

MRO

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Wheel & Brake services

Company profile
Beach Aviation Group

Industry interview
Kellstrom Aerospace

MRO News
from around the world

People on the Move
latest appointments

AVITRADER
MRO

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Opinion

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Better capacity utilisation

A recent report by the Centre for Aviation -CAPA- in respect to improving airline industry profitability highlights better capacity utilisation as a fundamental reason for this upward trend.

The report says global average load factors have steadily climbed for decades, from around 55% in 1970 to around 80% in 2016; meanwhile however airline profitability has not consistently followed a similar upward path throughout this period.

A fuller view of capacity utilisation needs to include how many hours per day aircraft are utilised (there's no point in having a full aircraft that only flies a few hours a day) and the percentage of the fleet that is actually flying and not parked or in storage (if that full aircraft is flying 24 hours a day,

but is the only one that is in service, then the fleet is not enjoying high overall capacity utilisation).

In contrast with the broadly upward trend in load factor, daily aircraft utilisation and the percentage of aircraft in use have both followed a cyclical pattern over several decades. However, following the global financial crisis, daily utilisation and the percentage of the fleet in use have been on a more clearly defined upward path since in 2009. At the same time, load factor has also continued to track upwards.

The combination of these three measures of capacity utilisation goes a long way towards explaining variations in the operating margin of the world airline industry.

Keith Mwanalushi
Editor



Wheels and brakes are components with significant maintenance requirements
Photo: Keith Mwanalushi

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MAEL signs maintenance agreement with Evelop Airlines
Photo: Monarch

Monarch secures Evelop Airlines as new customer

Monarch Aircraft Engineering Limited (MAEL), the engineering division of Monarch, has signed a base maintenance agreement with Evelop Airlines. The airline, based out of Palma de Majorca, is a new customer for MAEL who will carry out the first hangar maintenance check for Evelop's Airbus A330. All the maintenance work will be carried out at Monarch Aircraft Engineering's state-of-the-art facility at Birmingham Airport in the U.K..

CTT Systems receives first Zonal Drying order for Airbus A321Neo aircraft

CTT Systems, a leader in aircraft humidity control systems, has received an order for the new A321Neo aircraft from Novair to be retrofit installed in two of its newly delivered A321Neos. Peter Landquist, VP Sales & Marketing, CTT Systems AB, comments: "We are privileged to receive our first Zonal Drying order for the A321Neo aircraft. Novair has proven the benefits from mastering the root-cause of condensation when operating their previous A321Neo aircraft equipped with the Zonal Drying System. The systems will be retro-fitted in the aircraft to prevent weight gain from accumulated water/ice accretion (which increases fuel and CO2 burn) and to reduce other moisture problems, such as electrical failures."

AAR begins work on 15-year US\$909m landing gear contract for USAF

AAR has received notice to proceed on the US\$909,394,297 fixed-price contract from the U.S. Air Force for the Landing Gear

Performance-Based Logistics One program. AAR will provide total supply chain management including purchasing, remanufacturing, distribution and inventory control to support all Air Force depot and field-level, foreign military sales, other services, and contractor requisitions received for all C-130, KC-135 and E-3 landing gear parts. Repair work will be done at AAR's landing gear services facility in Miami and inventory supply and management will be handled via AAR offices and warehouses in Wood Dale, Illinois, and Ogden, Utah.

Vector Aerospace delivers 100th P&WC PW150A engine from Singapore facility

Vector Aerospace's Singapore facility has successfully serviced and delivered back to the customer its 100th Pratt & Whitney Canada (P&WC) PW150A turboprop engine. Vector Aerospace Asia, located in the Seletar Aerospace Park, Singapore, is a P&WC Designated Overhaul Facility (DOF) for the PW150A engine series, equipped with full overhaul and test capabilities. This state-of-the-art facility, which is one of only two independent PW150A DOFs worldwide, provides owners and operators of PW150A engines powering the popular Bombardier Q400 regional turboprop with cost-effective, viable and easily accessible engine MRO solutions.

ATR and Stobart Air renew Global Maintenance Agreement

After ten years of cooperation, turboprop manufacturer ATR and the Irish regional airline Stobart Air have extended their Global Maintenance Agreement (GMA). This new six-year contract covers the repair, overhaul

and pooling services of Line Replaceable Units, along with propellers' availability and maintenance. The entire ATR fleet of Stobart Air is covered by this maintenance agreement: 2 ATR 42-300s, 2 ATR 72 500s and 13 ATR 72-600s. Flying in the United Kingdom, Ireland and continental Europe, these aircraft are operated by Stobart Air under the Aer Lingus Regional and Flybe brands, on behalf of their respective owners. Stobart Air also operates charter flights and offers wet-leasing solutions.

New Honeywell self-diagnosing sensors improve performance and safety of aircraft systems

Honeywell has announced a new series of self-diagnosing sensors designed to improve the performance of aircraft systems and reduce maintenance costs associated with false readings. Honeywell is introducing Integral Health Monitoring (IHM) series proximity sensors that can detect when a sensor has been damaged or otherwise impacted. The patented proximity sensors can be designed into a range of aircraft systems such as thrust reverser actuation systems, flight controls, aircraft doors, cargo loading systems, evacuation slide locks and landing gear. "Aircraft operators who receive a sensor reading often cannot be sure if they have a system issue that needs to be addressed or if the sensor itself is malfunctioning," said Graham Robinson, president of Honeywell's Sensing and Internet of Things business, which produces more than 50,000 sensing products for a range of industries from aerospace to medical to oil and gas. "Leveraging Honeywell's technical expertise in the aerospace industry, we innovated a circuit that can detect whether a sensor reading is correct or the result of damage or some other problem with the sensor itself." The proximity sensors are configurable, non-contact devices designed to sense the presence or absence of a target in harsh-duty aircraft applications such as determining when a thrust reverser is not fully closed. The sensors can detect most internal failures and display a fault output to a pilot or maintenance worker in order to help reduce aircraft downtime and maintenance costs. Honeywell also introduced Linear Variable Differential Transformers (LVDT), which are used in engine mechanisms, pilot controls and nose-wheel steering applications, and which provide next-generation aircraft with continuous position monitoring and are designed for use in harsh environments. The LVDT sensors are already being incorporated into Honeywell-manufactured aircraft systems and can support other component and system manufacturers.



Liebherr-Aerospace Lindenberg GmbH
Photo: Liebherr-Aerospace

Liebherr-Aerospace Lindenberg receives DOA certification

Liebherr-Aerospace's Lindenberg-based center of excellence for flight control, actuation and landing gear systems has been officially recognized by the European Aviation Safety Agency (EASA) as a Design Organization Approval (DOA)-certified company for landing gear systems (hydro-mechanical systems and structures) to approve minor changes to type-certificates and minor repairs. This certification demonstrates the compliance of Liebherr-Aerospace's processes with the requirements of European regulation Part 21, Section A, Subpart J which establishes the certification rules for companies that design and manufacture aircraft systems and aircraft parts. The DOA is a mandatory certification for every commercial aircraft designer and is also available to system manufacturers such as Liebherr-Aerospace. The Management of Liebherr-Aerospace Lindenberg GmbH stated: "This certification will enable us to validate our own repair solutions for landing gear systems. It also allows us to be entrusted with a higher level of delegation from air framer customers in the management of product development."

TAM signs contract with SprintAir for major checks on Saab 340s

Täby Air Maintenance (TAM), has signed a contract with SprintAir of Warsaw, Poland, for major checks on their full-cargo-converted Saab 340s. The first of three aircraft is due to arrive in TAM's main overhaul facility at Örebro airport in mid-August, where the other aircraft will arrive during the autumn. "With SprintAir being a long-term customer, I am glad to see we once again have been trusted with a series of major checks and overhauls

on their pristine fleet of Saab 340s," said Pär Gulle, TAM Managing Director.

Kellstrom Aerospace signs inventory support program with OEMServices

Kellstrom Aerospace has signed an inventory support agreement with OEMServices. Within the scope of this agreement Kellstrom Aerospace, a leading supplier of aircraft parts, will provide OEMServices, a global component PBH and logistics provider, with full utilization of its aircraft component inventory for exchanges, loans or outright purchases. Kellstrom Aerospace's inventory is to be located on-site at OEMServices' European hub in Tremblay, France and will expedite critical AOG support throughout the OEMServices network. Jeff Lund, CEO, Kellstrom Aerospace commented, "The agreement we signed today with OEMServices is a great way for two industry leaders to supply a greater level of service to our customers. Kellstrom Aerospace specializes in sourcing aircraft and components, while OEMServices are experts in logistics and PBH support with a diverse portfolio of contracted PBH customers that will now benefit from access to increased inventory".

