

# MRO

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## CFM56 overhaul

Q&A  
TrueAero

People on the Move  
latest appointments

In profile:  
Joramco

MRO News  
from around the world

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**MRO**

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**Opinion**

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**Welcome to 2019!**

To kick off the first issue of the year, this edition of AviTrader comes with more bang for your buck! The cover story looks behind the scenes at the very popular CFM56 engine and we analyse some of the MRO trends affecting the engine type.

Our report highlights some interesting trends, for instance, we follow a change in policy by CFM saying its service licenses and warranties do not discriminate against the use of so-called PMA parts or DER repairs in engines. This is actually an interesting development considering the use of the parts and repair methods have sparked so much controversy for years. Despite the general welcome of this development other players feel it will bring little impact to current values.

Another notable market trend has been some of the larger (often operator-affiliated) shops hav-

ing to sub-contract CFM56 work to other providers due to capacity constraints.

We also highlight the market for cargo conversions to uncover some of the main issues there. Industry figures are showing that 2018 saw a total of 110 commercial aircraft converted to freighters, up from 99 in 2017 and 84 in 2016. According to experts at Boeing, in the next 20 years, 2,650 freighters are forecast to be delivered, with approximately half replacing retiring aircraft and the remainder expanding the fleet to meet projected traffic growth.

In 2019, both the cargo and MRO markets will be fascinating to watch.

Best wishes for the New Year!

Keith Mwanalushi  
Editor



The industry expects to see more serviceable engines on the market.  
Photo: MTU

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ERJ 145  
Photo: C&L Aviation Group

### C&L Aviation Group signs service agreement with Embraer Netherlands

C&L Aviation Services, a C&L Aviation Group company, has signed an Aircraft Maintenance Service Agreement with Embraer Netherlands (ENL) (which is responsible for the asset management of the Embraer commercial aircraft portfolio), to perform heavy maintenance, interior refurbishment, paint, and other services on the pre-flown ERJ 135/145 aircraft which they refurbish and remarket to their operator customers. C&L expanded into the ERJ 135/145 market two years ago and now offers a full range of services from maintenance and inspections, aircraft painting and interior refurbishment, to teardowns and aircraft records management. C&L also provides parts support, power-by-the-hour programs, component repair services and aircraft transactions for the ERJ 135 and ERJ 145 aircraft.

### Eirtech composite repair approval extended to Belfast facility

Eirtech Aviation Services, headquartered in Shannon Airport, Co. Clare has extended its EASA Approved Part 145 Maintenance Organisation Approval Certificate (IE.145.074) to include its Composite Repair Centre at Unit 8-10 Pinebank, Queens Road, Belfast, Northern Ireland. Eirtech Aviation Services can now perform composite repair at the Belfast facility in accordance with capability listing MOE 1.9 and also issue an EASA Form 1 on site. Eirtech Aviation Services' Part 145 Approved Maintenance Organisation offers composite repair on C6, C8 & C20 Rating Components in-

cluding slats, flaps, spoilers, ailerons, elevators, wing-to-body fairings, engine fan cowls, thrust reversers and overhead bins on the following aircraft types - B737, B757, B767, B777, and A320 & A330-Series aircraft.

### HAECO Privat Jet Solutions signs collaboration agreement with Eight Partnership

HAECO Private Jet Solutions (HAECO PJS), HAECO Group's private jet cabin completion specialist, has entered into a collaboration agreement on private jet cabin designs with Eight Partnership (Eight), one of Asia's leading design firms, with a diverse portfolio in luxury markets, including ultra-high-end hospitality and luxury residential real estate

in the region. The scope of the collaboration is to jointly develop conceptual and industrial cabin designs for private jets. Together, the partners will deliver bespoke, luxurious and sophisticated cabins for esteemed private jet owners. HAECO PJS is the first and only Airbus-approved and Boeing-licensed cabin completion center in Asia Pacific. It offers a complete range of solutions from industrial design, engineering design and certification, to cabin completion.

### AeroVision International signs ERJ parts support agreement with Eastern Airways

AeroVision International has signed a long-term component spares and exchange agreement with UK-based Eastern Airways. The parts support agreement provides Eastern Airways with access to an extensive inventory of components used to support their fleet of ERJ aircraft. Parts will be forward-positioned at Eastern's maintenance facilities throughout the UK and France and Bristow Helicopters maintenance facility in Nigeria, supplied from AeroVision's distribution center located at London Heathrow Airport and the main Logistics Center located in Muskegon, Michigan. "AeroVision's team is focused on developing a support model tailored to our organisation. This, along with their large ERJ inventory positioned regionally, were key factors in our decision to select AeroVision as our partner," said Tony Burgess, Managing Director of Eastern Airways. "It was important for us to choose a partner who could align with our specific business needs, and willing to adapt as our business grows. Supported in-region by AeroVision's Regional Director, Gary Jones, gives us the attention and focus that's required."



AeroVision International and Eastern Airways sign ERJ parts support agreement  
Photo: AeroVision



Eastar Jet Boeing 737 MAX  
Photo: Eastar Jet

### Lufthansa Technik to supply components for 737 MAX of Eastar Jet

Korean low-cost carrier Eastar Jet has contracted Lufthansa Technik to supply components for its new fleet of Boeing 737 MAX aircraft. With six aircraft currently on order, Eastar Jet will receive its first two 737 MAXs by the end of 2018, with the remaining four aircraft following in mid-2019. Similar to the support for the airline's Boeing 737NG fleet, the new Total Component Support (TCS®) agreement includes component maintenance as well as spare parts leasing through a component pool at Eastar Jet's headquarters at Gimpo International Airport in Seoul. Likewise, the airline will be granted access to the corresponding spare parts pools at Lufthansa Technik.

### Braathens Regional Airlines starts optimal fleet management with ATR Global Maintenance agreement

The Swedish airline Braathens Regional Airlines, BRA, started the implementation of its new ATR Global Maintenance Agreement on January 1, following the signature of this milestone agreement with ATR in June 2018 that further strengthens the strong relationship between the two companies. Covering Braathens Regional Airlines entire ATR fleet of ten ATR 72-600s, this customized full-service package covers repair, overhaul and pooling services of Line Replaceable Units (LRUs), and transportation of LRUs to the airline's facilities. The contract is for a period of five years. After the commissioning of the GMA for the Braathens Regional Airlines ATR fleet, Christian Clemens, the CEO of Braathens Regional Airlines, declared: "With a large fleet of ATRs, we must be able to benefit from the most suitable services, with responsiveness and

efficiency, in order to best operate our aircraft. The launch of this Global Maintenance Agreement signed with ATR is one step further in the bonds of trust that unite us."

### Airbus and Hungary sign long-term industrial partnership

Airbus Helicopters and Hungary have signed a Memorandum of Agreement to create an industrial cooperation for long-term aviation projects that will initially focus on the production of certain high-precision mechanical parts for helicopter dynamic systems. This project is part of the 'Zrinyi 2026' armed forces development program supporting Hungary's national security goals of developing independent defense capabilities. The agreement intends to create a sustainable

and integrated plant within Airbus. The green field production unit will start by manufacturing mechanical parts that will then be delivered to the major component assembly center for dynamic parts to be fitted on to the various helicopters of the Airbus range that are operated in more than 150 countries worldwide. The agreement will also rely on a local supply chain being qualified to perform certain tasks such as surface treatment. Hungary has been a long-standing supporter of Airbus' civil and military products, which found a home in a wide range of defense and civil applications.

### SR Technics and VAS Aero Services expand materials supply program with the addition of airframe components

MRO service provider SR Technics has signed an eight-year partnership with one of the aftermarket's leading suppliers, VAS Aero Services. Under the agreement, VAS will provide aircraft components exchange and repair services for SR Technics involving multiple Airbus and Boeing fleets. The new partnership marks the first major material supply partnership with a non-OEM company for the SR Technics' business unit Component Services. By covering service-level guaranteed exchange services, repair services, and leasing services, the collaboration will enable SR Technics to continue to provide cost-effective and reliable solutions to its airline customers. VAS has been supporting SR Technics in engine services for several years. The expansion of their collaboration into the Component Services business aims to leverage the strengths of both companies.



