fleet of Boeing 777s

Aery Aviation is scheduled to complete major upgrades to a fleet of Boeing 777-200ER aircraft for the installation of FANS1/A and ADS-B Out for each of the aircraft. The multiple B-777 avionics fleet modifications including FANS 1/A and ADS-B Out are expected to begin during Q4 2019 and finish up in Q1 of 2020, with thirty days estimated for the total elapsed installation time per aircraft. Aery intends to utilize an existing FAA Supplemental Type Certificate (STC), adding the Boeing 777 as a new model to the AML STC. Work will be completed by Aery's experienced team of avionics technicians and engineers at the customer's location during heavy maintenance checks. The work will be performed for an undisclosed International Operating airline. The non-integrated FANS 1/A and ADS-B Out method is a cost-effective solution meeting all regulatory requirements for other global B-777 operators. "Aery intends to market this capability and product to the marketplace upon completion of its initial order, installation, and certification," says Ken Walton, Aery's Director of Commercial Business Development.

StandardAero to open first European-based business aviation parts warehouse

StandardAero will open the company's first European-based business aviation parts warehouse to support operators and strengthen the company's parts support in the EMEA region. The warehouse operations will be located in Amsterdam with a goal for full functionality by January of 2020. The new facility will stock current parts that support Honeywell TFE731, HTF7000, CFE738 engines and Honeywell APU parts. Additional future expansions will include parts to support Lear, Challenger, Global, Gulfstream, Hawker, Falcon and Citation airframes. On behalf of StandardAero, the company will work in partnership with ASA-100-accredited MNX Global Logistics who will act as a forward stockist. Locating the inventory in Amsterdam allows for easy shipments across Europe and beyond.

SR Technics and Liebherr Aerospace renew their partnership
Photo: Liebherr Aerospace

Liebherr-Aerospace signs new General Terms of Agreement with SR Technics

Liebherr-Aerospace and SR Technics have renewed their partnership with a five-year global service contract. The partners work hand in hand to support a fleet of more than 500 aircraft operated by airlines around the world, including Airbus A320 Family and A330/A340 Family aircraft as well as Embraer E-Jets. In the five-year global service agreement, Liebherr-Aerospace and SR Technics will provide services on air management systems and flight control systems to a global fleet of more than 500 aircraft; Liebherr from its facilities in Toulouse (France), Lindenberg (Germany) and its repair station in Singapore.

Delta TechOps and Austrian Airlines sign multi-year engine maintenance agreement

Delta TechOps and Austria's largest carrier, Austrian Airlines, have signed an engine maintenance agreement at the MRO Europe conference in London. The exclusive agreement covers PW4060 engine maintenance for up to six years supporting the airline's Boeing 767 fleet. As the maintenance division of Delta Air Lines, Delta TechOps has numerous years of experience both operating and maintaining PW4000 engines. Delta TechOps will conduct scheduled full-overhaul shop visits. In addition to regularly scheduled maintenance on these engines, Delta TechOps will support any unscheduled engine work as required.

Atitech signs new maintenance agreements with Eurowings and Austrian Airlines

Eurowings has chosen Atitech, the independent MRO located in Naples, Italy, as its new partner to take care of airframe maintenance needs. In a meeting held at the MRO Europe in London, the Boards of Eurowings and Atitech signed the contract, starting a long-term cooperation. Furthermore, Atitech has signed a long-term service agreement for airframe maintenance with Austrian Airlines.

StandardAero signs PW100/PT6A/JT15D support agreement with Carolina Aviation Technical Services

StandardAero has signed a Services Agreement with Carolina Aviation Technical Services (C.A.T.S), a Part 145 repair station based at Statesville Regional Airport (SVH) in North Carolina. The Agreement – which extends StandardAero's long-running relationship with C.A.T.S – covers the provision of maintenance, repair and overhaul (MRO) services for the Pratt & Whitney PT6A and PW100 turboprop engines and the JT15D turbofan. C.A.T.S is a certified maintenance center for a wide range of aircraft from various manufacturers, including Beechcraft, Cessna and Dornier, and an avionics dealership for Honeywell and FDS. The recently signed services agreement with StandardAero will allow C.A.T.S to ensure that its customers benefit from seamless engine MRO support, minimizing downtime while locking in competitive pricing. Commenting on the agreement, Peter Sistare, Owner of C.A.T.S, said: "We are pleased to be able to extend our relationship with StandardAero. Most importantly they provide the right services to assist us with our customers in the field."

Joramco signs new maintenance contracts with MNG Airlines and Ryanair

Joramco, the Amman-based MRO and the engineering arm of Dubai Aerospace Enterprise (DAE), has signed a new base maintenance agreement with MNG Airlines, a Turkish cargo airline headquartered in Istanbul, to perform three C checks on two A300 and one A330 aircraft of the carrier's fleet. These checks are planned to commence between December 2019 and February 2020. Furthermore, Irish budget airline Ryanair has selected Joramco as its base maintenance provider. Joramco will perform heavy checks on Ryanair's Boeing 737 NG fleet. Ryanair has booked two parallel lines at Joramco's facility for the upcoming winter season, commencing November this year until the end of March 2020.

Sanad Aerotech becomes maintenance center for LEAP engines

MRO solutions provider Sanad Aerotech, a wholly owned subsidiary of Mubadala Investment Company PJSC (Mubadala), has signed a landmark agreement with GE Aviation (GE) to provide maintenance services to GE for the next-generation of narrow body and wide body aircraft. Under this agreement, the Abu Dhabi based company will provide performance restoration overhaul services on the GEnx-1B engine as well as continued time (quick turn) overhauls on CFM International's LEAP engines for GE. Effective January 1, 2020, Sanad Aerotech will expand its existing maintenance and repair services to include full overhaul on 315 GEnx engines until 2035, and quick turn on 237 LEAP engines until 2030 at its Abu Dhabi shop. The LEAP engine, which powers Boeing, Airbus aircraft and Comac C919 boasts a 18,000-plus worldwide order book, making it the world's most in-demand commercial airplane engine.

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Embraer reports third-quarter net loss of US$77.2 million

In the third quarter 2019 (3Q19), Embraer delivered 17 commercial and 27 executive (15 light and 12 large) jets, compared to 15 commercial jets and 24 executive (17 light and 7 large) jets in the third quarter of 2018 (3Q18). The Company's firm order backlog at the end of 3Q19 was US$ 16.2 billion; EBIT and EBITDA in 3Q19 were US$(20.8) million and US$18.2 million, respectively, yielding an EBIT margin of -1.8% and an EBITDA margin of 1.5%. The quarterly results were impacted by separation costs of US$34.8 million related to the carve out of Embraer's Commercial Aviation business. In the first nine months of 2019 the Company's EBIT was US$(9.3) million (EBIT margin of -0.3%) and EBITDA was US$ 116.2 million (EBITDA margin of 3.4%). In the same period, separation costs represented US$66.6 million. 3Q19 net loss attributable to Embraer shareholders and loss per ADS were US$(77.2) million and US$(0.42), respectively. Adjusted net loss (excluding deferred income tax and social contribution) for 3Q19 was US$ (48.4) million, with adjusted loss per ADS of US$(0.26). Embraer has reported adjusted net loss in 3Q18 of US$(16.5) million, for an adjusted loss per ADS of US$(0.09) in the quarter. The Company has reported 3Q19 free cash flow of US$(257.4) million, versus free cash flow of US$(162.6) million reported in 3Q18.