Precision and ATSG form joint venture for passenger-to-freighter conversion of Airbus A321-200 aircraft

Precision Aircraft Solutions and Air Transport Services Group, through its subsidiary Cargo Aircraft Management have reported the formation of 321 Precision Conversions, a joint-venture company to develop a passenger-to-freighter conversion of Airbus A321-200 aircraft. 321 Precision Conversions anticipates approval of a supplemental type certi-

cate (STC) for A321-200 conversions in 2019. PAS began feasibility analysis for A321-200 conversions in late 2011. Full-scale engineering for STC development began in the third quarter of 2016. The 321 Precision Conversions' A321-200 freighter will provide a best-in-class solution, fulfilling both replacement and growth needs in the narrow-body freighter market. It will deliver cube space that is commensurate to Boeing 757 freighters, and low operating costs comparable to smaller Boeing 737 freighters, making it an attractive platform for air express network operators. Additional details and information about the A321-200 conversion will be released at the Cargo Facts Symposium in Miami, Florida, October 2-4, 2017.

Spirit Aerosystems signs MOU for long-term agreement with Boeing to settle open issues

Spirit Aerosystems says it has reached an agreement with Boeing into 2022 on open commercial issues related to a range of programs, including the 737 MAX and the 787. Both parties have signed an MOU reflecting the agreement and will be working on formal amendments to the program agreements. "Overall, by addressing a range of programs and not just 787 pricing, the MOU reduces much uncertainty that has long existed in the relationship with our largest customer and preserves our ability to meet our long-term cash flow goals," Spirit President and CEO Tom Gentile said. The MOU requires that the parties negotiate and execute Definitive Documentation, as defined in the MOU, in the third quarter of 2017. Spirit management believes the agreement will be completed and executed in the third quarter; however, there can be no assurance that Definitive Documentation will ultimately be executed and that Spirit's dispute with Boeing will be resolved pursuant to the MOU.

"One of the biggest challenges in our discussions with Boeing has been 787 pricing. As part of this new MOU with Boeing, we are extending the block from 1003 units to 1300 units and establishing a planning block through line unit 1405. Although the 787 contract had agreed price step-downs for the 787-8, we had never agreed with Boeing on pricing for the 787-9 and -10. We have now agreed on modified step-down pricing for the 787-9 and -10 through line unit 1405. As a result of the MOU, we have recognized a reach-forward loss of US\$353m on the 787 program," Gentile remarked, adding that: "The agreement also includes a commitment from both organizations to work together on joint cost reduction efforts with financial incentives for both parties."



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Storm Aviation to launch light base maintenance services at London-Stansted airport
Photo: Avia Solutions Group

Storm Aviation introduces base maintenance services

Storm Aviation, one of the leading line maintenance and technical training service providers in Europe, has announced the launch of light base maintenance services at its headquarter facilities at London-Stansted airport. The UK Part-145- and Part-147-approved organization will provide base maintenance services such as large component change programs, modifications and equalized scheduled base maintenance up to 1C-Check level to operators of Airbus A320 family and Boeing 757 aircraft. At its MRO base in the renowned wide-body-capable Diamond hangar, Storm Aviation's specialists will offer 24/7 AOG support, major and minor modification services, engineering and maintenance planning, refurbishment and aircraft interior changes, as well as engine repair works and engine changes to airlines operating Airbus A319, A320, A321 and Boeing 757. Storm Aviation is a subsidiary of FL Technics, a global provider of aircraft maintenance, repair and overhaul services with hangars in Europe and Southeast Asia.

Boeing provides real-time maintenance support to Air Canada's entire fleet

Air Canada has expanded its Boeing Maintenance Performance Toolbox agreement to support its entire fleet, including Boeing and non-Boeing airplanes. The Maintenance Performance Toolbox suite delivers real-time access to the maintenance documents engineers and mechanics need to quickly troubleshoot and resolve airplane maintenance issues. For Air Canada, the expanded agreement means the airline can rely on a single document management system for the online delivery of airplane maintenance information, regardless of the airplane manufacturer. Air Canada has been a Boeing Toolbox customer since 2014, initially

contracting the service to support the airline's Boeing 767, 777, 787 and future 737 MAX fleet. The airline later added Boeing Toolbox Authoring and Job Card Manager Modules, which allow Air Canada engineering to directly customize maintenance data.

Mobil Jet Oil 387 gains new approval with GP7200 engines

ExxonMobil has released that Mobil Jet Oil 387, a synthetic High-Performance Capability (HPC) turbine engine oil, is now approved for use in GP7200 engines. Developed by Engine Alliance, a joint venture between GE Aviation and Pratt & Whitney, GP7200 engines represent one of the two engine technologies approved for use on the Airbus A380, the world's largest passenger airliner. With this latest milestone, Mobil Jet Oil 387 is now fully approved for use in all propulsion engines and engine accessories used onboard Airbus A380 aircraft in operation around the world. Since its commercial introduction in late 2012, Mobil Jet Oil 387 has accrued more than one million hours of on-wing performance. Today, it is used to protect more than 250 aircraft owned or leased by premium operators around the world.

STS Line Maintenance opens new station in New Orleans

STS Line Maintenance (STSLM), a division of STS Aviation Group, has opened a brand-new line maintenance station at Louis Armstrong New Orleans International Airport (MSY). The new STS Line Maintenance station in New Orleans is powered by a highly trained staff of certified technicians. These technicians, in conjunction with STS Line Maintenance's leadership team, have already begun to offer commercial aircraft maintenance services to multiple clients with routes in an out of MSY airport.

Comlux signs first ACJ320 NEO cabin completion

Comlux Completion has signed a VIP interior completion for an ACJ320 neo aircraft. The aircraft is to be delivered green by Airbus in September 2019 and is scheduled to take approximately 10 months to complete within Comlux' Indianapolis facilities. This Airbus Corporate Jet completion is for a private customer based in Asia. The four design firms – Alberto Pinto Design, DesignQ, Unique Aircraft, Winch Design – partnering with Comlux for the future neo and MAX cabin products, have been invited to submit their design concepts for the Comlux customer. In order to shorten the cabin completion downtime to ten months, the final design is expected to be selected by in the third quarter of 2017.

Chicago Jet Group receives EASA approvals for STCs with Universal Avionics retrofit fans solution

Universal Avionics and Chicago Jet Group have announced EASA approvals for multiple retrofit Future Air Navigation System (FANS) Supplemental Type Certifications (STC). These significant approvals offer European-based operators access to STC solutions that haven't been available to them until now. The retrofit installations include Universal Avionics FANS solution, featuring the company's UniLink UL-800/801 Communications Management Unit, SBAS-Flight Management System, and Cockpit Voice Recorder.

Magnetic MRO and Crestline Investors establish joint venture for aviation assets

Magnetic MRO, a Total Technical Care MRO provider, and Crestline Investors, a U.S.-based institutional alternative asset manager, have established a joint venture for aviation asset investments. The newly established company, Magnetic Parts Trading Limited, will focus on acquiring aircrafts and engines for immediate part-out, or short-term lease and subsequent part-out. Crestline Investors will furnish Magnetic Parts Trading Limited with the majority of its capital needs, while Magnetic MRO will focus on project managing the investment, part-out and value realization process. Magnetic Parts Trading Limited will aim to invest in the most popular narrow-body aircraft, such as the A320 and B737 families and their corresponding engines. The agreed capital structure will allow for immediate investments into a significant number of new-generation aircraft and engines, as well as the flexibility to purchase fleets of aircraft, or assets with remaining leases attached.



Hawaiian Airlines signs component support agreement with AAR
Photo: AAR

AAR signs component support agreement with Hawaiian Airlines

AAR has secured its first Airbus NEO fleet customer by signing a long-term component support agreement with Hawaii's largest airline, Hawaiian Airlines. AAR will be providing comprehensive flight-hour component support for the airline's brand-new fleet of 18 A321neo's via AAR's inventory hub in Chicago, as well as stock positioned in Hawaii and other strategic operating hubs. "This flight-hour agreement is the latest addition to AAR's long-term partnership with Hawaiian Airlines, which AAR has been supporting for over 15 years with our wide range of services," said Chris Jessup, Chief Commercial Officer, AAR.

SR Technics secures several new contracts

MRO service provider SR Technics, has reported strong operational performance in H1 2017. Besides significantly expanding its engine capacity with over 90 shop visits during the first six months of the year, the company helped its clients with state-of-the-art cabin upgrades in record time, along with over 60,000 line maintenance events and over 32,000 delivered components. In addition, SR Technics has signed important new contracts, including a twelve-year ICS contract with Philippine Airlines, a five-year component support agreement with Germania, and a three-year thrust reversers contract with easyJet. SR Technics' biggest business, Engine Services, has benefitted greatly from the strong growth. To date, the company has delivered over 4,300 CFM and Pratt & Whitney engines, with a yearly capacity of about 200 shop visits. With operations in Zurich and Malta, Aircraft Services completed several complex cabin modifications and inflight entertainment installations for commercial and VIP aircraft, in addition to contracted base and heavy maintenance checks. The company also supported leasing

companies with cabin modifications, C-checks and external paint when their aircraft changed lessors. SR Technics has strengthened its presence in the fast-growing Asia region, bringing more work to its modern Kuala Lumpur component facility, which currently has a capability of about 750 part numbers. Additionally, the company is developing its line stations and has extended its line maintenance capabilities for the Airbus A350 and A320neo in Zurich and Geneva. With training facilities in Zurich and Abu Dhabi, SR Technics is also enhancing its offer of professional training courses.