SR Technics and VAS Aero Services sign eight-year partnership agreement  
Photo: SR Technics



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Rolls-Royce and MEA sign TotalCare® contract  
Photo: MEA

### Rolls-Royce signs TotalCare® contract for MEA aircraft

As part of its wide-body fleet renewal, the Lebanese carrier Middle East Airlines – Air Liban (MEA) has decided to purchase four new and two option Airbus A330-900neos powered by Rolls-Royce Trent 7000 engines due to deliver in 2021. Rolls-Royce has signed a contract with MEA to provide support for the Trent 7000 engines powering its new Airbus A330-900neo fleet. The contract covers long-term engine maintenance services, throughout the operation of the engine with MEA, the purchase of spare engines and supply of parts. The contract was signed during the Lebanon-UK Business and Investment Forum in London. Rolls-Royce will deliver the latest engine in its Trent range, the Trent 7000, along with its flagship TotalCare® support service. The Trent 7000 is part of the Trent family that has now accumulated more than 125 million engine flying hours.

### TAP Portugal signs GSLA for CFM LEAP-1A engines

Portugal's national carrier, TAP, and CFM have signed a General Support License Agreement (GSLA) for maintenance activities of LEAP-1A engines. Under the terms of this agreement, TAP Portugal becomes part of the maintenance, repair and overhaul (MRO) network for LEAP-1A engines and will also benefit from CFM's expertise in training. This GSLA will allow TAP to ini-

tiate the process for LEAP-1A maintenance activities. TAP has been a CFM customer since 1990, operating a large fleet of A320 aircraft family. In 2016, the airline ordered 79 LEAP-1A engines to power its new fleet of 37 Airbus A320neo/A321neo aircraft and took delivery of the first three aircraft earlier in 2018.

### flydubai renews agreement with Joramco

Joramco, the Amman-based MRO and the engineering arm of Dubai Aerospace Enterprise DAE, and flydubai have successfully renewed an agreement to provide the carrier with heavy maintenance solutions for its fleet of Boeing 737 aircraft. Under this agreement Joramco will perform up to 45 C checks and EIS checks from January 2019. In addition, Joramco will perform avionics and cabin modifications including broad-band modifications. "In the past five years, Joramco has played an important role in our operations by fulfilling our MRO requirements," said Mick Hills, Senior Vice President, Engineering and Maintenance at flydubai. "We look forward to seeing our partnership strengthen with this latest agreement as our fleet continues to grow." Dubai-based flydubai has created a network of more than 85 destinations and over the next decade the airline will see its fleet grow by up to 296 aircraft. It currently operates a single fleet-type of 58 Boeing 737 aircraft. The airline placed the largest single-aisle aircraft orders in the region at

the 2013 and 2017 editions of the Dubai Airshow.

### AEI receives Transport Canada approval for CRJ200 SF

Aeronautical Engineers (AEI) has received Transport Canada approval for the AEI CRJ200 SF passenger-to-freighter conversion. The Transport Canada approval (SA18-130) allows for the operation of Canadian registered CRJ200 SF freighters. AEI received the original FAA STC for the CRJ200 SF at the end of 2016 and in May of this year received EASA approval. Currently, AEI has over 45 firm orders and commitments for the freighter. Since certification, AEI has delivered 10 CRJ200 SFs and will redeliver the 11th overall later this month. The AEI CRJ200 SF provides a payload of up to 14,574 lbs. (6,611 kg), depending upon the specific aircraft model. The conversion comes with a large 94" x 70" Main Cargo Door and with an ANCRA Cargo Loading System capable of carrying (8) 61.5" x 88" Containers/Pallets, P1 to P8.

### UAE-based avionics provider Falcon Aviation Services joins Honeywell's global channel partner network

Honeywell has confirmed United Arab Emirates-based Falcon Aviation Services as a member of its global channel partner network. The agreement covers the sale, installation and service of Honeywell avionics for Middle East-based helicopter operators. The arrangement between the two companies will augment the avionics service and upgrade options available to regional helicopter operators by offering a more localized repair and installation for Honeywell equipment at Falcon Aviation Services' Abu Dhabi-based facilities. This will allow faster turnaround time for maintenance, repair and overhaul activities, which in turn can reduce helicopter downtime. There are currently 1,536 government or military-owned helicopters in operation in the Middle East, with an additional 202 commercial helicopters in private ownership across the region. The channel partnership between Falcon Aviation Services and Honeywell will see an improvement to the services available to these operators. Honeywell's Channel Partner Program offers a concierge-level service to its members, including dedicated sales and marketing support, exclusive access to technical experts, tailored product training, and other incentives, including integration and installation of Honeywell's latest technologies.



Jet Aviation presents 20 IS-BAH™ Stage 2 Safety certificates  
Photo: Jet Aviation

### Jet Aviation receives IS-BAH™ Stage 2 Safety Registration for 20 FBOs at MEBA

Jet Aviation has received International Standard for Business Aircraft Handling (IS-BAH™) Stage 2 Safety Registration from the International Business Aviation Council (IBAC) for 20 of its FBOs across EMEA and the Americas. The company intends to achieve IS-BAH™ Standard registration for its new Hawker Pacific and KLM Jet Center FBOs in 2019. IBAC Program Director for IS-BAH™, Terry Yeomans, presented 20 IS-BAH™ Stage 2 Safety Certificates to Jet Aviation at its MEBA chalet in Dubai. "This remarkable achievement demonstrates Jet Aviation's ongoing commitment to the highest safety standards for its customers and employees," said Yeomans. Based around a safety management system that models the structure and format of the International Standard for Business Aircraft Operators (IS-BAO™), IS-BAH™ establishes criteria for best handling systems, processes and practices to ensure FBOs meet rigorous safety and security standards.

### Leonardo S.p.A selects HEICO Component Repair Group as authorized repair center

HEICO Component Repair Group (Structures Division), a subsidiary of HEICO Corporation has been selected as an authorized service center. Under the agreement, HEICO Component Repair will perform modification and repair and overhaul of Embraer 170 and 175 fan cowls and air inlets (inlet cowls) by Leonardo S.p.A, the manufacturer of these parts. Vladimir Cervera, VP/GM of HEICO Compo-

nent Repair Group, Structures Division commented "We are excited to partner with Leonardo to service Embraer E170 & E175 inlet and fan cowls as an OEM authorized service center. Leonardo's quality products, combined with HEICO's emphasis on customer satisfaction, ensures the highest level of support for our shared airline customers. HEICO's commitment to service, and Leonardo's exceptional product design, provide operators with a foundation for greater fleet control and continued operation."

### Construction begins on Airbus' U.S. A220 manufacturing facility

Airbus' manufacturing growth in the United

States advanced another step on January 16, in Mobile, Alabama, as construction of the company's A220 Manufacturing Facility officially launched with a groundbreaking ceremony. The assembly line will satisfy the strong and growing U.S. demand for the A220 aircraft, the newest offering in Airbus' commercial aircraft product line. The new assembly line, which is the company's second U.S.-based commercial aircraft production facility, will be located at the Mobile Aeroplex at Brookley adjacent to the A320 Family production line and will facilitate assembly of A220-100 and A220-300 aircraft for U.S. customers. Aircraft production is planned to begin in Q3 2019; with first delivery of a Mobile-assembled A220 aircraft scheduled for 2020. The new A220 production facilities will be complete by next year. Airbus has strong and longstanding ties to the United States, with Airbus aircraft being operated by the largest airlines in America. Additionally, Airbus is a major partner of U.S. aerospace companies and workers. In the last three years, Airbus spent US\$48 billion in the United States with hundreds of U.S. suppliers in more than 40 states, translating into Airbus support of more than 275,000 American jobs. Among its facilities in the U.S., Airbus has: engineering centers in Kansas and Alabama; a major training facility in Florida and soon one in Colorado; materials support and headquarters in Virginia; an A320 Family assembly line delivering aircraft in Alabama; an innovative think tank (A3) in California; a drone-data analysis business (Airbus Aerial) in Atlanta, Georgia; helicopter manufacturing and assembly facilities in Texas and Mississippi; and a satellite manufacturing facility (OneWeb) in Florida.