Héroux-Devtek posts solid fiscal 2020 second-quarter results

Héroux-Devtek, a leading international manufacturer of aerospace products, has reported strong results for the second quarter ended September 30, 2019. Consolidated sales grew 52.1% to CA$145.5 million, up from CA$95.6 million last year, including a 14.3% organic growth and a solid performance by the Corporation's recent acquisitions, which contributed CA$36.1 million. Commercial sales grew 38.1% from CA$47.0 million to CA$64.9 million, while defense sales were up 65.7%, from CA$48.6 million to CA80.6 million. Gross profit as a percentage of sales decreased during the second quarter to 15.3%, from 16.2% last year, mainly due to the 0.6% negative net impact of exchange rate fluctuations and higher manufacturing costs at the Longueuil facility. These negative factors were partially offset by the positive impact of the CESA acquisition. Operating income increased to CA$10.5 million, or 7.2% of sales, up from CA$5.3 million, or 5.5% of sales last year, mainly driven by lower selling and administrative expenses as a percentage of sales. Last year's operating income also reflected non-recurring acquisition-related costs, as opposed to this year. Adjusted EBITDA, which excludes non-recurring items, stood at CA$21.5 million, or 14.8% of sales, compared with $13.2 million, or 13.8% of sales, a year ago. For the same period, EPS doubled from CA$0.09 last year to CA$0.18 this quarter, while adjusted EPS grew 50%, from CA$0.12 last year to CA$0.18 in Q2. (US$1.00 = CA$1.32 at time of publication.)

Fly Leasing reports third-quarter 2019 financial results

Fly Leasing has reported its financial results for the third quarter of 2019. The company reported net income of US$51.7 million and adjusted net income of US$59.8 million. Fly Leasing sold eight aircraft for a gain of US$38.9 million, a 17% premium-to-book value. During the quarter the company purchased two aircraft for US$53.7 million. Fly Leasing's book value was US$25.85 per share at quarter-end, a 20% increase since December 31, 2018 and net debt-to-equity ratio of 2.6x.

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Astronics Corporation reports third-quarter 2019 financial results

Astronics Corporation, a supplier of advanced technologies and products to the global aerospace, defense and other mission-critical industries, has reported financial results for the three months ended September 28, 2019. Financial results include the divestiture of the Test Systems' semiconductor business on February 13, 2019. Consolidated sales were down US$35.7 million including sales of the semiconductor business which was divested in the first quarter of 2019. Excluding the divestiture, adjusted consolidated sales were down 2.4%, or US$4.3 million. Consolidated operating income decreased to US$5.1 million compared with US$18.3 million in the prior-year period. Adjusted consolidated income from operations excluding the sales and direct expenses attributable to the divested semiconductor test business was US$3.2 million, or 1.8% of adjusted consolidated sales, compared with US$8.0 million, or 4.5% of adjusted consolidated sales, in the prior-year period. Impacts to operating income and margin included tariff expenses of US$3.2 million and a US$1.7 million increase to a legal reserve for a long-term patent dispute. Also impacting operating income were operating losses of US$9.2 million related to the three challenged Aerospace businesses, which included a program charge of US$2.2 million. Operating losses related to the three challenged Aerospace businesses were US$11.2 million in the third quarter of 2018 and US$7.7 million in the preceding second quarter of 2019. The third quarter had a US$1.3 million loss on the sale of a business related to the sale of intellectual property and certain assets associated with the Airfield Lighting

product line which was divested in July. The effective tax rate for the quarter was 31.3%, compared with a tax benefit recorded in the third quarter of 2018. The 2019 third-quarter tax rate was unfavorably impacted by the tax associated with the gain on the sale of the semiconductor business. Net income was US$1.2 million, compared with US$17.0 million in the prior year.

Fly Leasing reports third-quarter 2019 financial results

Fly Leasing has reported its financial results for the third quarter of 2019. The company reported net income of US$51.7 million and adjusted net income of US$59.8 million. Fly Leasing sold eight aircraft for a gain of US$38.9 million, a 17% premium-to-book value. During the quarter the company purchased two aircraft for US$53.7 million. Fly Leasing's book value was US$25.85 per share at quarter-end, a 20% increase since December 31, 2018 and net debt-to-equity ratio of 2.6x

Airbus reports nine-months 2019 results, updates delivery outlook

Airbus has reported nine-months 2019 consolidated financial results and provided full-year guidance. Consolidated revenues increased to €46.2 billion (9m 2018: €40.4 billion), mainly driven by higher deliveries, a favorable mix and foreign exchange rate development. A total of 571 commercial aircraft were delivered (9m 2018: 503 aircraft), comprising 33 A220s, 422 A320 Family aircraft, 34 A330s, 77 A350s and five A380s. Airbus Helicopters delivered 209 units (9m 2018: 218 units) with its stable revenues supported by growth in services and reduced by program phasing. In September, the 1,000th Super Puma helicopter was delivered. Higher revenues at Airbus Defense and Space were mainly driven by Military Aircraft activities. Consolidated EBIT Adjusted increased to €4,133 million (9m 2018: €2,738 million), mainly reflecting the commercial aircraft performance at Airbus. Airbus' EBIT Adjusted increased sharply to €3,833 million (9m 2018: €2,340 million), largely driven by the A320 ramp-up and NEO premium, progress on the A350 financial performance and foreign exchange improvement which already materialized in H1 2019. "Our nine-months results are mainly driven by the performance in commercial aircraft, reflecting both the A320neo ramp-up and progress on the A350," said Airbus Chief Executive Officer Guillaume Faury. "We are focused on the A320neo ramp-up and improving the industrial flow while managing the higher level of complexity on the A321 ACF in particular. Our nine-months delivery numbers and the updated delivery outlook for the year reflect the underlying actions to secure a more efficient delivery flow in the next years as we progress to rate 63 per month for the A320 Family in 2021. The full-year free cash flow guidance has been adjusted to reflect the revised delivery outlook while the EBIT Adjusted target is maintained. We are focused on meeting our customer commitments and preparing the production system for the future." As the basis for its 2019 guidance, the Company expects the world economy and air traffic to grow in line with prevailing independent forecasts, which assume no major disruptions. The 2019 earnings and Free Cash Flow guidance is before M&A. Airbus now targets around 860 commercial aircraft deliveries in 2019, which reflects the updated delivery schedule. Airbus maintains its expected increase in EBIT Adjusted of approximately +15% compared to 2018. Airbus now expects FCF before M&A and Customer Financing of approximately €3 billion. (€1.00 = US$1.11 at time of publication.)