ATR and TransNusa extend their global maintenance agreement

Turboprop manufacturer ATR and the Indonesian airline TransNusa have extended their Global Maintenance Agreement (GMA). Signed in 2014, the initial contract covered the repair, overhaul and pooling services of Line Replaceable Units, along with propeller services, fuel nozzle services and an on-site stock support for the domestic carrier's fleet of two ATR 72-600s. The GMA between ATR and TransNusa will now be extended for several additional years and the number of aircraft covered will increase from two to five. TransNusa is progressively introducing three additional ATRs into its fleet: two ATR 42-500s and one ATR 72-600.

Jet Aviation expands services in the Caribbean with FBO grand opening in San Juan

Jet Aviation marked the expansion of flight services in the Caribbean on July 13, with the grand opening of a new Fixed Base Operation (FBO) in San Juan at the Luis Muñoz Marín International Airport. Jet Aviation is managing the recently-completed FBO through an agreement with Pazos, which has built a tradition of FBO

excellence with an experienced, trained and professional staff over the last 25 years. The facility is a long-standing member of the Air Elite global network of exceptional FBOs.

XIESA joint venture between Safran Landing Systems and China Eastern Airlines starts construction of first MRO center

On July 20, 2017, before the first meeting of the Board of Directors of the new joint venture XIESA, Vincent Mascré, Chief Executive Officer of Safran Landing Systems, and LIU Shaoyong, Chairman of China Eastern Group, jointly laid the cornerstone for a new center of excellence dedicated to landing gear maintenance, repair and overhaul (MRO). Located in the airport zone of the city of Xi'an, the new MRO center will be operated by XIESA (Xi'an CEA Safran Landing Systems Services), the joint venture created on November 1, 2016 by China Eastern Airlines, one of China's three major state-owned carriers which are the backbone of the air transport group, and Safran, the French aerospace and defense giant. Xi'an is already home to a maintenance hub, under development, for the China Eastern Airlines fleet. It gives both partners an ideal location for their new landing gear MRO plant, at the departure point for the historic "Silk Road", as well as the new rail network intended to link China and Europe. The capital of Shaanxi province, Xi'an offers a large pool of top-flight skills for XIESA, which aims to provide outstanding local services.

Dowty Propellers to build new UK headquarters and production facility

Dowty Propellers, a leading manufacturer of aircraft propeller systems for both civil and military applications, has announced approvals to create a new facility in the Gloucester, U.K. area. This follows a fire in February 2015 that destroyed its operating headquarters and blade manufacturing facility. It is expected that the new facility will be operational in 2019. The exact facility location will be determined by the end of this year on completion of a tender process to ensure that the best combination of cost and efficiency can be achieved. Dowty Propellers has also announced the commencement of a £20m technology development project to deliver capabilities both for propeller systems and future propulsion systems. The project, Digital Propulsion, is match funded by the United Kingdom's Aerospace Technology Institute with a grant of £9.5m, and overseen by Innovate UK. Partners which include the UK's National Composites Centre, The University of Sheffield Advanced Manufacturing Research Centre and the Manufacturing Technology Centre.

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OEMServices and SCAC sign MOU to develop SSJ100 component services
Photo: Sukhoi Civil Aircraft Company

OEMServices and SCAC sign MOU to develop SSJ100 component services

OEMServices, a leading provider of integrated OEM component services and original parts' supplier for airlines and SCAC, manufacturer of the Sukhoi SuperJet 100 have signed a Memorandum of Understanding that confirms their mutual interest towards finding solutions for SSJ100 operator support. This cooperation results from a shared vision between the two companies. For SCAC, the purpose is the continuous improvement of the SSJ100 aftersales program, including analysis of the supply chain, stock sizing optimization and stock configuration in order to bring cost effective solutions to SCAC's customers and to mitigate the risks related to the delivery and repair of spare parts. For OEMServices, it is a new milestone in its strategic development of the SSJ100 program, supported by its OEM partners and thanks to its core competency in aftermarket services.

Kellstrom Aerospace extends agreement with AMETEK Sensors & Fluid Management Systems

Kellstrom Aerospace has announced a five-year extension of its distribution contract with the AMETEK Sensors Fluid Management Systems Business Unit (AMETEK Sensors) through 2023. This agreement will allow Kellstrom to continue servicing international airlines and MROs with factory-new AMETEK Sensors line-replaceable units (LRU's) while minimizing interruptions in the supply chain. "We are excited about the opportunity to continue our relationship for another five years with the AMETEK Sensors Group," comments Jeff Lund, CEO of Kellstrom Aerospace. "As AMETEK Sensor's exclusive international distributor, Kellstrom Aerospace will continue to invest and expand its platforms to support the growth of AMETEK Sensor's aftermarket including factory new spare replacements, exchange programs and

initial provisioning initiatives in support of newer platforms that include the LEAP engines."

MTU Maintenance and Air Burkina sign exclusive CF34-8E engine maintenance contract

MTU Maintenance and new customer Air Burkina, have signed an exclusive three-year maintenance agreement. The contract for the airline's four CF34-8E engines from their E170 aircraft covers maintenance, repair and overhaul, on-site services and guaranteed spare engine leasing availability. Air Burkina is the national airline of Burkina Faso and operates regional flights from the capital Ouagadougou to other countries in Africa. The company history reaches back to 1967, when Air Volta was founded. Air Burkina is the only West African company to have operated without interruption for 50 years.

Liebherr-Aerospace supplies further components for Embraer E-Jets E2

Brazilian landing gear manufacturer ELEB has awarded Liebherr-Aerospace with a built-to-print contract regarding the leg strut and trailing arm for the main landing gear of the Embraer E175-E2. Liebherr-Aerospace will manufacture the landing gear components according to the drawings by ELEB, which is responsible for the E175-E2 main landing gear design. The trailing arm will be made of titanium, the leg strut of steel. Liebherr-Aerospace is already on-board Embraer's E-Jets E2, the second generation of the E-Jets family of commercial aircraft: Liebherr-Aerospace Lindenberg GmbH, Liebherr's center of excellence for flight control/actuation and landing gear systems develops and manufactures the high lift system as well as the nose wheel steering control module for the E190-E2, the E195-E2 and the E175-E2. Liebherr-Aerospace Toulouse SAS, Liebherr's center of excellence for air management systems designs

and produces the integrated air management system for the E-Jets E2.

Nile Air extends contract with AJW Group for entire A320 fleet

Nile Air has renewed its contract agreement with AJW Group to service its entire A320 fleet, nearly doubling the number of aircraft previously supported. The agreement with one of Egypt's leading airlines includes comprehensive 'Power by the Hour' (PBH) support with on-site stock. Nile Air is the largest and fastest-growing private airline in Egypt, operating out of five airports across Egypt and offering services to the wider Middle East, Arabian Gulf, Southern Europe and Africa.

AJW to assist Aero Contractors in restructuring and upgrading MRO services

AJW Group, a market leader in the global management of aircraft spares, has signed an agreement with Aero Contractors, the Nigerian-based airline, to assist in the restructuring and upgrading of their MRO support services. AJW Group will be supporting Aero Contractors with the upgrade of its MRO services to C check capabilities for Boeing 737 Classic aircraft – 300,400 & 500. The enhancement of its MRO capabilities will ensure that maintenance is carried out to a very high standard, thus providing added quality assurance to their customers. In addition to their own fleet, Aero Contractors will be able to extend these services to third-party operators both in-country and within region. Furthermore, AJW Group will also be focusing on the management of Aero Contractors' assets to deliver an effective return on investment, disposal of Aero Contractors' PW150 engines and to provide support with engine shop visit management. AJW Capital, the group's principal investing division responsible for the purchase, sale and lease of large aviation-related capital assets, will facilitate the acquisition of two new Bombardier Q400 aircraft for Aero Contractors.

International aircraft manufacturers rely on ExxonMobil lubricants for recent test flights

ExxonMobil lubricants were recently selected by international aircraft manufacturers COMAC and Irkut to support the first test flights of their respective COMAC C919 airliner and Irkut MC-21 300 aircraft. Powered by CFM LEAP 1-C engines, the first Chinese-built large passenger aircraft to enter the market, the COMAC C919, used Mobil Jet Oil II synthetic gas turbine lubricant for its initial test flight on May 5. The

79-minute flight took off from Shanghai Pudong International Airport. On May 28, the Irkut MC-21 300 also used ExxonMobil lubricants for its initial test flight, which took off from the Irkutsk Aviation Plant, located in the Siberian city of Irkutsk, Oblast, and spanned 30 minutes at an altitude over 3,000 feet. The aircraft's Pratt & Whitney PW1400G-JM engine was lubricated with Mobil Jet Oil II and its hydraulic system was filled with Exxon HyJet IV-Aplus. With nearly 600 million hours of on-wing experience, today Mobil Jet Oil II is used in more than 50% of aircraft in operation. Its popularity stems from its proven ability to help deliver outstanding engine cleanliness and component protection.