Groundbreaking ceremony in Mobile, Alabama for A220 manufacturing facility  
Photo: Airbus

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An agreement between FADEC Alliance and Lufthansa Technik ensures global availability for LEAP engine controls  
Photo: FADEC

### FADEC Alliance signs agreement with Lufthansa Technik

FADEC Alliance, a joint venture between GE Aviation and FADEC International, has signed a 25-year agreement with Lufthansa Technik to provide Full Authority Digital Engine Controls (FADEC) availability services for LEAP engines globally. Lufthansa Technik and FADEC Alliance will use the engine controls for support agreements, loans and exchanges across their global airline customer bases to bring a full selection of asset management services to the commercial transport industry. The agreement covers asset management, logistics and maintenance, repair, and overhaul (MRO) support. Lufthansa Technik will manage a global pool of line replaceable units (LRU) in order to provide availability to both Lufthansa Technik and FADEC Alliance airline customers. Lufthansa Technik will establish a certified repair station in Hamburg, Germany for the LEAP FADEC. FADEC Alliance will provide technical support from the FADEC Alliance MRO network located in Massy, France and Fort Wayne, Indiana. LEAP engines equipped with FADEC Systems are used on Boeing 737 MAX, Airbus A320neo and COMAC family 919 aircraft. The FADEC – consisting of digital computers, called engine control units and a pressure sub-system – controls all aspects of aircraft engine performance, such as engine fuel flow and variable engine geometries. Both parties will use the pool to support their customers for loans and exchanges of LEAP FADECs, to provide high availability and high performance asset services, and to maximize efficiency for airlines. The LEAP engine is a high-bypass turbofan produced by CFM International, a 50-50 joint venture company between GE and Safran Aircraft Engines.

### IAI's Bedek Aviation Group and ATSG celebrate 70 full freighter conversions

IAI's Bedek Aviation group has concluded the 70th full freighter conversion for Air Transport Services Group. Over the past 25 years the cooperation of the two companies unfolded to encompass a major part of the global P2F conversions market. Bedek performed DC-8 short-to-long duct pylon modifications and JT8 engine overhauls and QEC components, and Bedek participated in the conversion program of B767-200 Passenger-to-Package-Freighter configuration, which was followed by the 767-200BDSF Passenger-to-Special-Freighter (SF) conversion program. In 2009

Bedek started the B767-300BDSF conversion program, in partnership with Mitsui of Japan, under which over 60 aircraft have already been converted – most of them for ATSG, with the 767-300BDSF conversion program continuing at full steam ahead.

### Magnetic MRO provides aircraft for fight against terrorism

Tallinn-based Total Technical Care partner Magnetic MRO has completed a teardown project for an Airbus A320 aircraft which will be used for fight against terrorism in Germany by special forces. Magnetic MRO obtained the aircraft after an emergency landing in Tallinn at the start of 2018. In cooperation with a Netherlands partner organization, XTRAPartners, the airframe found its way to the German Bundeswehr for training of its special forces. The teardown project took place over a course of a few weeks in Tallinn Airport where the aircraft had its stabilizers and both wings removed. The aircraft was transported to Calw, near Stuttgart, with five large trucks and in addition to careful maneuvering in Estonia and Germany, it also involved marine transport from Paldiski, Estonia to Lübeck, Germany. "We had done teardown projects before but nothing of this scope," stated Maksim Kolesnik, Facility and Tooling manager of Magnetic MRO. "The logistics of the teardown and especially the transport provided huge challenges, but after months of hard work we were successful in delivering an aircraft that will now be used for a good cause."



Magnetic MRO completes teardown project for an Airbus A320  
Photo: Magnetic MRO



3D printing  
Photo: Liebherr Aerospace

### Liebherr-Aerospace Starts serial production of 3-D printed components

Liebherr-Aerospace has begun printing 3-D components for Airbus. Following approval from the European aircraft manufacturer, first equipment fit for flight that Liebherr will be supplying will be nose landing-gear brackets for the Airbus A350 XWB. Liebherr has collaborated intensively with Airbus over the past few years and development of additive manufacturing is advancing at a fast pace. These brackets will be the first ever introduced Airbus systems parts to be qualified for printed titanium. In the fall of 2017, Liebherr-Aerospace Lindenberg GmbH, Liebherr's center of excellence for flight control systems, landing gears, gears and gearboxes, has reached a key milestone: authorization by the German Federal Aviation Office (Luftfahrtbundesamt, LBA) to produce components using additive manufacturing. Liebherr has since been printing Class 2 and Class 3 titanium serial parts, delivering them under EASA Form 1.

### ST Engineering's Aerospace arm secures contracts worth S\$450m in 4Q2018

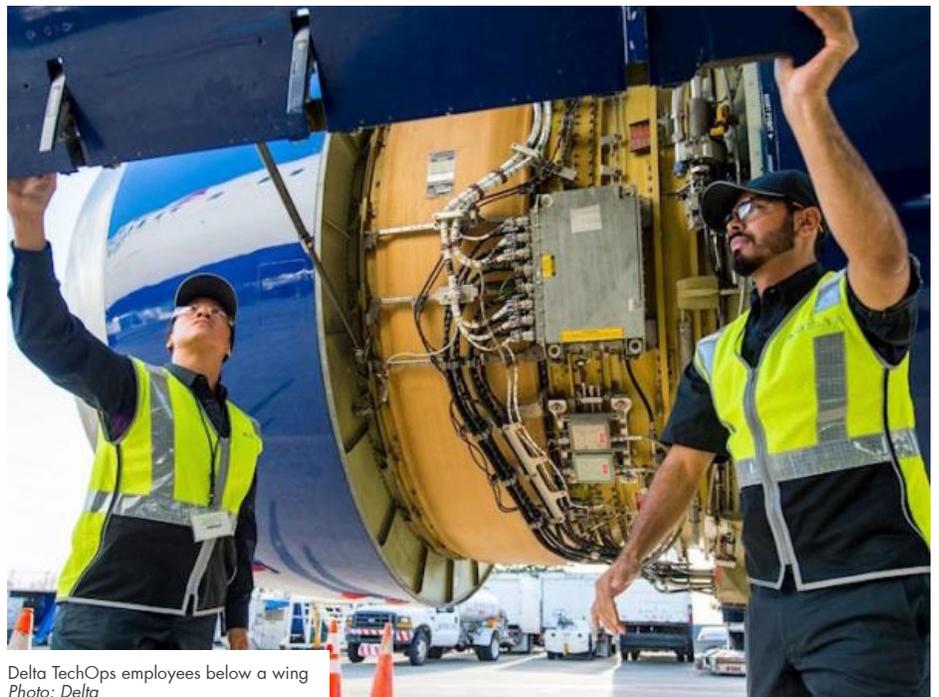
Singapore Technologies Engineering (ST Engineering) has reported that its Aerospace arm has secured new contracts worth about S\$450 million in the fourth quarter (4Q) of 2018 for services including maintenance and modification for wide-ranging aircraft parts from the airframe to components. A number of new contracts secured in 4Q2018 are for airframe heavy maintenance checks to service both commercial aircraft and private jets. These include a contract from a major North American airline to carry out heavy maintenance

services to its A321s for the first time. In addition to airframe maintenance, the same North American airline also awarded a contract for an in-seat power supply, overhead bin and galley modification program for its entire suite of 48 A320s. ST Engineering continues to win multi-year contracts as it maintains the confidence of repeat customers with high-quality redeliveries. Multi-year contracts won in 4Q2018 include a five-year component maintenance-by-the-hour contract extension to support an Asian airline's entire fleet of B737NG/MAX aircraft. The Aerospace sector redelivered a total of 213 aircraft for airframe heavy maintenance and modification work in 4Q2018. Additionally, a total of

11,212 components, 50 landing gears and 41 engines were processed, while 2,515 engine washes were conducted. In China, the sector expanded its airframe maintenance portfolio when its Guangzhou facility obtained approval from the Civil Aviation Authority of Malaysia to carry out base maintenance for the A320neo platform.