Boeing net earnings down 53% in third-quarter 2019

Boeing has reported third-quarter revenue of US$20.0 billion, GAAP earnings per share of US$2.05 and core earnings per share (non-GAAP) of US$1.45, reflecting lower 737 deliveries partially offset by higher defense and services volume. Boeing recorded operating cash flow of (US$2.4) billion and paid US$1.2 billion of dividends. Total company backlog at quarter-end was US$470 billion and included net orders of US$16 billion. Commercial Airplanes third-quarter revenue was US$8.2 billion reflecting lower 737 deliveries. Third-quarter operating margin decreased to (0.5) percent reflecting lower 737 deliveries partially offset by a higher margin on the 787 program. During the quarter, estimated costs to produce 737 aircraft included in the accounting quantity increased by US$0.9 billion primarily to reflect current assumptions regarding timing of return to service and the timing of planned production rate increases. There was no significant change to estimated potential concessions and other considerations to customers related to the 737 MAX grounding. Commercial Airplanes delivered 62 airplanes during the quarter. Given the current global trade environment, the 787 production rate will be reduced to 12 airplanes per month for approximately two years beginning in late 2020. The 777X program is progressing through pre-flight testing and remains on track for first flight in early 2020. The company is now targeting early 2021 for first delivery of the 777X. Commercial Airplanes booked net orders worth US$5 billion during the quarter, including orders for twenty 787 airplanes for Korean Air, eight 787 airplanes for Air New Zealand, and six 777 freighters for China Airlines. Commercial Airplanes backlog included nearly 5,500 airplanes valued at US$387 billion.

MTU posts net income of €391.7 million for first nine months of 2019

In the first nine months of 2019, MTU Aero Engines generated revenues of €3,403.7 million, up 3% on the previous year (1-9/2018 €3,318.7 million). The group's operating profit increased by 10% from €508.9 million to €557.7 million. The EBIT margin rose from 15.3% to 16.4%. Net income increased by 8% to €391.7 million (1-9/2018: €362.8 million). The area in which MTU recorded the highest revenue growth in the first nine months of 2019 was the commercial engine business, where revenues increased by 10% from €1,037.0 million to €1,137.8 million. The main source of these revenues was the V2500 engine for the classic A320 family as well as the PW1100G-JM for the A320neo and the GEnx engine that powers the Boeing 787 and 747-8. Revenues in the military engine business increased by 7% to €323.6 million (1-9/2018: €303.1 million). The EJ200 Eurofighter engine was the main source of these revenues. In the commercial maintenance business, revenues in the first nine months of 2019 remained at the previous year's level at €1,995.9 million (1-9/2018: €2,019.7 million). "In terms of organic growth, revenue in the commercial MRO segment has increased by around 8%," said CFO Peter Kameritsch. This growth was driven mainly by the V2500 engine, followed by the CF34 family of regional and business jet engines. (€1.00 = US$1.11 at time of publication.)

AMOS MRO-edition to be deployed at TAP airline and TAP M&E
Photo: Swiss-AS

The Portuguese flag carrier **TAP** together with **TAP Maintenance & Engineering** has inked agreements with **Swiss-AS** to manage in future company-wide fleet maintenance activities with AMOS. During the in-depth evaluation phase, all details of AMOS were extensively analyzed and questioned by TAP in order to make sure that it is the best fit for the airline as well as the M&E unit. Customer visits were organized, tender documents were exchanged, and several workshops had taken place before the decision was finally taken. **Portugalia Airlines (PGA)** next door, being a subsidiary of TAP and having used AMOS since 2012, allowed TAP the unique opportunity to see AMOS live in production and benefit from PGA's long-term experience with AMOS and Swiss-AS. By choosing the AMOS MRO Edition including AMOSmobile and relying on the Swiss-AS Cloud Hosting solution, TAP will take advantage of the latest features and services offered by Swiss-AS. In the future, AMOScentral may well become a cornerstone for TAP to facilitate easy and safe communication and data exchange between TAP, its subsidiary Portugalia Airlines, and beyond.

iBASEt, a provider of manufacturing, MRO, and quality software solutions for complex, highly regulated industries, has launched "iBASEt MRO", its Maintenance, Repair and Overhaul software solution for MRO execution at MRO Europe. "iBASEt MRO" is designed to enable new levels of visibility, velocity, and reliability for maintenance and repair of highly engineered products that consist of multiple assemblies and have high value and long lifecycles. The solution serves complex manufacturing OEMs as well as Aerospace and Defense MRO providers who must support ongoing customer demands, rapid engineering changes, and strict compliance requirements. Built upon iBASEt's software technologies and leveraging 20 years of MRO Operations execution experience, the out-of-the-box solution is designed to provide fast on-boarding and deployment of cost-effective MRO procedures aimed at simplifying the execution of routine and non-routine maintenance tasks. "iBASEt MRO" provides operators with a complete history and product genealogy of all critical materials and resources for MRO work plans, along with full traceability of important sustainment operations such as equipment data, serial numbers and inspection results, including those parts supplied by vendors. iBASEt's solution for MROs can integrate with ERP, PLM, and other software to form an eco-system of digital continuity across the enterprise. This differs from massive silos of data and disconnected systems that are hard to use, expensive to maintain and complex to deploy.

Lufthansa German Airlines and **Lufthansa Cargo** are joining the AMOS community with a scheduled first Go-Live in autumn 2020 followed by two later cut-overs in 2021. The initiative will see both airlines and its entire fleets adopting AMOS, which is at the forefront of the Maintenance and Engineering software market. Lufthansa German Airlines and **Lufthansa** will both benefit from the vast experience gathered by the Lufthansa group member airlines, **Swiss International Air Lines**, **Austrian Airlines**, **Eurowings**, **Brussels Airlines** and **Lufthansa CityLine**, with some of them using AMOS for almost 20 years. After completing the in-depth Definition Phase including AMOS business process/interface workshops and the specification of comprehensive business requirements, the Lufthansa Executive Board has now approved the start of the project's Implementation Phase. A highly skilled and dedicated team of Lufthansa German Airlines and Lufthansa Cargo aviation experts supported by Swiss-AS Consultants and Project Managers will guide the flag carrier through this next project phase. Both carriers will implement AMOS including AMOSmobile for its Line Maintenance and CAMO Operations, based on best practice processes already implemented within the group.

Photo: Lufthansa Group Airlines

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MRO Software: Push for digitisation

Paperless maintenance procedures are ongoing in the MRO sector. *Photo: TRAX*

The global MRO software market is witnessing several modifications based on the changes in global dynamics. **AviTrader MRO** examines how these technologies are improving operational efficiency.