Singapore Technologies Aerospace secures new contracts worth S\$650m in 2Q2017

Singapore Technologies Aerospace (ST Aerospace) secured new contracts worth about S\$650m in the second quarter of 2017 for services ranging from heavy airframe and engine maintenance, component repair and overhaul to freighter conversion.

The heavy airframe maintenance contracts include a long-term agreement, announced in June, that ST Aerospace's US affiliate company, VT San Antonio Aerospace (VT SAA), secured from Air Canada to service the airline's flagship 787 Dreamliner fleet. With the first 787 successfully redelivered after it underwent C1-checks at VT SAA's facility in San Antonio, US, in May, ST Aerospace became the first MRO service provider in the Americas to perform heavy maintenance on the 787.

Among the other heavy maintenance contracts secured during the quarter were agreements to service CFM56-5B and CFM56-7B engines for a European and Middle Eastern Airline respective-

ly, as well as agreements to service the 747 and 767 aircraft for American Airlines. Other long-term contracts won during the quarter included an agreement for a labor Charge-Per-Aircraft-Landing program to service the wheels and brakes of a low-cost carrier's Airbus A320 fleet. ST Aerospace gained momentum in its A330-300 passenger-to-freighter (P2F) conversion programme during the quarter when its joint venture with Airbus, Elbe Flugzeugwerke (EFW), secured additional four firm and ten optional A330-300P2F conversions from DHL Express. This agreement, also announced in June, follows the launch contract for four similar A330-300P2F conversions that was also awarded by DHL Express in July last year. The first aircraft under the launch contract is currently undergoing conversion at EFW's Dresden, Germany-based facilities, and is on track to be redelivered by the end of 2017.

EL AL Israel Airlines and Lufthansa Technik sign comprehensive, long-term agreement

The Israeli airline EL AL Israel Airlines and Lufthansa Technik have signed a comprehensive, long-term agreement. In the frame of a 15-year Total Component Support (TCS) contract, Lufthansa Technik will ensure the global and prompt component supply of the carrier's future Boeing 787 fleet. EL AL has ordered a total of 16 Dreamliners, with the first aircraft to enter service in the EL AL fleet in the third quarter of this year. The new and exclusive TCS agreement strengthens the cooperative partnership between Israel's flag carrier and the Hamburg, Germany-based maintenance, repair and overhaul provider. The contract covers the global availability of Boeing 787 components. In addition to stocking the inventory

at EL AL's hub at Ben Gurion International Airport near Tel Aviv, Lufthansa Technik will supply EL AL through its global spare parts pools in Asia, America and Europe.

AAR signs agreement with flydubai to support Boeing 737 MAX aircraft

AAR has expanded its relationship with flydubai by signing a long-term contract to provide comprehensive flight-hour component support for its new Boeing 737 MAX aircraft. The Dubai-based airline is set to take delivery of 100 Boeing 737 MAX 8 aircraft ordered at the 2013 Dubai International Airshow by the end of 2023. This is AAR's first agreement to support the new aircraft and will utilize the company's extensive global supply chain network, including its new parts warehouse in Dubai.

Boeing Shanghai signs first maintenance agreement with SF Airlines

Boeing Shanghai Aviation Services (Boeing Shanghai) has signed a maintenance agreement with Chinese-based SF Airlines for its Boeing Classic 737 and 767-300 freighters. With this contract, Boeing Shanghai has made a major step forward to expand its aircraft maintenance services in the fast-growing Chinese cargo market. The first airplane is already undergoing a C-check in Boeing Shanghai's facilities at Shanghai Pudong International Airport and more airplanes will follow on a nose-to-tail basis. A C-check is an extensive check of the airplane's systems and components that can require several days to perform.

Finance News

Willis Lease Finance second-quarter pretax profit grows 76% to US\$10.2m

Willis Lease Finance has reported that pretax income grew 76% to US\$10.2m in the second quarter of 2017, compared to US\$5.8m in the second quarter of 2016, on revenues of US\$67.8m. The company's second-quarter 2017 results were bolstered by continued strength in its core leasing business with 90% utilization at quarter end and US\$19.4m of spare parts and equipment sales revenue, of which US\$12.9m was generated by the sale of equipment. Net income attributable to common shareholders for the second quarter increased 68% to US\$5.7m from US\$3.4m in the second-quarter 2016. Earnings in the second quarter included a US\$2.3m non-cash write down of equipment and parts.

ALC and Napier Park Global Capital establish second aircraft leasing joint venture

A wholly owned subsidiary of Air Lease Corporation has entered into a joint venture with a co-investment vehicle (the JV Partner) arranged by Napier Park Global Capital (Napier Park) for the purpose of investing in commercial aircraft and leasing them to airlines worldwide. The newly formed entity is named Blackbird Capital II (Blackbird Capital II) and 90.5% of the equity is owned, through the JV Partner, by a pooled investment vehicle of long-term institutional investors managed by Napier Park. The Company owns 9.5% of the joint venture and will not consolidate the entity. Blackbird Capital II closed its first round of equity commitments, aggregating US\$231m. The fund has the ability to add additional commitments over the next 18 months based on investment opportunities. Aircraft will be acquired with eq-

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uity, a planned US\$650m warehouse credit facility, and other forms of debt financing. In contrast to the Blackbird Capital I joint venture, the investment window for Blackbird Capital II has been extended from two to four years, allowing for additional flexibility to purchase incremental aircraft alongside ALC's forward fleet planning work with airlines. ALC will provide management services over a 12-year period to the joint venture for a servicing fee based upon aircraft assets under management. In addition, the company expects to sell two aircraft from its portfolio to the joint venture to initially seed the fund. Through the joint venture, ALC will manage additional aircraft lease transactions to better serve its airline customers and may grow the size of the fund as opportunities develop.

GA Telesis announces another US\$1bn of funding capacity to support expanding inventory leasing business

GA Telesis has reported the launch of a specialty finance unit, Structured Credit Products (SCP) to focus on structured financial solutions for airline, MRO, and OEM customers. The initial focus strategy will be inventory leasing. Going forward SCP will explore other aviation finance products including originated secured lending, trading in public and private debt, and investments in other aviation-related financial instruments. SCP will be led by Stuart Weinroth, Vice President, an industry veteran with over 20 years of experience in the aviation finance and leasing sector. The initial SCP growth initiative will be enhancing the company's existing inventory leasing platform with a three-year capital allocation of US\$1bn towards providing enhanced inventory leasing solutions to airlines around the globe. The forthcoming transition into new-technology narrow-body and wide-body aircraft types has put a significant capital investment burden on operators to procure spare parts to support essential operations. GA Telesis' innovative inventory leasing product provides medium- to long-term financing under a lease structure, allowing airlines complete operational flexibility for a fixed monthly rent amount. GA Telesis has been an industry leader in the aircraft and engine parts market since its inception in 2002 and has consummated billions in parts sales over the past 15 years. GA Telesis pioneered the inventory leasing product to address the increasing capital needs of the evolving global commercial airline sector to support new aircraft deliveries. SCP will focus on spare parts related to Boeing 787 and 737MAX and Airbus A350 and A320NEO families of aircraft. However, lease opportunities for equipment related to other aircraft types will also be considered. GA

Telesis has already closed and has financing commitments for over US\$200m of inventory leases and expects to close over US\$800m of new opportunities over the next 36 months.

Rolls-Royce reports 2017 half year results

For the first half 2017 Rolls-Royce reported that revenue increased 12% at constant exchange rates and 17% at actual exchange rates. Profit before tax was £1,941m compared to a loss of £2,150m in 2016. Underlying revenue was up 6% at constant exchange rates, led by Civil Aerospace and Power Systems. Underlying profit before tax was £287m, up £183m compared to 2016. Rolls-Royce reported good profit growth in Civil Aerospace and Power Systems with Defence remaining steady; Marine continues to face challenging offshore oil and gas markets. First-half commercial and administration costs were down £38m or 7% and first half R&D spend increased to £411m compared to £378m in 2016, underpinning key growth opportunities. Free cash flow performance was solid, with a steady operating performance, helped by effective working capital management. (£1.00 = US\$1.32 at time of publication.)

Bombardier reports second-quarter net loss of US\$296m

Bombardier has reported its second-quarter 2017 results. For the quarter, the company reported revenues of US\$4.1bn. EBIT before special items grew to US\$164m, up 55% over the same period last year. EBIT margins before special items were 8.2% for Transportation, a robust 8.9% at Business Aircraft and 7.7% at Aerostructures. Bombardier reported a net loss of US\$296m for the second quarter. Commercial Aircraft recorded an EBIT loss in line with the C Series ramp-up plan. Free cash flow usage was also in line with plan at US\$570m for the quarter. Bombardier reaffirmed its revenue, delivery and EBIT before special items guidance for the full year. The Company delivered 20 commercial aircraft during the quarter, including six C Series, seven CRJ Series and seven Q400 aircraft. With year-to-date deliveries of regional aircraft and turboprops totaling 28 aircraft, Bombardier reached the halfway mark of its full-year delivery guidance for CRJ Series and Q400 aircraft. Production is ramping-up to support approximately 30 C Series aircraft deliveries. C Series aircraft deliveries are expected to gradually intensify in the second half of the year.