### Delta TechOps continues to grow MRO business with major investments

In 2018, Delta TechOps continued to invest in and grow its Maintenance Repair and Overhaul business, resulting in record-breaking financial growth, expanded capabilities, increased work with new partners and continued work with current partners. As the largest aviation maintenance group in North America, Delta TechOps highly skilled workforce of over 10,000 technicians, engineers and other support employees provide full-service maintenance to more than 850 Delta aircraft and their engines as well as maintenance services to more than 150 other operators, cargo operators and the military & government, through the airline's MRO business. Looking forward to 2019, Delta TechOps will open the largest test cell, which will be capable of safely running a mounted, stationary engine at full power with 150,000 pounds of thrust. Through expanded capabilities and new facilities, Delta expects to grow the top line of the MRO business by US\$1 billion a year in the next five years.



Delta TechOps employees below a wing  
Photo: Delta

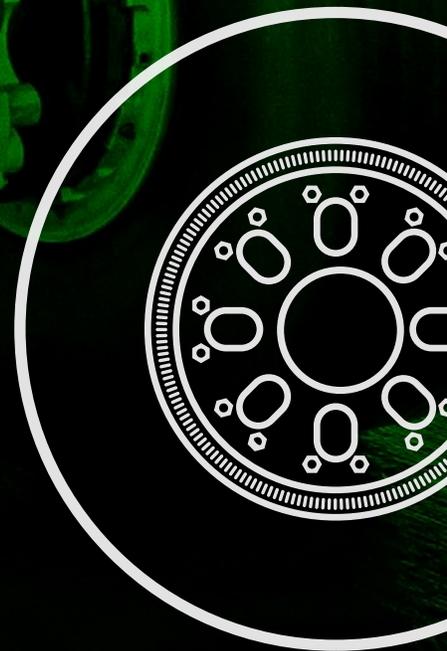
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### Airflow Solutions receives EASA Part-145 approval

Airflow Solutions has received European Aviation Safety Agency (EASA) Part-145 approval. Under the certificate, the company is now fully authorized to perform repairs on all items within their Operation Specifications. Airflow Solutions provides expert level services in a wide variety of metal and composite repairs. These include bonding, solid laminate repairs, metal-to-honeycomb repairs, metal-to-metal repairs, AOG support, and painting.

### HAECO Xiamen performs cabin re-configuration for Virgin Atlantic

HAECO Xiamen, a member of the HAECO Group, has successfully completed cabin modification work on the first of Virgin Atlan-

tic Airways' four Airbus A330-200 aircraft. The cabin received a complete makeover with brand-new business class suites unique to the A330-200, the addition of premium economy class, re-pitched economy class seats, newly fabricated carpets, an upgraded IFE system, and modified lavatories. The successful completion of this prototype marks another achievement in HAECO Xiamen's partnership with Virgin Atlantic, following cabin modification programs for the airline's Boeing 747-400 and Airbus A330-300 fleets.

### Lufthansa Technik and JAL expand partnership on Total Component Support services

Lufthansa Technik and Japan Airlines (JAL) have expanded their trusted partnership by entering into a long-term agreement on Total

Component Support (TCS®) services for the carrier's Airbus A350 fleet. For a period of ten years the new contract covers the majority of Japan Airlines' Airbus A350 components. The contracted services include maintenance, programs for reliability monitoring and enhancement as well as logistic services. Currently JAL holds 31 firm orders and 25 options for the state-of-the-art long-range jet. With the new agreement, Japan Airlines and Lufthansa Technik continue to expand their successful relationship which already includes a variety of MRO services. Among others, Lufthansa Technik has been providing TCS® services for Japan Airlines' Boeing 787 fleet since 2011.

## Finance News



TurbineAero Asia Operations Team

Photo: TurbineAero

### TurbineAero acquires APU piece part repair business from Triumph Group

TurbineAero, a portfolio company of The Gores Group, has acquired the APU piece part repair product line (RPL) from Triumph Aviation Services Asia. The acquisition of this business segment integrates APU piece part repair into the APU Systems MRO in TurbineAero's Asia facility which increases in-house capabilities, improves turn-times and assures extra cost reduction. Effective immediately, the integration will take place in TurbineAero Asia's new Thailand-based 80,000 ft<sup>2</sup> facility which will house up to 250 employees and will handle high-technological testing, maintenance, repair and overhaul activities for aircraft components and systems for its worldwide customers, including APU MRO, LRUs and APU part repair.

### Safran share buyback program

On May 24, 2017 Safran announced its intention to implement a

€2.3 billion ordinary share buyback program to run over the two years following completion of the tender offer for Zodiac Aerospace shares. To date, Safran has already contributed 11.4 million shares to its program for a total of €1.22 billion. On January 10, Safran entered into an agreement with an investment service provider for a follow-on repurchase tranche. According to this agreement, Safran will acquire up to €600 million worth of ordinary shares no later than May 10, 2019. The average price per share will be determined based on the mean volume-weighted market price observed during the entire duration of the agreement. The unit price may not exceed the maximum of €140 per share set by the November 27, 2018 shareholders' meeting. (€1.00 = US\$1.15 at time of publication.)

### Woodward reports fiscal year 2018 results

Woodward has reported financial results for its fiscal year 2018 and fourth quarter ending September 30, 2018. Net sales were US\$719 million for the fourth quarter of 2018, an increase of 19% from the fourth quarter of last year. Organic net sales, which exclude sales of US\$78 million attributable to the acquired L'Orange business, were US\$641 million, an increase of 6% from the prior year fourth quarter. Net earnings were US\$75 million and adjusted net earnings were US\$89 million, compared to US\$62 million for the fourth quarter of the prior year. Adjusted EBIT was US\$120 million, compared to US\$93 million for the prior year fourth quarter. Net sales were US\$2.33 billion for fiscal year 2018, an increase of 11% compared to the prior year. Organic net sales, which exclude sales of US\$103 million attributable to the acquired L'Orange business, were US\$2.22 billion, an increase of 6% compared to the prior year. Net earnings were US\$180 million and adjusted net earnings were US\$246 million compared to US\$201 million for the prior year. Adjusted EBIT was US\$326 million, compared to US\$278 million for the prior year. Net cash provided by operating activities for 2018 was US\$299 million, compared to US\$308 million for the prior

year. Free cash flow was US\$172 million for 2018, compared to US\$215 million for the prior year.

### SkyWorks grows global platform with aircraft equity vehicle

Building on the success of its global platform, in 2018 SkyWorks Holdings (SkyWorks) significantly expanded its investment and asset management businesses while simultaneously increasing its commitment to the advisory business. SkyWorks has established a dedicated aircraft servicing platform, SkyWorks Leasing (Ireland) Limited, in its Dublin Ireland offices. In addition, SkyWorks created a new equity vehicle, Sierra Echo Aircraft Leasing Limited (Sierra Echo), for whom SkyWorks Leasing (Ireland) Limited will act as origination agent, servicer and asset manager. The launch of this aircraft vehicle further reinforces SkyWorks' commitment to its global aviation clients by expanding the suite of services that SkyWorks now offers. SkyWorks launched Sierra Echo during 2H 2018, acquiring through four transactions a total of eight Airbus and Boeing commercial jet aircraft on lease to five different operators in North America, Europe and Asia. Sierra Echo's anchor investor is a large institutional investor aiming to conservatively grow its investment in commercial aviation with the benefit of SkyWorks' origination, servicing, and analytical capabilities. To leverage Sierra Echo's investments, Sky-

Works also closed a US\$300 million debt facility. The facility was led by Bank of America, N.A. (as Structuring Agent and Joint Lead Arranger), with BNP Paribas and Royal Bank of Canada acting as Joint Lead Arrangers. SkyWorks' portfolio of assets under management is now over 60 aircraft, after having sold more than 180 aircraft on behalf of clients in the past five years.