Industry experts say the global aircraft MRO software market is expected to witness a CAGR of 5.55% during the forecast period of 2019-2025. Based on the end-user, the aircraft MRO software market is segmented into third party and independent MRO, in-house airline MRO, and OEM-affiliated MROs.

In an increasingly digital world, vendors have become increasingly aware that customers are demanding adaptability and connectivity from their MRO software systems – "In today's business setting, the gold standard for productivity is to be able to connect and work from anywhere," declares Omar Santos, VP, Global Services and Support at TRAX. "The hardware and technology exist, and with TRAX so do the software solutions. We are completely focused on providing solutions that mobilise maintenance since it is an essential requirement in today's aviation environment."

Omar Santos, VP, Global Services and Support at TRAX

Keeping steps ahead of technology transitions has become a hallmark of the TRAX business perspective. Santos says this approach continues today and is best demonstrated by TRAX' successful implementations of its web-based eMRO system and associated eMobility suite of apps. "These products leverage today's technology to support digital signatures, paperless operations and manuals, RFID-capability for logistics, biometric security, offline capability for apps, web-based solutions and the ability for its users to work anywhere with easy access to real-time information."

AJW's customers ask for flexibility, simplicity, and standardisation when delivering connectivity between multiple systems – "There is no one size fits all solution," states Han-Ley Tang – Chief Information Officer at AJW Group. "Naturally, there is a high level of bespoke development and customisation for each airline dependent on its fleet size and mix and technical capability, but there is also a breadth of software and technology used across the maintenance industry."

Han-Ley Tang – Chief Information Officer – AJW Group

At AJW, the preference is to integrate through modern web services (REST APIs and webhooks) based on their own digital integration platform. "This extends the capabilities of our Quantum system to enable

Guidelines and regulations for paperless processes are already in place.
Photo: TRAX

near real-time integration with our customers in a robust, standardised manner. This API is leveraged to deliver customer integrations, vendor integration, our next-generation customer web portal, and to enable internal automation projects such as our use of software robotics," he says.

Sergei Shkolnik, Base Maintenance Director at Magnetic MRO has noticed the trend of customers expressing their interest rather than demanding to have MRO either entering data directly into customer software or arrange certain crosstalk links between customer and MRO software. He says Magnetic MRO is utilising both options providing the customers with the flexibility to choose.

Ian Kent, Product Manager at Rusada observes that their customers, both new and old, are looking to digitise their operations beyond the traditional business processes and are looking for more flexible and connected solutions in support of this. "We are reacting to this by building more configurability into our software with improved business workflow support along with more mobile solutions that enable the removal of paper-based systems," he responds.

Sergei Shkolnik, Base Maintenance Director at Magnetic MRO

Christobal Henner, Sales Director at ADSoftware feels tremendous synergies can be initiated if all software providers agree to work together to allow a continuous flow of data between their solutions. "We are always open to work towards this goal, in fact we have done so with financial, flight operations and SMS software providers. We are also working with OEM and equipment manufacturers to connect our MRO software to their services and equipment."

Also, Henner highlights that choosing the right technology is also important when trying to increase connectivity. "The programming language we chose allows accessibility from any computer or mobile device. This allowed us to develop mobile solutions for pilots and mechanics. They can now bring the power of our MRO solution with them wherever they go which means they are more efficient, also the rest of the company can benefit from their feedback in real time."

At Ramco they have built an industry specific ERP – Ramco Aviation Suite, that provides solutions to the distinct demands of the aviation segment. Ramco Aviation Series 5 Suite covers the entire spectrum of aviation operations that range from maintenance planning to line, hangar, shop and engine maintenance, reliability and engineering, and technical records.

Saravanan Rajarajan S, Solution Consulting and Head of Pre-Sales at Ramco Aviation Solution says it also provides support in terms of human resource management, purchasing, inventory, warranty, maintenance, financials, third party maintenance and sales.

Ian Kent - Product Manager at Rusada

Pertaining to the developing MRO requirements, the current challenge while using any ERP system is data entry which is time consuming and prone to errors. He says at Ramco, by leveraging AI /ML and high amount of

Kirk Baugher, Executive Vice President, Business Development at Pentagon2000

data available in the ERP system, tangible benefits can be brought in wherein the ERP software suggests and automates the transactions. Moving from Passive ERP to Active ERP. "We are collaborating with our customers in identifying and evaluating the use cases for AI application, few of the use cases have been successfully deployed and are in the production, yielding desired results."

Continuing Airworthiness Management Organisations (CAMOs) have been using MRO software for many years, yet the market is witnessing an upsurge in interest especially now. Kirk Baugher, EVP of Business Development reminds that CAMO's operate in an extremely demanding and complex environment. He says business operations require advanced supply chain management, customer service, process control, quality system management, regulatory compliance, and much more. "There are a few good options available for CAMO's to automate their full range of operations without taking on complex system-to-system integrations of separate software systems."

Uniquely, says Baugher, the Pentagon 2000SQL system incorporates the full set of capabilities within a single system and database for multinational CAMO organisations. "For operators, functionality for fleet management, flight operations, and aircraft recordkeeping is available. For the shops, advanced work order systems support aircraft maintenance, component repair, engineering, manufacturing and teardown work orders. Core materials management capabilities to perform exchanges, outside repairs, and full supply chain execution are included."

Baughrer adds: "And with a full GAAP and IFRS compliant accounting/financials capability, the system supports multi-company, multi-currency, and multi-language operations. The advancement of powerful and affordable fully integrated systems such as Pentagon 2000SQL has driven a resurgence of automation among mid-market CAMO's that now compete with the global giants."

CAMOs rely on this software to maintain accurate and timely data, notes Marc Bajaj, Sales Director Americas at Spairliners – "This enables reliability and the tracking of maintenance events and documentation. We believe the uptick in interest is due to increased digitisation capabilities of the providers as well as the increasing acceptance by the regulatory entities to accept paperless solutions."

Marc Bajaj - Sales Director Americas at Spairliners

There is also a growing focus on big data and analytics in the aviation industry. So how is this impacting the MRO software business? Bajaj says their ability to aggregate big data gives the company the most efficient solution to plan, manage and provision assets for the supply chain and pool locations – "We form strategic alliances with technology partners to accomplish these goals. These alliances also allow us to integrate services into standalone products. One such product is SPACE, our asset management and planning tool. The key is to utilise the data efficiently and derive results based on probabilistic forecasting technology in real time in order to ensure a minimum of downtime for the aircraft, smooth operations and therefore achieve maximum cost savings."

Making informed, intelligent, and real-time business decisions is critical for aviation operations. Santos indicates that MRO software such as TRAX eMRO is a prime candidate for fostering data analysis. "With so many transactions entered across an operation, tremendous amounts of raw data are captured on an ongoing basis. The key is transforming this data into actionable information that provides the ability to improve organisational effectiveness, lower costs, and increase revenue. That is why we have developed numerous dashboards and enhanced our custom report generation features to turn 'big data' into 'great data', i.e. usable. An example of this is the lease return portal app we created that facilitates the use of existing data for an efficient and successful aircraft re-delivery."