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MTU Aero Engines raises forecast

MTU Aero Engines AG generated revenues of €2,548.0m in the first six months of 2017, up 11% on the previous year (1-6/16: €2,299.2m). The group's operating profit increased by 26% from €254.1m to €320.8m, resulting in an EBIT margin of 12.6% (1-6/16: 11.1%). Earnings after tax increased by 29% from €176.1m to €227.5m. "The development in the first half year allows us to provide a more precise full-year guidance based on concrete targets rather than approximate ranges, and we can raise our forecast," said Reiner Winkler, CEO of MTU Aero Engines AG. MTU expects revenues to reach some €5.3bn by the end of 2017, which is higher than the original forecast of between €5.1 and €5.2bn. Winkler adds: "Deliveries for the Geared Turbofan programs are set to increase significantly in the second half of the year, with a corresponding impact on earnings." Nonetheless, MTU's operating profit could well be higher than anticipated, rising to around €560m (adjusted EBIT in 2016: €503.0m). This will result in a stable EBIT margin for MTU. Earnings after tax are expected to amount to approximately €390m in 2017 (adjusted net income for 2016: €345.4m). In the first six months of 2017, the commercial maintenance business recorded the highest growth rate in terms of revenues, which increased by 32% to €1,181.0m (1-6/16: €893.3m). The main source of these revenues was the V2500 engine, which powers the Airbus A320 family. In the six months to the end of June 2017, revenues in the commercial engine business grew by 4% from €1,200.9 million to €1,242.8 million. The V2500, the GEnx for the Boeing 787 and 747-8, and the PW1100G-JM for the A320neo accounted for the greatest share of these revenues. (€1.00 = US\$1.18 at time of publication.)

Embraer posts second-quarter 2017 results

In the second quarter 2017, Embraer delivered 35 commercial and 24 executive (16 light and 8 large) jets, compared to the 26 commercial and 26 executive (23 light and 3 large) jet deliveries in the second-quarter 2016. The company's firm order backlog ended the quarter at US\$18.5bn. Revenues in the second quarter increased 29.5% year-over-year to US\$1,769.6m, with significant growth across all three segments. Adjusted EBIT and Adjusted EBITDA margins were 9.3% and 13.9%, respectively. Adjusted EBIT and Adjusted EBITDA exclude US\$9.4m in net non-recurring gains in the second-quarter 2017 and US\$200.0m in non-recurring charges in the second-quarter 2016. Adjusted EBIT and Adjusted EBITDA in the quarter were US\$164.6m and US\$245.4m, respectively. Second-quarter 2017 net income attributable to Embraer shareholders and Earnings per ADS were US\$59.1m and US\$0.32, respectively. Adjusted net income (excluding the impact of FX-related non-cash deferred income tax and social contribution and non-recurring items) for the quarter was US\$123.0m, representing Adjusted Earnings per ADS of US\$0.67 per basic share in the second-quarter 2017. Embraer generated US\$220.0m of Adjusted Free cash flow during the second quarter, and over the first six months of 2017 Adjusted Free cash flow was US\$20.7m. The company's net debt position improved to US\$661.5m at the end of the second-quarter 2017 from US\$805.8m at the end of the first-quarter 2017.

Rockwell Collins reports third-quarter financial results

Rockwell Collins has reported sales for the third quarter of fiscal year 2017 of US\$2.094bn, a 57% increase from the same period in fiscal year 2016, or 5% growth excluding US\$695m of revenue from the acquisition of B/E Aerospace. Third-quarter fiscal year 2017 earn-

ings per share from continuing operations was US\$1.12 compared to US\$1.63 in the prior year. Adjusted earnings per share for the third-quarter fiscal year 2017 was US\$1.64 compared to US\$1.67 in the prior year. Earnings per share and adjusted earnings per share for the third quarter of fiscal year 2016 included a 31-cent income tax benefit from the release of a valuation allowance related to a U.S. capital loss carryforward. Cash provided by operating activities for the nine months ended June 30, 2017 was US\$416m, an 87% increase from the same period in the prior year.

Boeing reports strong second-quarter results

Boeing has reported strong earnings and operating cash flow in the second quarter of 2017, driven by improved operating performance. Second-quarter GAAP earnings per share increased to US\$2.89 and core earnings per share (non-GAAP) increased to US\$2.55. Revenue was US\$22.7bn, reflecting planned production rates and timing of commercial and defense aircraft deliveries.

Operating cash flow in the quarter of US\$5.0bn was driven by strong operating performance and favorable timing of receipts and expenditures. During the quarter, the company repurchased 13.6 million shares for US\$2.5bn, leaving US\$9.0bn remaining under the current repurchase authorization. Commercial Airplanes second-quarter revenue was US\$15.7bn, 10% down from the previous year second quarter, on planned production rates and timing of deliveries. Second-quarter operating margin was 10.0%, reflecting solid execution. During the quarter, Commercial Airplanes delivered the first 737 MAX 8 aircraft and announced the launch of the 737 MAX 10. Demand continues to be healthy with 571 incremental orders and commitments announced at the Paris Air Show, including 56 for wide-body aircraft and 361 for the launch of the 737 MAX 10. Also at the Paris Air Show, a number of commercial service agreements were announced that provide further growth opportunity for Boeing Global Services. Commercial Airplanes booked 183 net orders during the quarter. Backlog remains robust with more than 5,700 airplanes valued at US\$424bn.

Airbus reports half-year 2017 results

Airbus SE has reported half-year (H1) 2017 financial results and maintained its guidance for the full year. Order intake totaled €37.2bn (H1 2016: €39.1bn) with the order book valued at €981bn as of June 30, 2017 (year-end 2016: €1,060bn). A total of 203 net commercial aircraft orders were received (H1 2016: 183 aircraft), with the order backlog comprising 6,771 aircraft at the end of June. During June's Paris Air Show, 144 firm orders and 202 commitments were announced. Net helicopter orders increased to 151 (H1 2016: 127 net orders), including 30 H225Ms for Kuwait. Defence and Space's order intake was impacted by the perimeter changes from portfolio reshaping and some slowdown in telecommunication satellites. Good order momentum was seen in Military Aircraft with orders for 19 Light and Medium aircraft booked. Revenues were stable at €28.7bn (H1 2016: €28.8bn) despite the perimeter changes in Defence and Space. Commercial Aircraft revenues rose 3% with deliveries of 306 aircraft (H1 2016: 298 aircraft) comprising 239 A320 Family, 30 A350 XWBs, 31 A330s and six A380s. Helicopter revenues increased 9% with deliveries of 190 units (H1 2016: 163 units). Revenues at Defence and Space reflected a negative impact of around €1.2bn from the perimeter changes. EBIT Adjusted – an alternative performance measure and key indicator capturing the underlying business margin by excluding material charges or profits caused by movements in provisions related to

programs, restructuring or foreign exchange impacts as well as capital gains/losses from the disposal and acquisition of businesses – totaled €1,099m (H1 2016: €1,679m). Commercial Aircraft's EBIT Adjusted was €954m (H1 2016: €1,269m), reflecting the aircraft delivery mix and phasing as well as transition pricing. Good progress was made on the A350 industrial ramp-up with 30 deliveries compared to 12 in the first half of 2016. The A350 program is on track to meet the monthly production rate target of 10 aircraft by the end of 2018. The level of outstanding work has improved in the industrial system and supply chain bottlenecks are improving. In the second quarter, Qatar Airways cancelled four A350 delivery slots. The focus remains on recurring cost convergence. On the A320neo program, 59 aircraft were delivered compared to eight in the first half of 2016. The A320neo ramp-up remains challenging and customers are still experiencing a number of in-service engine issues. Engine supplier Pratt & Whitney has introduced some fixes but these improvements have not come through yet on a reliable basis under normal service conditions. Close to 200 A320neo deliveries are still targeted for 2017 but this objective is more challenging given these engine issues. Considering the current A380 order booking situation, 2019 deliveries will be adjusted to eight aircraft. As the basis for its 2017 guidance, Airbus expects the world economy and air traffic to grow in line with prevailing independent forecasts, which assume no major disruptions.

Honeywell reports financial results for second quarter of 2017

Honeywell has reported financial results for the second quarter of 2017. Honeywell sales for the second quarter were up over 3% on an organic basis and up 1% on a reported basis. The difference between reported and organic sales is the impact of foreign currency transla-

tion, the 2016 spin-off of the former Resins and Chemicals business in Performance Materials and Technologies, and the 2016 divestiture of the aerospace government services business, partially offset by the Intelligrated acquisition in Safety and Productivity Solutions.