### The Carlyle Group agrees to buy StandardAero from Veritas Capital

The Carlyle Group, a global asset manager, has agreed to purchase StandardAero, the global provider of aftermarket engine maintenance, repair and overhaul (MRO) services for the aerospace and defense industries, from Veritas Capital, subject to customary regulations. While financial terms have not been disclosed, the equity will come from Carlyle Partners VII, an US\$18.5 billion fund that focuses on buyout transactions in the United States. The transaction is expected to close by the end of the first quarter of 2019. Founded in 1911, StandardAero is one of the world's largest independent MRO providers offering extensive services and custom solutions for commercial aviation, business aviation, military and industrial power customers. As an OEM-aligned strategic partner, StandardAero has developed a reputation for quality and performance. Russell Ford, CEO of StandardAero, said, "We are

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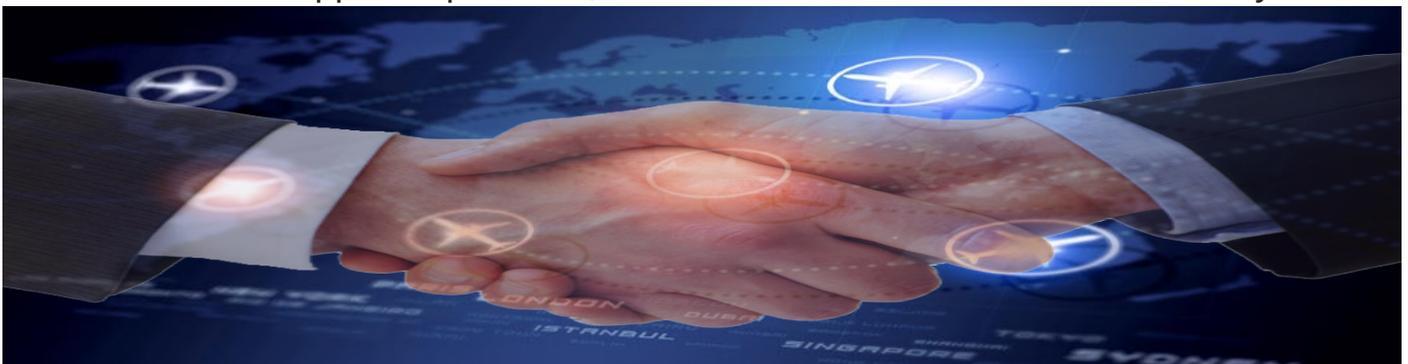


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excited to partner with The Carlyle Group, and we thank Veritas Capital for its support and partnership. We look forward to working with Carlyle to further our aggressive growth trajectory as we continue providing world-class services to our customers as one of the world's best and largest independent MRO service providers." Adam J. Palmer, Managing Director and Global Head of Aerospace, Defense and Government Services for The Carlyle Group, said, "Russell Ford and the StandardAero team have built a reputation for industry-leading capabilities and customer service. StandardAero is well positioned in an attractive market and we look forward to building on its strong foundation by helping it grow and meet evolving customer needs." Credit Suisse, RBC Capital Markets LLC and Macquarie Capital served as financial advisors to Carlyle, and Latham & Watkins LLP served as legal advisor. Credit Suisse, Goldman Sachs Merchant Banking Division, RBC Capital Markets LLC, Macquarie Capital, Barclays, Jefferies LLC, Nomura Securities and Goldman Sachs have agreed to provide debt financing for the transaction. Goldman Sachs & Co. served as lead financial advisor to StandardAero, and Morgan Stanley & Co. LLC also acted as a financial advisor on the transaction, and Skadden, Arps, Slate, Meagher & Flom LLP served as legal advisor.

### STS Aviation Group selects Greenbriar Equity Group as new equity partner

STS Aviation Group, a leading global aviation solutions company, has selected Greenbriar Equity Group, L.P. (Greenbriar), a New York-based private investment firm, as its new equity partner. STS provides a range of solutions to the global aviation industry, including component sales and distribution, workforce management, engineering services, line maintenance, and aircraft repair and modifications. The company is well-known for its breadth of capabilities and customer-centric approach to helping airlines and aircraft operators meet their critical operational and people requirements worldwide.

### TAT Group enters into exclusive negotiations with Sagard, BPI France and Towerbrook funds for acquisition of Sabena technics' capital

TAT Group has entered into exclusive negotiations with the investment companies Sagard, Bpifrance and TowerBrook in order to sell them its majority interest in its subsidiary Sabena technics, one of the European leaders in the field of aircraft maintenance and modification. This project was presented on December 17, 2018 to all Sabena technics Group's works councils. The sale should be finalized during the second quarter of 2019, subject to the completion of this procedure and the approval of the supervisory authorities. This shareholder evolution will be an important step for Sabena technics' development by reinforcing its growth opportunities while accompanying it in the successful implementation of its strategic plan which aims at a turnover of €600 million (US\$678 million) in 2021. This development will also give the Group significant resources to expand its offer through external growth, with the constant goal of better serving its customers using skills or locations that complement its own. TAT Group will remain a minority shareholder and its current chairman, Rodolphe Marchais, will take over the presidency of Sabena technics' supervisory board. Philippe Rochet will become the executive CEO and shareholder

of the group alongside the Group's senior executives, Jean Marc Schaefer, Gilles Foultier, Philippe Delisle and Fabrice Dumas, who are all continuing in their positions.

### Bombardier confirms it remains on track to achieve its 2020 financial objectives

Bombardier has released its 2019 business unit guidance and confirmed that it remains on track to achieve its 2020 financial objectives. The 2019 guidance reflects the anticipated closing of the sale of both Business Aircraft's flight and technical training activities and the Q Series aircraft program as of September 30, 2019. For 2019, Bombardier is targeting revenues of US\$18 billion or more, representing a year-over-year increase of approximately 10% over 2018 guidance. This growth is expected to be driven by: the entry-into-service of the Global 7500 aircraft, which is sold out through 2021; execution on Bombardier's strong US\$34-billion rail backlog, which covers more than 80% of Transportation's targeted 2019 and 2020 revenues; and an increased focus on aftermarket services across the portfolio. Aftermarket revenues are estimated to grow from approximately US\$3.5 billion in 2018 to approximately US\$4.0 billion in 2020 as the Company continues to optimize its aftermarket and services operations, leveraging its large installed base which includes over 100,000 rail cars, more than 4,700 business jets and approximately 1,250 regional jets. Profitability is anticipated to grow faster than the top line and is expected to be driven by solid conversion on revenue growth and the strategic reshaping of Commercial Aircraft. EBITDA before special items is targeted to grow by approximately 30% over 2018 guidance to a range of US\$1.65 billion to US\$1.80 billion, while EBIT before special items is targeted to increase by approximately 20% over 2018 guidance to a range of US\$1.15 billion to US\$1.25 billion. From a free cash flow perspective, 2019 is expected to mark the transition from a heavy investment cycle to a strong growth and cash generation cycle. Sustainable capital expenditures are projected to decrease to approximately US\$800 million or less on an annualized basis, which represents a decrease of approximately 50% from the previous five-year average. On a normalized basis, before one-time items, Bombardier estimates free cash flow in the range of US\$250 million to US\$500 million for 2019. One-time items that are expected to impact free cash flow in 2019 include; a US\$250-million charge for the previously announced restructuring; and a working capital contingency of US\$250 million largely associated with the intense ramp-up of the Global 7500 program. Free cash flow including these one-time items is targeted to be breakeven plus or minus US\$250 million, resulting in an estimated cash on hand exceeding US\$3.0 billion by year end. Along with announcing its 2019 business unit guidance, Bombardier reaffirmed its 2020 objectives of revenues in excess of US\$20 billion, EBITDA before special items over US\$2.25 billion, EBIT before special items over US\$1.6 billion and free cash flow between US\$750 million and US\$1 billion. In addition to generating strong cash flow from operations, Bombardier anticipates ending 2020 with strong liquidity, including more than US\$3.5 billion of cash on hand and a significantly improved leverage ratio.

### Ardian in talks to acquire majority stake in Revima

Ardian, a private investment house, has confirmed that it is in exclusive talks to acquire a majority stake in Revima, a leading MRO

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(Maintenance, Repair & Overhaul) solutions provider for aircraft equipment, from private equity firm Argos Wityu. Following the transaction, Olivier Legrand, President of the Group, and Argos Wityu will reinvest alongside Ardian. This transaction is subject to approval from the antitrust authorities as well as the opinion of the works council. Founded in 1952, Revima is an independent company which has become a leader in the maintenance, repair and overhaul of commercial transport aircraft equipment. The group is well-known for its expertise in the maintenance of auxiliary power units (APU) and landing gears for regional, medium- and long-haul aircraft. The company, which has c.750 employees, realized revenues of more than €280 million (US\$319 million) in 2018, showing double digit growth for several years.