Santos adds that MRO software can utilise artificial intelligence concepts in the aviation industry sphere to best take advantage of all the data that is being generated. TRAX has AI development plans that include augmented reality, machine learning, predictive analytics, and others.

More airlines are implementing paperless maintenance procedures through MRO and engineering software to achieve paperless maintenance records management.

The approval processes for airlines to implement paperless maintenance records management via MRO software varies from airline to airline observes Christopher Lawn, Marketing Specialist at WinAir. "Generally, these approval processes are very stringent, which is a good thing, as it safeguards against the use of inadequate software. However, airlines must be cautious in their approach to be sure that they are selecting the right system. To ensure operational success, they need to do their research and speak with operators that are using the software to gain first-hand knowledge about their experience with the solution," he advises.

Christopher Lawn - Marketing Specialist at WinAir - Aviation Management Software

There are many safety-related benefits associated with going paperless, including ensuring compliance and having the ability to easily identify unsigned tasks via a user-friendly interface. "Operators can rest assured knowing a paperless environment that is powered by a comprehensive system with software enforced data validation will hold all authentications intact. But it doesn't end there, airlines can actively integrate their maintenance software with a third-party flight-ops system to provide dispatch information. They can also expand this paperless approach to other areas of their operation to allow for greater situational awareness for aircraft maintenance," Lawn continues.

During MRO Europe in London, Czech Airlines Technics (CSAT) introduced www.e-CSAT.com, a new e-commerce portal, to support this segment. "This portal provides our customers the option of ordering items from CSAT stock even more easily. In addition, they can benefit

Pavel Hales, Czech Airlines Technics.

from online prices and stock availability, flexibility of order placement and a complete overview of products. We focused primarily on a simple and intuitive portal user experience and believe that its users will be satisfied with this approach. We also expect to see a significant time-saving benefit of the ordering process," speaks Pavel Hales, CEO and Chairman of the Board of Directors, Czech Airlines Technics.

Using the new e-commerce portal, CSAT will provide its customers with online access to its inventory of over 25 thousand consumable items to the value of $15 million USD. The portal displays in real-time items for sale alongside their purchase conditions. In addition to the price quoted, the customers are also offered the option of selecting how to collect the ordered goods. In urgent AOG requests, where a quick response is needed to minimise time of aircraft on ground, the shipment for EU customers will be dispatched within an hour, non-EU customers within about three hours. Hales states in other cases, different delivery options will be offered to suit the customers' needs. He says the portal also supports various shipping options for each consignment, allowing the customer to specify multiple addresses if needed.

"We also plan to launch an AOG support, available around the clock very soon. This segment will grow very quickly in the coming years, so we plan to focus more on the promotion of Czech Airlines Technics as an important supplier of spare parts."

Earlier this year, Honeywell launched Honeywell Forge for Airlines. Arnaud Renard, Honeywell Regional Retrofits, Modifications and Upgrades Centre of Excellence EMEA & APAC explains that the platform collects, cleans and analyses streams of data from a wide variety of aircraft, airport, government and Honeywell sources, offering actionable insights and alerts that can help improve an airline's understanding of its fleet, profitability and passenger experience.

Renard reports that Honeywell Forge Connected Maintenance is available on multiple aircraft OEM platforms and works with both Honeywell and non-Honeywell aircraft systems. "Other approaches require retrofitting the aircraft for data collection; our system works with your existing systems, making for an easy integration. Furthermore, the system allows users to access detailed data through mobile devices or an online portal, meaning records management is both straightforward and better accessible for intended users."

Talvar Tari, Senior Airworthiness Engineer - Magnetic MRO

Talvar Tari, Senior Airworthiness Engineer at Magnetic MRO believes at a low level, operators and MROs have been approved to use various paperless procedures. However, they are mostly internal processes and limited in scope, and often still needing to be duplicated on paper. "At a higher level, the progress towards going all-digital does not look so good. Even though the content requirements have been harmonised by ICAO and IATA, guidance on acceptance of electronic records has been published by ICAO and electronic record interchange has been standardised through ATA Spec 2500, the progress has screeched to a near halt. The only remaining step is giving it legal status; otherwise, nothing will change. However, national aviation authorities are reluctant to step from the paper world into a no-paper-ever world."

WinAir dashboards displayed on Monitors in maintenance hangar. *Photo: WinAir*

"The aviation industry is finally acknowledging that if they haven't already begun their digital transformation, they're already late to the game," comments Alexis Clemens, Director, Business Development and Strategic Partnerships at Power Werks.

Alexis Clemens - Director, Business Development and Strategic Partnerships at Power Werks

Clemens sees the industry responding by creating new tools that allow users to harness their data and make it more usable. "Digitisation is all about saving time and enhancing quality. There is data floating everywhere relating to the aircraft, paperwork, engineering, and so much more, and unless people are able to centralise this data, it's virtually useless."

In terms of implementing paperless maintenance procedures, Santos from TRAX finds that the guidelines and regulations are already in place for most regulatory agencies. An example of this would be the IATA guidance document for Paperless Aircraft Operations (PAO).

Santos says gaining approval is not an insurmountable process and is actually very similar to approval gained when implementing a regulatory compliance system (although TRAX has found the process for its eMobility products to have a vastly shortened timeline by comparison).

"As we see it, the approval process is not an obstacle to mobilising maintenance."

TRAX provides comprehensive software solutions designed to cater to all aspect of aircraft maintenance management.

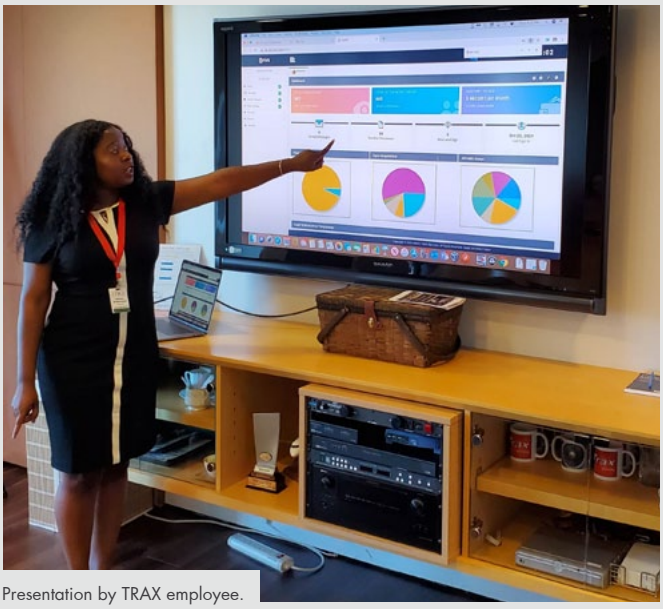
All photos: TRAX

Mobilising maintenance

TRAX is focused on mobilising maintenance – an essential requirement in today's aviation environment. TRAX technology powers the safe operation of tens of thousands of aircraft for hundreds of airlines and MROs worldwide. Our enterprise system and suite of mobile apps – eMRO and eMobility – provide leading edge products that support digital signatures, paperless operations and manuals, RFID-capability for logistics, Biometric security, offline capability for apps, web-based solutions and the ability for its users to work anywhere with easy access to real-time information.