Aerospace sales for the second quarter were up 2% on an organic basis driven by strength in Commercial Aftermarket, growth in U.S. defense, and a continuing recovery in commercial vehicles in Transportation Systems. Segment margin expanded 140 bps to 22.3%, primarily driven by higher volumes, productivity net of inflation, and the favorable impact of the 2016 divestiture of the government services business.

DAE announces pricing of US\$2.3bn Senior Notes

DAE Funding (DAEF), a wholly-owned subsidiary of Dubai Aerospace Enterprise (DAE) has priced US\$500,000,000 aggregate principal amount of 4.00% Senior Notes due 2020, US\$800,000,000 aggregate principal amount of 4.50% Senior Notes due 2022 and US\$1,000,000,000 aggregate principal amount of 5.00% Senior Notes due 2024 (collectively, the Notes). The Notes will be fully and unconditionally guaranteed by DAE. DAE intends to use a portion of the net proceeds from this offering, along with cash on hand, to pay the cash purchase price for its previously announced acquisition of the AWAS group of companies, as well as for related fees and expenses, and any remaining net proceeds for general corporate purposes, which may include the future repayment of outstanding indebtedness. Settlement of the offering is expected to occur on August 4, 2017. Pending the consummation of the acquisition of AWAS, the gross proceeds of the offering will be placed into an escrow account with Wells Fargo Bank, National Association.

Other News

CTT Systems AB, a market leader in aircraft humidity control systems, has announced a Zonal Drying order for additional 14 Boeing Next-Generation 737-800s from **Pobeda Airlines** (a low-cost airline in the Aeroflot Group) to be line fitted from February 2018. Peter Landquist, VP Sales & Marketing, CTT Systems AB, commented that: "We are privileged to receive an additional order from Pobeda Airlines. The retrofit installations previously with Pobeda have proven the benefits from mastering the root-cause of condensation. These systems will be line fitted in new aircraft to prevent weight gain from accumulated water/ice accretion (which increases fuel and CO2 burn) and to reduce other moisture problems, such as electrical failures."

Bombardier has expanded its Challenger 300 training capacity in Dallas, complementing the existing Challenger 350 aircraft training program. The new Challenger 300 simulator was certified at Bombardier's Dallas Fort-Worth (DFW) Airport Texas facility by the Federal Aviation Administration (FAA) in May 2017 and is now ready for training. With six Level D full-flight simulators, one flight training device, 21 multimedia, interactive classrooms, and numerous part task training devices, Bombardier's Dallas Training Centre can train up to 3,000 pilots and 280 maintenance technicians each year.

Air China, the flag carrier and one of the major airlines of the People's Republic of China, has selected inflight entertainment and connectivity (IFEC) solutions from **Panasonic Avionics Corporation (Panasonic)** for its fleet of Airbus A350 aircraft. Under the terms of the agreement, Panasonic will provide its industry-leading eX3 inflight entertainment for 10 Air China A350 aircraft. The first of these aircraft will be delivered in December 2017. By selecting eX3, Air China will offer a unique passenger experience that includes audio and video on demand, a content library that can offer up to 300 movies, 200 TV shows, games, music, a moving map, and much more. These A350 aircraft will also offer global connectivity services.

EL AL Israel Airlines has selected **Panasonic Avionics Corporation's (Panasonic)** eX3 inflight entertainment (IFE) system for its new fleet of 16 Boeing 787 Dreamliners. Under the terms of its agreement with Panasonic, EL AL will install eX3 across nine Boeing 787-9s and seven B787-8s, with the first aircraft being delivered in August 2017. The agreement also includes a 15-year contract for the provision of system maintenance by Panasonic Technical Services, including spares, repairs and logistics, at an optimized maintenance cost.



Happy landings

Wheels and brakes require the most removals.
Photo: Flybe Aviation Services

The increasing fleet size globally and evolving new technologies are driving growth in the aircraft wheels and brakes market. **Keith Mwanalushi** looks closer at this growing sector.

Industry reports indicate that the aircraft brake system market is projected to grow from US\$6.08 billion in 2017 to US\$8.42 billion by 2022, at a CAGR of 6.71% during the forecast period.

Carbon brakes are set to account for the bulk of the demand – “This can also be seen at Magnetic MRO, where the majority of brake systems that go through our workshop are carbon brakes,” observes Raili Mägi Workshop Manager at Magnetic MRO.

Richard Jowett, AerFin VP Purchasing and Programmes has similar views saying the industry is seeing an evolution from steel brakes, to carbon which has increased life on wing and reduced removals, weight and therefore gaining fuel savings. Another trend is electrical braking systems on the 787 which is the latest technology. “Carbon brakes are more able to control the heat and wear created by landings and thus longer life. Jowett refers.

Lufthansa Technik’s wheel and brakes have its core business on the European market due to the logistical challenges for which it has developed bespoke solutions. “With our new factory in Frankfurt East, Lufthansa Technik has set itself up to expand its market leader position while sustaining future growth,” says Sven Duve, Senior Director

Closed Loop Fulfilment Aircraft Component Services.

The sheer number of travellers, a shift towards more fuel efficient, environmentally friendly and larger capacity aircraft are driving the necessity for a change in the way brakes are designed, produced and perform.

Hans Laudon, VP General Manager of Wheels and Brakes at Honeywell Aerospace says customers are looking for brakes that function with longer maintenance intervals and ultimately help to reduce aircraft operating costs and greenhouse gas emissions. “Honeywell’s advancements in brake design and Carbenix friction materials is meeting this demand while deployed across a wide breadth of platforms, including the world’s largest airliner, the Airbus A380,” he says.

Based on component, the brakes segment of the aircraft brake system market is projected to grow at the highest CAGR during 2017 to 2022 according to industry projections. The growth of this segment can be attributed to the high demand for carbon brakes and technological advances in braking systems, such as electric braking.

Wheels and brakes require the most removals and this will supposedly present some challenges to aircraft operators, especially with regards to maintenance.



Wheels and brakes need a lot of attention as they are crucial to landings.
Photo: Direct Maintenance

"Wheels and brakes need a lot of attention as they are crucial to landings," states Mägi from Magnetic MRO. "They need to be maintained at a specific interval and also according to regulatory rules like all other components." She adds that environmental conditions such as a wet, sandy or snowy runways, climate as well as human factors all play a big role in the state of wheels and brakes and how often they should be maintained.

Duve says removals and its causes are inherently different to that of a normal component, and make the operation more prone to its effects. "This means that operators need to plan wheel or brake changes within the allotted maintenance ground times such as a night stop."

The wheels aspect of the business is highly seasonal. During the peak summer months the increased temperatures result in higher wear of the tyres alongside the increased cycles operated by the aircraft, Duve notes. Inversely, the winter period, subsequently drives high stock levels. "Both of the above require the operator to allocate his stock in an optimum way giving maximum stock availability throughout his flying programme.

"As an MRO you need to ensure that the output and supply and availability is given, which are only possible through a stable output and high reliability of your facilities. Flexibility in staffing is also key as these factors enable you to act quickly to any changes in both the market, operator or weather conditions, while being economic on the approach," Duve explains.

Jeffrey Becker, Director, CRO and Manufacturing Services, Airborne Maintenance and Engineering Services, Inc. (AMES) adds that the problem mostly comes with predatory pricing from the brake OEM's. "Over the last several years they have increased the prices for brake replacement parts while reducing the price for brake repairs and overhauls sent to their facilities. This makes it more difficult for operators as they are basically forced to ship brakes to OEM repair and overhaul facilities only."

Laudon from Honeywell Aerospace feels the most common maintenance removals are to service the wheels by changing to a fresh tire tread. Honeywell has also led the development of boltless wheels through its advanced fighters such as F18, F22 and F35 such that new air transport designs can reliably benefit from less parts to streamline wheel maintenance.

In addition, Laudon says brake Landings-per-Overhaul (LPO) life needs to be predictable and maximised in order to reduce brake overhaul intervals. "Honeywell continuously works to improve carbon brake life performance with advanced carbon process technology, design for heat management, and leading anti-oxidant systems."

Jowett, from AerFin feels that actually, the wheels and brakes are amongst the most predictive components on the aircraft to forecast removals and therefore easier to negotiate support contracts if not supported by internal workshop capability and also to calculate level of inventory to purchase.

"Wheels are dictated to by the expected life of the tyre and operational environment, most tyre manufacturers have a pretty good idea on performance and can provide a guaranteed landing expected on nose and main," Jowett states.

With brakes, he says as you can measure wear pin or have the a/c provide wear pin reading (787) you can calculate and forecast removals fairly accurately. "We do this on the TUI fleet.

"Being able to calculate removals allows you to understand how many tyres you are likely to need, how many brake removals so you can negotiate with an MRO provider based on fairly accurate data and the MRO can calculate a rate for services based on this data, other airframe components are on condition so more unpredictable in number of removals expected, plus there's +1000 PN's to consider."