### Embraer presents preliminary forecast for 2019 and 2020

On January 16, Embraer presented its preliminary forecast for 2019 and 2020 at a meeting with investors at the New York Stock Exchange. For 2019, Embraer expects to deliver between 85 and 95 commercial jets, 90 to 110 executive jets, including light and large jets, 10 A-29 Super Tucano aircraft and two multi-mission KC-390 aircraft. Total consolidated revenues should be between US\$ 5.3 billion and US\$ 5.7 billion. The Company expects to achieve a consolidated EBIT margin of breakeven (approximately zero) for the year 2019. It is important to highlight that 2019 guidance includes potential costs and expenses associated with the creation of the Commercial Aviation JV in a strategic partnership between the Company and Boeing, under the terms of the associated material facts published by Embraer. With the finalization and closure of the partnership operation described above, tentatively expected to occur by the end of 2019, Embraer anticipates a capital structure without leverage, with a net cash position of approximately US\$ 1.0 billion after the payment of a special dividend to shareholders of roughly US\$ 1.6 billion (which remains subject to the confirmation of certain

requirements, including the fiscal year results). During the event in New York, Embraer also presented its guidance for the year 2020, the first year after the potential closure of the operation creating the strategic partnership between Embraer and Boeing in Commercial Aviation, as mentioned above. The guidance presented for 2020 includes 100% of the expected results of the Executive Jets and Defense & Security segments (and the results of their respective services and support businesses) and exclude expected financial results coming from the 20% stake Embraer will have in the Commercial Aviation JV in partnership with Boeing. Embraer expects to have net revenues of between US\$ 2.5 billion and US\$ 2.8 billion, EBIT margin of between 2% and 5%, and roughly breakeven free cash flow for 2020.

### Aireon signs US\$200 million credit facility with Deutsche Bank

Aireon has signed a credit facility agreement for US\$200 million with a group of several independent investor funds, led by Deutsche Bank. This credit facility provides Aireon with the resources to fund various company initiatives and to continue to pay Iridium for the costs related to the integration, launch and hosting of the AireonSM payload on each of the 81 Iridium® NEXT satellites.

The agreement was signed on December 21<sup>st</sup>, 2018. This announcement comes just days after the final launch of Iridium NEXT satellites and their Aireon hosted-payloads.

The eleven long-term contracts signed with its launch Air Navigation Service Provider (ANSP) customers have provided Aireon with a strong financial foundation. Aireon has already started paying the US\$200 million hosting fee owed to Iridium, and this new credit facility has enabled the company to pay another US\$35 million in 2018 for a total of US\$43 million to date.

## Information Technology



As an authorized Pilatus center, Bournemouth Aviation Services uses Centrik to manage the maintenance and repair of Pilatus PC-12 aircraft for parent company, Jetfly  
Photo: Bournemouth Aviation Services

Aircraft maintenance provider **Bournemouth Aviation Services** has transformed the efficiency of its operations thanks to its new management system, Centrik. Handling all maintenance and repair of Pilatus PC-12 aircraft for parent company **Jetfly**, Bournemouth Aviation Services turned to Centrik at the start of 2018 to streamline its operational procedures, adding a more structured, centralized way of tracking and evidencing all MRO processes. ICAO and EASA-compliant, Centrik provides Bournemouth Aviation Services with a way to replace its reliance on paper trails and various separate computer programs in favour of a fully-integrated solution capable of managing every operational element. Centrik's cloud-based architecture puts a complete operational picture at the finger-tips of those who need it, from wherever they are. All information is stored on Centrik's own, ultra-secure data-centres and is instantly accessible via any browser or tablet. The system is completely portable and can be used even when offline. Based on a modular system, Centrik can also provide full management of safety,

risk, workflows and meetings, as well as compliance and training, which can build a comprehensive overview of all findings, providing visible heatmaps and KPIs that quickly and easily demonstrate how all regulatory compliance requirements are being met. Centrik will also monitor the training records of every staff member, providing full oversight of all training activity, highlighting when training currency may be about to expire and providing a way to effortlessly create a tailored course, all within the system.



Air Madagascar selects ADSSoftware MRO IT solution  
Photo: ADSSoftware

**ADSSoftware** has announced its collaboration with **Air Madagascar** and its subsidiary, **Tsaradia**. The contract covers the complete fleet of 10 aircraft (Airbus A340-300, Boeing 737-800 NG, ATR72-500, ATR72-600 and TWIN OTTER). Maintenance and procurement personnel will be using the software on a daily basis to manage all aspects of maintenance operations. Air Madagascar joins ADSSoftware's growing customer base in the region. The move is part of a complete redesign of Air Madagascar's IT systems and a significant step towards operations optimization. The combination of Airpack's technology and Air Madagascar's MRO know-how will improve time saving and cost efficiency while giving Air Madagascar's management valuable insight into maintenance activities. With Customer including Air Austral (Air Madagascar's partner) and Corail Helicopter, ADSSoftware increases its presence in the region. ADSSoftware's expertise in handling data migration was a key factor in Air Madagascar's decision. Years of maintenance activities will be transferred to the new system via exclusive processing tools developed locally. As part of the startup service, ADSSoftware's maintenance data experts visited on-site to elaborate a tailored and efficient implementation plan.

In 2018, **Swiss-AS** welcomed 12 new customers to the AMOS Community, amongst them **Ural Airlines**, **Kuwait Airways**, **LIAT**, **Bamboo Airways**, **Lufthansa German Airlines** and **Air Tahiti Nui**. Though the new customers have different backgrounds, ranging from start-ups, CAMO organizations up to MRO providers and established airlines, they have all chosen AMOS as their perfect fit. With the offer of four different AMOS editions, airlines, airline groups, CAMO organizations and MRO providers of all sizes can individually select the AMOS edition that best supports their business scope. With Lufthansa German Airlines joining the AMOS Community, Swiss-AS now equips all carriers in the Lufthansa Group with AMOS. One highlight of the year was the AMOS Customer Conference that took place in October in Lucerne, Switzerland. Over 250 delegates attended the conference with customers and partners representing 92 companies from all over the world. The goal of

the event was to facilitate networking and exchange of experience within the AMOS Community as well as to inform attendees about the latest AMOS developments and the enriched service portfolio.



Photo: Emirates Flight Training Academy

Aviation engineering and maintenance company **Commsoft** has signed a contract for its MRO IT system, OASES. The deal was signed with the recently launched **Emirates Flight Training Academy (EFTA)**, located at custom-built premises at Al Maktoum International Airport in Dubai. OASES has been supporting the prestigious flight training academy which began operations in Dubai South in November 2017. The contract covers five key modules of the OASES system: core, airworthiness, planning, inventory and production. These have been implemented on Commsoft's private cloud for optimum security and customer care. EFTA recently received its CAR M Subpart G continuing airworthiness management organization and CAR 145 maintenance organization approvals (ref CAMO/0007/18 & UAE.145.0073) from the UAE General Civil Aviation Authority which allows EFTA to manage and carry out the maintenance on the aircrafts in-house. OASES support is being progressively rolled out across the fleet of twenty-two Cirrus SR22 G6 aircraft and five Embraer Phenom 100EV Very Light Jets that are being used to train cadets in EFTA's ab-initio flight training programme.