Customer focused ethos

Our customers include several of the world's largest airlines as well as the vast majority of low-cost-carriers and large MROs, all of whom operate and maintain the safest fleets in the industry at a very efficient cost structure. As a mission-critical system, our solutions are vital to the success of their business. We aim to keep our customers' needs fulfilled and to keep them satisfied with a high level of service.

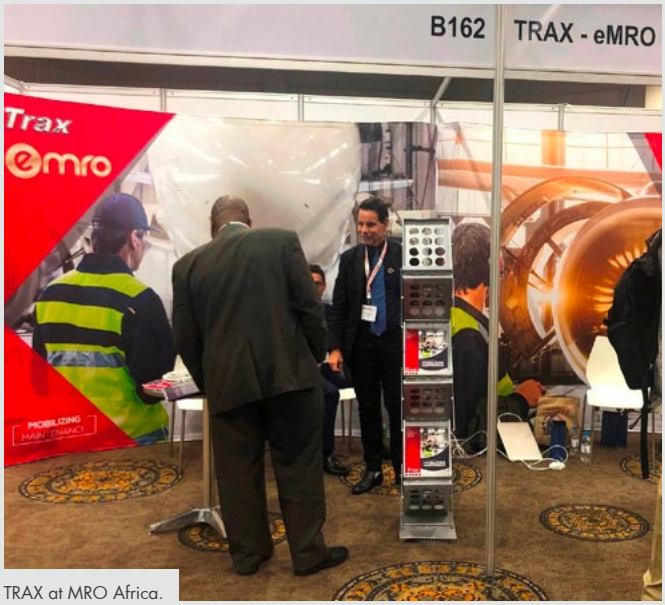


Presentation by TRAX employee.

TRAX new technology plans

Prior to the formation of TRAX in 1997, existing aviation maintenance software companies had yet to recognise the potential of the Windows platform. TRAX saw the tremendous advantage this technology would offer and wanted to lead this sea change. The company decided to develop and offer its cutting edge ERP product to the industry to replace green screen and legacy systems.

Keeping steps ahead of technology transitions has become a hallmark of the TRAX business perspective. This approach continues today and is best demonstrated by TRAX' successful implementations by many customers of its web-based eMRO system and associated eMobility suite of iOS apps.



TRAX at MRO Africa.

TRAX is continuously investing and innovating to ensure our applications remain best-of-breed in the industry. What was previously considered to be trendy or abstract artificial intelligence concepts – augmented reality, machine learning, predictive analytics, voice recognition, remote inspection, and Blockchain parts records – can now be brought to fruition in practical and cost saving solutions for aviation maintenance today. TRAX is excited to put these concepts into action and have added them to our near-term road map.

Mobilising maintenance means savings

After more than 20 years of success in the aviation maintenance software field, TRAX can let its customers speak as to the benefits of its products. There is an avid interest among airlines and MROs in the business case for mobile maintenance and TRAX has helped publish multiple Case Studies. These reports – available on our website -- include concrete dollar amounts showing increased productivity, reduced maintenance delays, optimised utilisation of manpower, and enhanced access to up-to-date information as a result of using these mobile solutions.

In the hot seat.....

Chris Clements, Sales Representative, Swiss AviationSoftware Ltd.

AviTrader MRO: Briefly, what is your job function at Swiss-AS?

Clements: My roles as Sales Representative is to work with my Marketing colleagues to manage new prospective customers, dealing with their technical queries and upon request perform an on-site demonstration of AMOS. Due to my background as an aircraft technician before joining Swiss AviationSoftware I am able to fully understand our customers' requirements and demonstrate to them why AMOS is the best solution for them.

AviTrader MRO: What is the most challenging part of the job?

Clements: Ensuring that I am fully up to date with our product, AMOS. Despite working for Swiss AviationSoftware for the last 10 years the ever changing industry and broad customer base that we serve, as well as the innovations that are released with AMOS, means that between customer visits I have to test and probe AMOS to keep myself up to date!

AviTrader MRO: What demands and opportunities are you seeing in the MRO market today?

Clements: In my opinion, the most common demands are mobility and the ability to share data with vendors or MRO's. AMOS offers a mobile solution for maintenance execution and we continue to look into other roles and business areas that have a genuine requirement to be mobile and provide the user with the correct tools for their job. We have seen the requirement to share and access data, collaborating with business partners, as the opportunity to develop AMOScentral and allow our customers to share data between themselves, and in the future, with third parties. This may be as simple as sharing available stock that we would be willing to supply or transmitting work packages for a C check simply whilst regularly sending performance updates.

AviTrader MRO: How can MRO's in particular benefit from the AMOS suite of software?

Clements: The complete integration of the AMOS modules gives our MRO customers an end-to-end solution. From the initial contact, quotation phase, paperless maintenance execution with the ability to export the work package results to the customer at regular intervals all the way through to the billing AMOS has it all in a single solution. With our new Component Maintenance programs coming soon, it will be even easier to handle ship-shop-ship transactions than it is today as well as shop routing based on decision nodes with predefined worksteps available.

Chris Clements, Sales Representative, Swiss-AS

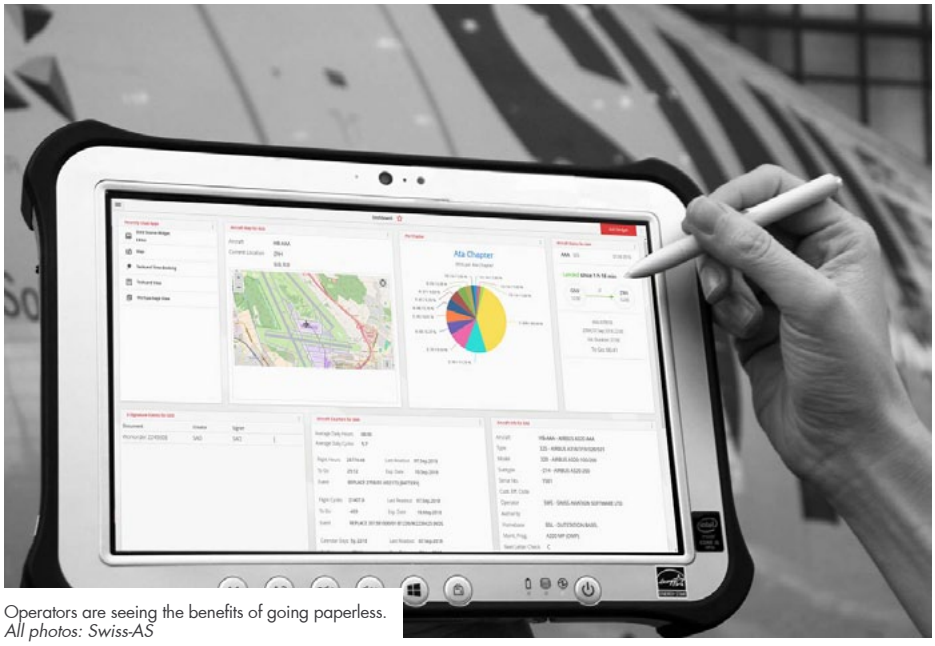
AviTrader MRO: For a new carrier, briefly explain the implementation process for your MRO software?