With regards to the trends in landing gear technologies Nick Filce, AerFin Director-Regional Sales and MRO notices that technology is constantly evolving with the manufacturers striving to achieve reduced weight and life cycle costs whilst maintaining high performance and an extended life. "The development of high strength materials, active damping systems, increased use of composite material and moving away from hydraulic to electrical actuation systems help achieve these goals and will also assist in moving towards a 'on condition' based maintenance.

"From the manufacturers, this inevitably filters down to companies such as AerFin supporting the equipment since our material and logistical requirements change to meet the differing demands on wheel, brake and component removals," he says.

Mägi stresses on the need to keep up with operators' needs: MRO responsiveness and adaptability to change with demand.

"This is obviously not only tied to landing gear technologies," she indicates. However, as brakes and wheels are components with significant maintenance requirements, she adds that the MROs need to be able to adapt to change rapidly and adopt a "what-operators-need-we-train-staff-mentality" to provide service to as wide a variety of operators' wheel and brake assemblies. "Magnetic MRO



Railii Mägi Workshop Manager at Magnetic MRO

Workshop has adapted this responsive mentality, and also knowledge to offer different capabilities for wheel and brake assemblies exactly where customer's needs lie," Mägi affirms.

Honeywell is able to use value analytics based on aircraft operational and component wear data to identify ways to operate the aircraft more efficiently while providing feedback to further improve landing gear, wheel and brake design models. The connected system of components also reduces workload in routine dispatch checks such as tire pressure and condition and remaining brake life (wear pin) and to proactively share monitoring data to predict maintenance requirements by identifying component health and associated fleet operating trends.

"These advances are providing new insights that allow Honeywell to collaborate with airlines and MRO's to reduce troubleshooting time and maintenance costs, reduce fuel-related operating costs and improve overall aircraft availability," Laudon stipulates.

In addition, he adds that RFID technologies have been developed to levels of robustness to reliably enhance asset tracking and management of spare components that improves spares logistics accuracy, reduces inventories and speeds up repair turnaround times – therefore saving the airline money and time while making flying safer and more efficient for the passenger.

Larry Montreuil, VP Asset Management and Business Development at Werner Aero Services says airlines are increasingly relying on used surplus material (USM) to lower maintenance costs. He mentions the most economic source of USM is from aircraft teardowns. Werner Aero Services, a specialist in the acquisition and disassembly of end of life aircraft is a leading provider of USM to airlines, MROs and other suppliers. "The material we harvest from these aircraft is refurbished through our network of high quality repair agencies for use to support direct sale or pooling programmes for operators."

Wheels and brakes like all aircraft components are subject to strict regulatory regimes, as will all components that can be made serviceable, they are subject to following the CMM (component maintenance manuals) issued by the OEM and any work is released under EASA or FAA or CAAC or combinations etc. depending on the operators requirement and regulatory regime. Jowett says: "Wheels can have tyre changes up to four to five occasions and then on the next visit an OH, brakes can have similar intervals or be OH on each shop visit, dictated by the CMM or increased frequency introduced by the operator."



Duve says removals and its causes are inherently different to that of a normal component.
Photo: LuffhansaTechnik

Duve from Luffhansa Technik indicates that wheels and brake components are subject to the same requirements as any other aircraft component and part, which is key for the safety of the product and its usage. "For wheels and brakes a pressure test and visual inspection form the basis



Magnetic MRO offers different capabilities for wheel and brake assemblies

of this, and are maintained in the history of this individual component."

"Certification should be always very stringent as it is the last document that will be released for the specific component after repair," continues Mägi. "Moreover, if a component is released with a certificate it is certain that it can be used in the way that it is supposed to. Before certificate release various tests should proceed depending on the condition of the component and customer needs. At Magnetic MRO we release certificates only when all is clear with the component concerned and it passes all tests."

Laudon notes that components are tested to demonstrate that they can meet stringent requirements under the most extreme conditions with factors of safety beyond typical aircraft service levels.

"Each level of the wheel and braking system are tested from individual component parts, to sub-assemblies and to full integrated assembly to ensure that aircraft qualification requirements are met with consistency when subjected to various unique conditions," says Laudon.

He further states this qualification testing includes laboratory testing through to full aircraft flight-testing of components to determine performance. "One of the most demanding qualification tests is the simulation of a rejected take-off whereby the braking system is subject to the energies of take-off abort with engines in full thrust." The testing qualification of wheels and brakes play a particularly vital role as they take the brunt of landing a 575 metric tonne aircraft in various conditions.

Certainly, airframe OEMs and regulatory agencies will define these extreme conditions to include all possible environmental and operating conditions that the aircraft may experience. "Hundreds of thousands of braking cycles and tens of thousands of miles of wheel testing are used to certify that these essential components are up to the task with repeatable performance," Laudon concludes.

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Selling airframe parts is a key business at Beach Aviation Group.
Photo: Beach Aviation Group



The company is investing in both people and technology.
Photo: Beach Aviation Group

located through any and all of the following: ILS, PartsBase, Locatory, Stockmarket, or aeroXchange. Our inventory is accurately updated on a daily basis, ensuring the customer an up-to-date stock selection.

Beach Aviation Group fundamentally strives to always answer phone calls with a live person and is happy to consistently reply to all quote requests. We take pride in our customer service skills as it is a critical axis in our business mission. We make it very easy for our customers to access and communicate with all personnel at Beach Aviation Group.

We wholeheartedly invest in both people and technology. The purchasing process is substantially efficient and surpassingly easy. Our engine and airframe parts records are particularly organised and thorough. We develop comprehensive solutions that increase value as well as provide significant cost savings for our customers.

We are currently ASA-100 accredited and will be undergoing ISO9001:2015/AS9120B:2016 audit during August 2017.

What we do?

Manage tear down of engines

Work with Maintenance Repair Operations to Repair Parts to Overhauled or Serviceable Condition

Sell Serviceable, Overhauled, As Removed commercial engine and airplane parts

Provide programmes (Consigned material) for end of life engines

Where are we?

Beach Aviation Group's commitment starts with our completely environmentally controlled warehousing and distribution facility located in beautiful seaside Vero Beach, Florida. Vero Beach is located on the Treasure Coast of Florida between St. Lucie and Melbourne and is centrally located only a couple hours from major cities of Orlando, Fort Lauderdale, Tampa, Miami and Jacksonville.

In the hot seat.....

Jeff Lund, President and CEO, Kellstrom Aerospace

AviTrader MRO: Can you tell us a bit about Kellstrom Aerospace and how the company came to be?

Lund: Kellstrom Aerospace's operating history dates back to the 1970s. In 2013, Kellstrom Commercial Aerospace acquired AirLiance Materials, becoming what is formerly known as Kellstrom Materials. Kellstrom was then acquired by AE Industrial Partners in 2015 with the goal of becoming a full-service aftermarket solutions provider to airlines, MROs, and the aircraft lessor community.

Over the last two years, Kellstrom has expanded its capabilities and product offerings to further support its customer base as a full-service provider to the commercial aftermarket. With further acquisitions of Transaero Commercial Distribution (2016), The Aircraft Group (2016) and now Vortex Aviation (2017), the growth of Kellstrom was continuing. Kellstrom Materials was rebranded to Kellstrom Aerospace in April 2017, to represent to airlines, leasing companies and MROs around the world that Kellstrom Aerospace signifies full service aftermarket solutions, from supporting new aircraft inductions to end-of-life solutions.

AviTrader MRO: In June, Kellstrom acquired Vortex Aviation, what necessitated this move?

Lund: The acquisition of Vortex Aviation plays a key role in connecting the synergies of our new technical services division: Kellstrom Aerospace Technical Services (KATS). With Vortex's specialisation in on-wing support services and quick-turn hospital shop repairs, paired with the aircraft portfolio maintenance and records management of The Aircraft Group and expertise of end-

of-life assets of Kellstrom Aerospace, KATS offers a complete 100% technical services capability for the entire aircraft. This acquisition strengthens Kellstrom Aerospace as the global leader in aircraft lifecycle solutions and builds upon our diverse portfolio aimed at reducing aircraft operational costs and better end of life solutions.

AviTrader MRO: How will aircraft operators and MROs benefit from your acquisition of Vortex?

Lund: With the addition of Vortex Aviation to Kellstrom Aerospace Group's portfolio, lessors, owners and operators of aircraft and engines will maximise time on wing, reduce the cost of maintenance, and receive optimum end of life solutions for assets upon retirement. The broader market reach Vortex Aviation brings to Kellstrom Aerospace will also benefit our OEM distribution partners, as we expand our geographical footprint and customer base.

Aircraft operators, lessors and MROs will further benefit from Vortex's alignment with The Aircraft Group as part of the KATS programme. Through their patented records management system, The Aircraft Group is able to enhance the value of any portfolio through active fleet management. By pairing the synergies of The Aircraft Group and Vortex, Kellstrom is able to provide a team of industry specialists to effectively provide technical and consultancy services resulting in flexibility to operators as they transition to newer aircraft, economic optimisation of mature assets, technical and commercial services to extend operational life, and exit strategies upon retirement.