After a common and shared journey with **Swiss-AS**, **Evergreen Aviation Technologies (EGAT)** has successfully accomplished its go-live with AMOS. EGAT, as the key development partner of Swiss-AS for the AMOS MRO Edition, has significantly influenced the realization of the advanced AMOS MRO functions. Therefore, implementing AMOS at EGAT was not just "another" project for Swiss-AS. It was the beginning of a strategic partnership, which allows Swiss-AS – in cooperation with EGAT – to complete the AMOS MRO Edition and thereby fulfil the functional requirements of the global MRO business segment. EGAT, as a renowned MRO provider with an extensive in-field experience, was the perfect fit to accompany Swiss-AS in this major development project. The AMOS MRO Edition has been available since the end of 2017 and offers MRO providers a fully-fledged MRO solution covering the specific needs of their maintenance activities. For a timely realization of the new Edition, Swiss-AS allocated a substantial amount of resources to build up a dedicated and interdisciplinary project structure and prioritized MRO specific functions on the development roadmap. The new functions have been well received by the AMOS Community, as well as by the market. AMOS has been enriched by new modules including Facility/Hangar Planning, Ground-time Management, Finance and Production Control Dashboards, CRM and an in-depth



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Quotation/Contract Management. EGAT and nine other MRO companies in the AMOS Community had actively participated in scoping workshops for the new functions and shared their expertise and knowledge gained in their daily work as MRO providers. This valuable input, gathered in the early development phases and based on the in-field experience of EGAT, provided a significant contribution to the successful development of the AMOS MRO Edition.

Polish MRO organization, **WZL2 (Wojskowe Zakłady Lotnicze Nr 2 S.A.)**, has chosen OASES, Commssoft's MRO IT system, to support its developing commercial operations. With more than 70 years' experience of repairing, modernizing and servicing complex fighter-bombers and fighter aircraft for the armed forces of the Republic of Poland, WZL2 is now approaching civil aviation customers with Bombardier Q400, ATR 42 and ATR 72 turboprop airliners, Embraer E-Jet airliners and ultimately Boeing 737NG aircraft. OASES, with its technical sophistication allied to an intuitive user interface, is structured in a modular format to provide maximum flexibility and scalability. WZL2 has selected the Core, Airworthiness, Planning, Materials, Production, Commercial and Warranty modules which will be implemented initially through Commssoft's Private Cloud service.

**MJet GmbH** of Austria has become the first ACJ319 operator to sign up for Skywise, enabling it to integrate its own operational, maintenance and aircraft data into the Skywise platform. MJet will store, access, manage, and analyze selected Airbus data together with its own data and global benchmarks without the need for additional infrastructure investments. This service will provide MJet new insights at aircraft, company and global level while allowing it to enhance its operations by improving operational reliability, reducing operational interruptions and identifying efficiencies, cost savings and enhanced revenue opportunities. MJet will share its Airbus operating-data and in return access the platform to benefit from other A319 operators' aggregate aircraft reliability fleet data. MJet will also work with Airbus to further develop product and support services specifically for ACJ operators. Skywise provides all users with a single access-point for their enriched data by bringing together aviation data from multiple sources, across the industry, into one secure platform. The more data that airlines share into the Skywise platform, the more accurate the predictions and models for all connected. All data is anonymized to ensure data confidentiality. More than 190 Airbus Corporate Jets are in service around the world, flying on every continent, including Antarctica.

**Commssoft** has released that Spanish airline **Albatar** has chosen to support its airline operations with OASES, Commssoft's MRO IT system. Albatar is a privately owned Spanish airline, founded in 2010 by Italian and British entrepreneurs from the tourism and transport sectors to provide on-demand flight services in collaboration with major Spanish, Italian and other European tour operators. Based in Palma de Mallorca, Albatar operates mainly charter flights from its principal bases of Palma de Mallorca, Milan Malpensa and Milan Bergamo, as well as seasonal services from Lourdes. The fleet to be supported by OASES will initially include four Boeing 737-800 aircraft. Renowned for its technical sophistication as well as its intuitive user interface, OASES is structured in a modular format to provide maximum flexibility and scalability and Albatar has opted for the Core, Airworthiness, Materials, Planning and Production modules with an option to add the Line Maintenance

Control module at a later date. All modules will be accessed through Commssoft's Private Cloud service, avoiding any need for the airline to invest in new hardware.

**FLYdocs**, the aviation data and records management solution provider, has signed a 5-year contract with **Swiss airlines, SWISS** and **Edelweiss Air**, who will use the FLYdocs® platform for the ongoing management of their maintenance and engineering records across their entire respective fleets of 90 and 15 aircraft. The FLYdocs® platform provides a centralized cloud-based digital replica of all aircraft technical records – right back to birth. That means, once uploaded into FLYdocs®, the millions of paper records, combined with electronic documents often distributed in different formats around most aviation organizations, are now instantly available in useable, industry standard formats to support business-critical operations, such as verifying airworthiness compliance, and aircraft sales and transitions. The Airlines, which are also users of MRO software AMOS, are set to be the first organizations to benefit from significant operational efficiencies and cost savings from FLYdocs®' holistic approach to data management, as the platform has an exclusive integration with AMOS, and its advanced functionality is enriched further by live feeds from the ATA e-business specifications, Spec 2500.



Robot Controlled Cockpit Electronics Testing, RoCCET  
Photo: LHT

**Lufthansa Technik AG** has developed the first robot for fully automated tests of cockpit controls. The test procedure is called RoCCET, which stands for Robot Controlled Cockpit Electronics Testing. In the future, RoCCET will be used to check the functionality of LED lights and switches on the basis of concrete, standardized measurement data. The robot-based procedure is currently in the integration phase. The robot has integrated sensors to measure the forces that occur when switches are activated. In addition, it is equipped with several industrial cameras with which it captures all display instruments and any outer damage. With another camera, it measures the brightness of all displays from various angles. The robot is thus able to check all switches and LEDs just as well as a human and perform defined functional tests. The robot-based test procedure will initially be used for cockpit controls on Airbus A320 and A350 as well as Boeing 787 aircraft. In the future, its use may also be extended to other cockpit and cabin controls on all aircraft types at various locations.



TAG Aviation UK receives renewed accreditation to the Wyvern Wingman Standard safety program

Photo: TAG Aviation

**TAG Aviation (UK)** has successfully received renewed accreditation to the **Wyvern** Wingman Standard safety program following a rigorous on-site safety audit conducted by Wyvern. The Wingman Standard is globally acknowledged as the industry's benchmark in aviation safety and reflects a commitment to current aviation best practice and the highest level of safety and protocol. Wingman-certified operators must successfully pass a Wingman audit which demands transparency with respect to safety records, operational history and operating procedures, pilot experience, established training practices and a close evaluation of critical programs such as the Safety Management System and Emergency Response Plan. Safety is one of TAG Aviation's core values and successful completion of the Wingman Standard audit is an assurance to customers, industry partners and employees of the on-going commitment to maintain the highest standards at all times. "We are proud to have had our prestigious Wyvern Wingman status renewed. It is a hugely important endorsement within the business aviation industry and underpins our investment in providing best-in-class service and operations", said Patricia Davis, Head of Compliance and Safety, TAG (UK).

**Honeywell** is bringing the ease of everyday online buying and selling to the

aviation parts industry with GoDirect™ Trade. The new e-commerce platform will improve access to new and used aircraft parts for airlines, air transport and business aviation customers by offering transparent pricing and the option to buy inventory directly from its website — a first-of-its-kind experience. "GoDirect Trade represents an evolution in our market and, being backed by a major equipment manufacturer, brings the confidence we need to be one of the early adopters," said Thomas Noonan, director of material and part sales, **StandardAero Total Aircraft Spares**. "This technology will help propel the aviation industry forward into the realm of other e-commerce sites that many of us use each day without a second thought." Previously, buyers looking for aviation parts such as avionics, auxiliary power units and more would have to call numerous companies, wait days or even weeks to price a part, and risk buying from a company that did not have the inventory immediately in stock. On GoDirect Trade, Honeywell is using blockchain technology to ensure every listing includes images and quality documents for the exact part being offered for sale, giving the buyer confidence about purchasing the part. In addition, every part on GoDirect Trade is immediately available for sale and shipping. There is no need to wait days or even weeks for the seller to confirm availability. Building upon experience from the Honeywell Aerospace Trading business, GoDirect

Trade aims to build stronger connections between buyers and sellers. For example, buyers and sellers can directly contact one another via the platform, streamlining the process to ensure both parties are satisfied with the exchange. As with similar websites in other industries, online reviews of both buyers and sellers are encouraged.