Clements: Firstly, it is important to clarify that an AMOS project is not a "MRO software" IT project. Instead, it is a business optimisation project with the target to increase process efficiency through digitalisation.

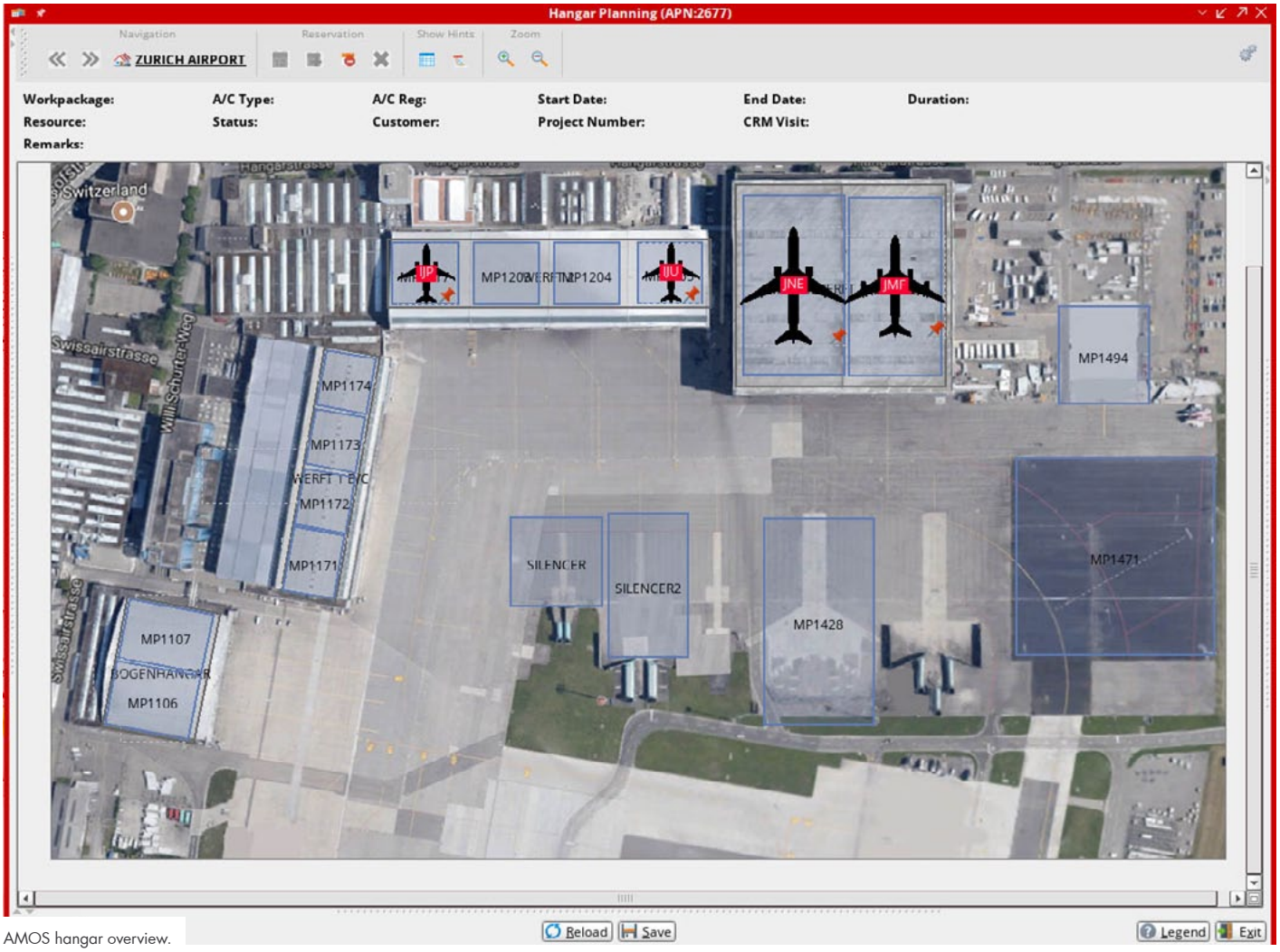
Our dedicated Business Consulting Teams have devised tools and methodologies to assess the "as-is" process landscape and works together with the airline & MRO's stakeholders to define the target digital-based future state.

The prioritisation of the change impact scoping based on expected business value, starts during the pre-sales phase and is then detailed during the definition phase. Swiss-AS assigns a team of business and IT experts to play a key part within the customer project team.

The customer's project team receives an accelerated AMOS knowledge ramp-up through trainings (classroom, e-learnings) and process review workshops. Swiss-AS Consultants deliver more than 90+ pre-written "AMOS-based business processes", which are used as the baseline to be refined and documented within each customer's process landscape. The fact that AMOS software is a "ready-to-use" commercial off-the-shelf (COTS) product, the project team's efforts are well spent on business value improvement instead of software customisation and development. Typical AMOS implementation projects have a duration of



Operators are seeing the benefits of going paperless.
All photos: Swiss-AS



AMOS hangar overview.

between 8 months to 20 months, of course, depending on the airline & MRO's size and complexity. The Swiss-AS AMOS Implementation Guidebook includes pre-defined project activities for each work-stream, Project Management, Change Management, Data Migration, Integration, IT architecture, and Training Plans. The "Go-Live" of AMOS and the new business processes is a carefully orchestrated single-event, which takes place over a weekend period. Multiple system tests, including data and interface verifications are performed in small to large-scale rehearsals. The "single-event" Go-Live method remains preferred due to the high amount of connected systems and the deep process integrations.
We have successfully implemented AMOS more than 30 times in the last 3 years. Our proven methodologies continue to evolve, such as our new online project management platform used to guide customers through the projects.

AviTrader MRO: There is a growing movement towards digitisation of MRO processes, where do you stand currently within the paperless MRO ecosystem?

Clements: Swiss AviationSoftware offers AMOS as a paperless solution and when implemented with AMOSmobile they really see the benefits of going paperless. Of the 180+ customers we have, around 15 have opted for this solution and we see an increase in the customers looking to the early adopters and seeking out more details.

AviTrader MRO: What do you think is the main challenge with deployment of an MRO software system from a user perspective?