Jeff Lund, President and CEO.
All photos: Kellstrom Aerospace

AviTrader MRO: Will Vortex Aviation keep its brand identity?

Lund: Yes, Vortex Aviation will continue to operate under their current trademark. The brand that Vortex has achieved throughout their operating history is strong in the industry and recognised as knowledgeable and reliable, and will continue to operate as such.

AviTrader MRO: Are there any details on the financial aspect of the acquisition or how much investment is going into Vortex?

Lund: We will not be releasing financial information about the acquisition.



The business includes new OEM aircraft parts distribution.



Embracing Blockchain

The maintenance history of aircraft parts needs to be transparent.
All photos by IFS

Bas de Vos, Director of IFS Labs at IFS looks at how the aviation asset management business can utilise this new technology.

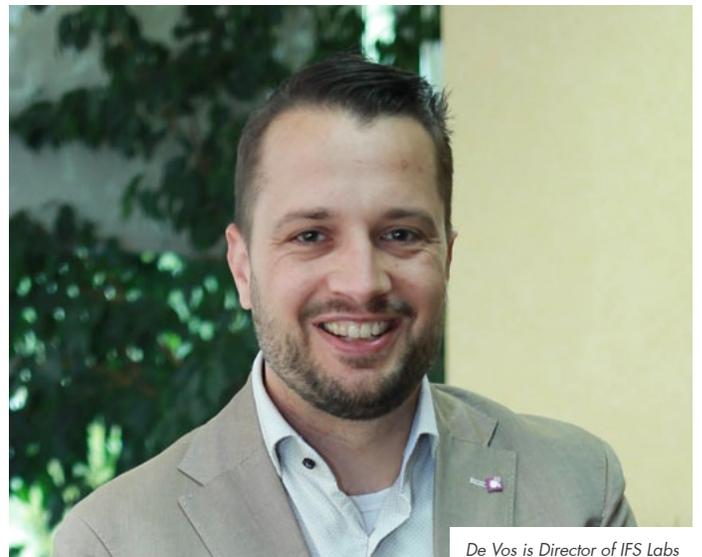
Blockchain is one of the most discussed and intriguing technologies out there today. I will not go too deeply into the specifics of how it works since that has been covered by many other sources. Suffice to say that it is a huge, global distributed ledger or database running on many devices and open to anyone within the blockchain. In the blockchain, information, or anything of value can be stored. Its purpose is to ensure a 100% secure, verifiable and traceable database protocol.

So far, most use cases have been focused on the financial sector, including transaction management where costs are reduced by keeping property ownership and records or using it to track high-value goods, such as diamonds. There is, however, a huge untapped market in asset management—specifically in the commercial aviation industry.

Aviation – A highly regulated market with complex supply chains

A modern aircraft consists of roughly 2–3 million parts. It is crucial to know the provenance of these parts, i.e. original manufacturer and exact product model and version, in order to ensure they have the right specification and that they are not counterfeit. In addition, many of these parts are so-called “tracked items.” Not only their provenance, but the entire maintenance history of these parts needs to be transparent.

Today, the many participants in an asset’s lifecycle—from manufacturers to transporters, maintainers and operators—each have their own disparate systems for managing assets. Consequently, it’s quite difficult to establish and maintain a single version of the truth when



De Vos is Director of IFS Labs



There is untapped market in asset management for blockchain technology.

looking at that asset's entire lifecycle. Often, these records can be incomplete or non-digitised, where communication between the different participants is often conducted on paper or even verbally. Lack of standardisation leads to limited traceability and the cost for non-compliance can be high.

But what if all of these participants submitted a transcript of the transactions into a purpose-specific, distributed ledger—like blockchain—which only authorised participants would have access to?

The manufacturer would initially start the blockchain for the asset and each participant would add the relevant blocks to it. The distributor would let the chain's participants know that the asset was transported from point A to point B, while the operator would register the number of flight hours that the asset has undergone.

Using blockchain for this asset management scenario would give you a 100% verifiable, traceable and trustworthy history of the asset's lifecycle in real-time. Each individual participant in the chain still has the features and benefits of their own business applications to run their business.

Potential benefits for the blockchain participants:

- Improved data quality through minimised need for manual data entry by the various participants
- A single, traceable record of serial numbers
- Complete and more accurate maintenance history

- Increased trust between service providers, suppliers and operators
- Reduced cost for compliance
- More flight hours for the aircrafts due to improved reliability of parts

Integration is key

So how can we achieve these benefits? There are several players that need to work together to make this happen: the technology providers must work together with the regulating authorities, such as the FAA, and the airlines and their partners, as well as with software vendors. We all need to work together and be willing to share information to integrate with the blockchain.

We're not there yet, as there are still several challenges to overcome. Things like technical performance need to be considered, as latency of transactions and computing power could stand in the way for achieving consensus within a chain. Data ownership, privacy and security must also be addressed.

There are certainly a few things to consider before blockchain succeeds in asset management, but there is huge potential and a possible competitive edge for those who are willing to get in on the ground floor.

Honeywell has been selected by **KLM** to provide Connected Aircraft fuel-management services across its fleet of 115 commercial aircraft and four Martinair cargo aircraft to reduce carbon emissions and cut fuel costs by up to 5%. Using data analysis, reporting and monitoring tools, Honeywell's GoDirect Fuel Efficiency software provides fuel-saving recommendations that airlines can deploy

immediately. Honeywell's GoDirect Fuel Efficiency software fully complies with recent changes to the Paris Agreement on reducing greenhouse gases. Capable of analyzing data from more than 100 reports, the software is easily integrated with existing airline systems through a user-friendly interface. By monitoring current fuel usage and identifying opportunities for savings, it significantly

reduces overall operational costs and the carbon footprint for airline operators. Users of the software have reported annual fuel savings of up to 5%, which, across the 30 airlines that have deployed fuel efficiency technology, would add up to nearly 200 million kilograms of fuel saved.

People On The Move



Roberto Furlan



Jakob Straub

MRO service provider SR Technics, has appointed **Roberto Furlan** as Head of Engine Services and **Jakob Straub** as Head of Aircraft Services & Line Maintenance. Mr. Furlan joined SR Technics in 2007 as Division Manager for Engine Parts Repair, and he recently served as Vice President Engineering in Engine Services. Prior to joining SR Technics, Mr. Furlan worked at companies such as Fischer Advanced Composite Components and MTU Aero Engines.

Mr. Straub started his career as a mechanical engineer at Swissair back in 1978, and since then he has held several global leadership roles across the company. From 2009 until 2013, Mr. Straub led Jet Aviation Zurich before returning to SR Technics. He became Head of Line Maintenance at SR Technics in 2015.



Gavin Simmonds

AJW Group has promoted **Gavin Simmonds** to Chief Operations Officer following five years of success as General Manager of AJW Technique – the maintenance hub for the Group's component repair and overhaul service. Simmonds, whose promotion takes effect immediately, will report to AJW Group's President and CEO, **Christopher Whiteside**.

Independent aviation consultancy firm IBA has responded to market dynamics with the introduction of a new Freighter Advisory practice within the firm. The focused team is formed against a backdrop of a surge in freight volumes in the first half of 2017 and is headed by **Moshe Haimovich** – Head of Freighter Advisory. Haimovich joined IBA in 2017 and has over thirty years of aviation experience in engineering, project management, consulting and marketing with Aldav Engineering and Israel Aerospace Industries.

GA Telesis has appointed **Pastor Lopez** as the President of its Component Repair Group SE (CRGSE) systems MRO and its Composite Repair Group (CRG) aerostructures MRO divisions. He will grow the division revenues over the next five years by making significant technology enhancements, additions to the business units' repair capabilities, building new greenfield MRO businesses and via acquisitions. Prior to joining GA Telesis, Mr. Lopez served as CEO of PEMCO.



Sam Millikin

PPG has named **Sam Millikin** global platform business director for aerospace sealants and packaging and a member of PPG's aerospace business leadership team. He succeeds **John Sands**, who retired after a 32-year career. Millikin began his PPG career in 1989 at the former La Porte, Texas, chemicals plant. He moved to the company's specialty coatings and materials business, holding assignments in optical products and silica products before becoming global sales and marketing development director for TESLIN substrate. Since joining PPG's aerospace business in 2013, he was the global business manager for packaging.



Kelly Gray

their after-market parts and service needs.

C&L Aerospace has hired **Kelly Gray** as Regional Parts Sales Manager for Corporate Aircraft covering the western region of the United States. Kelly has two decades of aerospace experience specializing in parts replacement, component repair and overhaul needs for corporate aircraft such as Challengers, Hawkers and more. His experience as a Sales and Service Program Manager for Heroux-Devteck and Component Overhaul Manager for Bombardier make him uniquely qualified to support C&L customers with

Airborne Maintenance & Engineering Services (AMES), a subsidiary of Air Transport Services Group, has appointed **Ben Ward** as General Manager of its PEMCO World Air Services division. Mr. Ward brings over 30 years of experience to his new role. Most recently he served as PEMCO's Chief Financial Officer.