Clements: Change Management. Having had such vast experience implementing AMOS at over 180 customers, it is clear that we are not completely changing how our customers are doing business. Regardless of which MIS they are replacing with AMOS, the users have generally learnt how to exploit that system and they may have experienced several different MIS implementations over the past few years. If the change management is done well then, this impact can be vastly reduced, and the users can be brought along to a successful Go-Live in a positive and productive manner.

AviTrader MRO: What's next in the pipeline at Swiss-AS?

Clements: AMOScentral. With AMOScentral, we are looking to change how our customers manage their data and how they can share their data with both other AMOS customer's and third parties. This is a solution that will allow the AMOS community to interact even more efficiently than they do today as well as allowing our biggest airline groups to standardise their data and processes enabling them to see huge savings as well as accuracy.

AMOS. AGAIN.

"After TAP's privatization, digital transformation in the Company became a priority as a way to support new processes, increase the speed of multiple transactions, improve communication, all this to increase efficiency and productivity. Maintenance and Engineering faces the same challenges and so the decision was made to look for a solution. Along the next couple of years we'll face for sure some obstacles but I believe we're ready and that AMOS will strongly support our continued success"

considers TAP's Chief Technical Officer.

TAP takes off with AMOS, the world-class M&E software solution.
TAP together with TAP Maintenance & Engineering will manage the company-wide fleet maintenance activities with AMOS.
By choosing the AMOS MRO Edition including AMOSmobile and relying on the Swiss-AS Cloud Hosting solution, TAP will take advantage of the latest features and services offered by Swiss-AS.

SWISS AviationSoftware

SWISS-AS.COM

(l) Greg Conlon, (r) Alec Burger

Greg Conlon has been promoted to the role of President and CEO of GECAS, effective immediately. **Alec Burger** will continue as President and CEO of GE Capital and will also serve as the Chairman of GECASThis change in leadership is being done to ensure the continued strength and health of GECAS, with Conlon being fully dedicated to leading the GECAS business with Burger's continued engagement as Chairman. Conlon has been with GE for 20 years and is a highly respected leader in the aviation financing industry. He is ideally positioned for this role, with a career history including experience in Capital Markets, Asset Trading, OEM Management, Sales, Debt Financing and P&L leadership.

BOC Aviation has announced a change to its senior management due to retirement. **Gao Jinyue (Chris)** will retire from his role as Chief Commercial Officer (Asia Pacific and the Middle East) with effect from November 9, 2019. Gao Jinyue joined BOC Aviation as a Non-executive Board Director in December 2006 and joined the senior management team as Chief Commercial Officer in December 2014. Replacing Gao Jinyue as Chief Commercial Officer (Asia Pacific and the Middle East) with effect from November 11, 2019 is **Deng Lei (Lenny)**. Deng Lei is responsible for overseeing all revenue activities within the Asia Pacific and the Middle East and is primarily responsible for airline leasing and sales within the region.

AJW Group has appointed **Martin Broadhurst** as Non-executive Director. Broadhurst has been appointed to replace retiring Director, **Randeep Grewal**, to help oversee AJW Group's diversification into new markets, predominantly defense, due to his proven track record of growing international organizations and expanding their capabilities. He has over 15 years of experience running a large engineering organization, with a total of over three decades of experience in the international aerospace and defense sectors. Broadhurst previously held the title of chief executive and group director at Marshall Aerospace and Marshall of Cambridge, respectively, for fourteen years.

(i) Krisstie Kondrotis, (r) Julie Smyth

GKN Aerospace has appointed **Krisstie Kondrotis** as President of Defense, effective November 1, and **Julie Smyth** as General Counsel, effective November 25, 2019. In their new roles, both will join the GKN Aerospace Executive Committee reporting to **Hans Büthker**, GKN Aerospace Chief Executive Officer. In her newly created role, Kondrotis will lead GKN Aerospace's growing defense business and will be based in Dallas, USA. She joins GKN Aerospace from Spirit AeroSystems where she was Senior Vice President Defense Programs and Business Development. As General Counsel, Julie Smyth will be based in London, U.K., and will be accountable for legal, risk, compliance, and governance matters across the global aerospace business. She joins GKN Aerospace from BAE systems where she was Chief Counsel for the Air Sector.

The Board of Directors of Safran has selected **Olivier Andries** as successor to **Philippe Petitcolin** in the position of Chief Executive Officer with effect on January 1, 2021, after a transition period of one year starting on January 1, 2020. As of that date (1/1/2020), Andries will serve under Petitcolin's authority. Andries has demonstrated all the qualities required to lead the Group. He has acquired solid operational experience over the past 10 years in the Group's Defence and Security activities (2009-2011) and Propulsion activities since 2011 (Safran Helicopter Engines and subsequently Safran Aircraft Engines). The year 2020 will be devoted to specific missions under the authority of Petitcolin.

Eric Segura

Eric Segura has been nominated SVP Procurement and Supply Chain of ATR, the regional aircraft manufacturer. Starting November 1, 2019, he will be reporting to the CEO, **Stefano Bortoli** and joins the ATR Executive Committee. Segura will be succeeding **David Brigante**, who was nominated SVP Programmes and Customer Services earlier in the year. With more than 30 years in key positions within the Airbus group, Segura brings additional, comprehensive knowledge of the global aviation ecosystem to ATR.

Other News

MTU Aero Engines AG and the government of the **Republic of Serbia** have inked a Memorandum of Cooperation (MoC), establishing their close cooperation in the field of training of skilled labor. The aim is to effectively address the specific needs of the aviation industry in the curricula of vocational and trade schools. The move clears the way for an adoption of a training scheme based on the proven dual system of classroom and work-place learning for teaching people the ropes of the aviation industry. The decision to step up cooperation comes against the backdrop of MTU's plan to open a dedicated engine parts repair facility in Serbia. MTU's new shop will be located in Nova Pazova, near Belgrade and is scheduled to be up and running in the course of 2022. In support of the project, a Serbian subsidiary, dubbed MTU Maintenance Serbia d.o.o., has been set up, and first employees have already been hired. Its focus over the next few months will be on developing a workforce to meet the company's needs. While construction of the new facility is under way, MTU will be training people for the skilled positions to be filled. This training will take place at local vocational and trade schools in Serbia and on site at MTU's facilities in Germany along the lines of the MoC now signed.

AJW Group, the independent specialist in the global management of aircraft spares, has announced the formation of a new joint venture to help drive its growth in China. The joint venture will be called **AJW Greavia Limited** and has been established with Hong Kong-based, Greavia Limited to enable AJW Group to better serve the booming Chinese aviation market. AJW Greavia Limited will be led by the retiring Chairman of AJW London, Randeep Grewal, who will drive its focus on strategic commercial aviation opportunities with selected Chinese partners. Greavia Limited is part of Greran Group, which complements AJW's aviation business interests in aircraft and component maintenance, engineering, maintenance programs, ground operations, planning and aircraft leasing.