**HAECO Xiamen**, a member of the **HAE-CO Group**, has signed a collaboration agreement with **Xiamen City University (XMCU)**. The agreement formalizes cooperation between the two organizations in developing talented individuals for the aircraft maintenance industry.

Students who enroll in the joint XMCU-HAECO Xiamen program will receive basic skills training in aircraft maintenance at the HAECO Xiamen Technical Training Centre over the course of their three-year academic studies at XMCU. This will give them exposure to the aircraft maintenance industry and upon graduation, students will receive higher diplomas from XMCU and training certificates from HAECO Xiamen. The integrated program will fast-track the process of developing high-quality aircraft maintenance mechanics by six months. The partners will continue to refine the program's curriculum, assessment criteria, and develop student recruitment plans.



City Colleges of Chicago and AAR announce the new Aviation Futures Training Center

Photo: AAR

**City Colleges of Chicago** and **AAR** have announced the new Aviation Futures Training Center to train students in aviation sheet metalworking. AAR, a global leader in aviation aftermarket services, will partner with Olive-Harvey College to prepare students for in-demand jobs in aviation, heavy manufacturing, boating, automotive repair, and HVAC. The Center will launch in March 2019 as an extension of Olive-Harvey College's Transportation, Distribution and Logistics (TDL) Center. The aviation sheet metalworking course prepares graduates for the CertTEC Certification with 300 hours of instruction and hands-on training with sheet metal from airplane fuselages. The Center will also expand its program offering to include composite repair. Students will receive training on how to work with this lighter and stronger material, which is increasingly used in industries such as aerospace, transportation, construction and more.

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# CFM56 - Keeping the blades turning

Shop visits will peak for the CFM56-5B and -7Bs in the next two to five years.  
Photo: Aero Norway

The CFM56 is one of the most iconic engines in commercial aviation. **Keith Mwanalushi** checks in on the key MRO issues.

**T**here is no doubt the CFM56 is the world's best-selling jet engine. With more than 30,000 engines delivered to date, CFM data shows the engine type powers more than 550 operators worldwide across the single-aisle 737 and A320 family platforms.

Over the years, the CFM56 has seen several continuous improvement programmes and service bulletins issued to operators. In April 2018 a Southwest Airlines Boeing 737-700 experienced a very serious inflight engine failure and following that event the FAA issued a new Airworthiness Directive (AD) requiring airlines inspect more CFM International CFM56-7B engines.

CFM responded by issuing a Service Bulletin (SB) to operators of CFM56-7B engines, which power the Boeing Next-Generation 737. CFM called for inspections of fan blades on long-service engines—there are approximately 14,000 CFM56-7B engines in operation.



Holger Beimfohr, Senior Manager Customer Accounts, MTU

As a result of the Southwest incident, the FAA and EASA issued several ADs and further revisions are expected. This means that all CFM56-7 fan blades with more than 20,000 cycles need to be removed and undergo an ultrasonic inspection.

"Some airlines carry this out themselves with their own equipment, we support others with our on-site services, and of course, if an affected engine is in the shop, we carry this work out in addition to what-

ever other work is taking place," declares Holger Beimfohr, Senior Manager Customer Accounts at MTU.

Alex Marom, Director, Engines MRO, IAI Aviation Group, Bedek MRO Division says the reduction in the inspection intervals of the CFM56-7B fan blades has led to increased demand on the limited number of parts repair vendors and therefore increased TATs for those repairs. "We have had to compensate for that by acquiring rotatable fan blades, which are in short supply on the market."

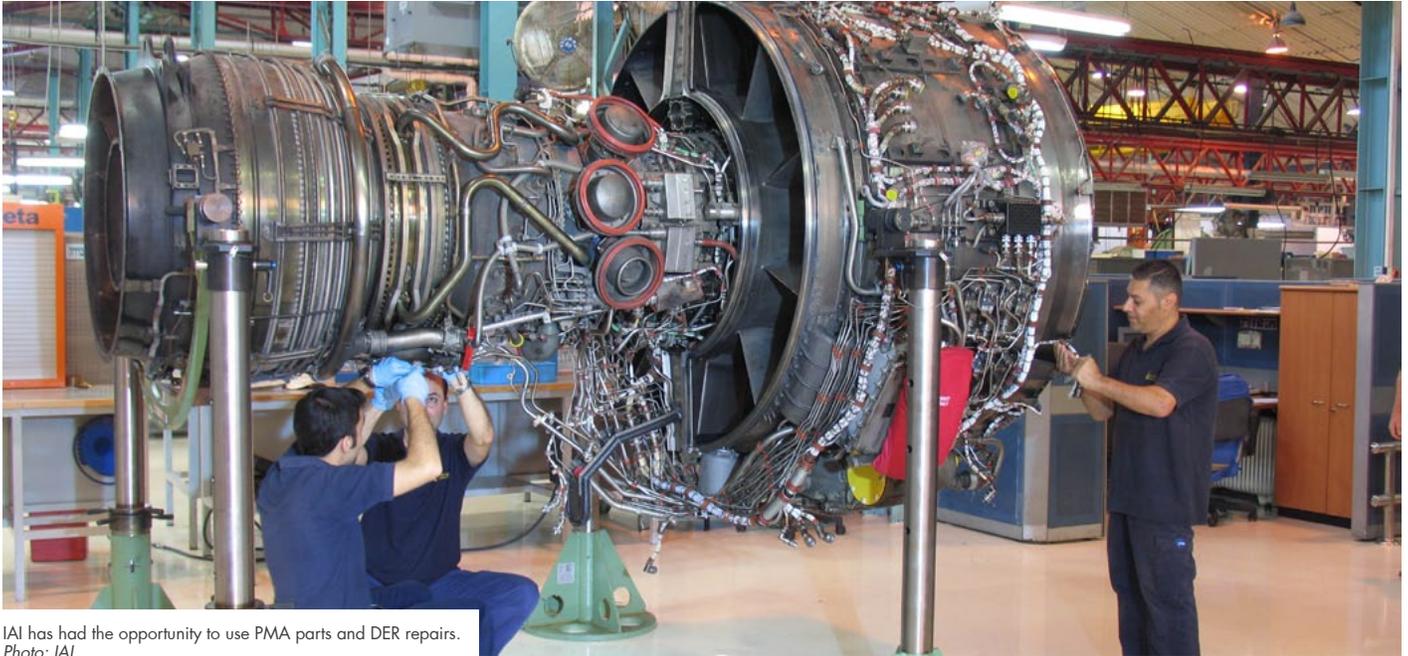
Magellan's asset managers and product support team actively track ADs and SBs issued by the various regulatory authorities and OEMs respectively. "The monitoring of ADs and SB embodiments applies to both owned incoming assets and as Magellan does not have any internal repair function, we ensure that any ADs or SBs are adhered to by our network of approved repair vendors," says David Rushe, Director, Sales and Marketing – Europe.

Nevertheless, Rushe says the FAA AD had an impact on Magellan's business in that the accumulated cycles on the fan blades on one of their leased -7B engines were applicable as they had over 30,000 flight cycles since new. "At the time, it was quite challenging to locate a team to perform the inspection required within the timeframe specified by the OEM," he admits.

Similarly, James Bennett, Director – Sales and Marketing at



Alex Marom, Director, Engines MRO, IAI Aviation Group, Bedek MRO Division.



IAI has had the opportunity to use PMA parts and DER repairs.  
Photo: IAI

AerFin observes the trend with their MRO partners and says they now need to outsource the fan blade repairs to GKN, Snecma or TCI in order to have the ECI inspection carried out – a factor of the 7B manual repair which came about as a direct result of the Southwest fan blade failure. GKN is consequently opening a new facility in Malaysia to cope with the increasing demand for fan blade repairs and inspection of the fan blade root. Fan blade pricing is also now at an unprecedented high, due to airlines having to make sure their fleets' engines comply with the 2018 directive issued by the FAA.



James Bennett, Director – Sales and Marketing,  
AerFin

In July, CFM released 41 pages of “conduct policies”, broadly saying its service licenses and warranties do not discriminate against use of so-called PMA parts or DER repairs in engines. With the policies, some CFM-licensed shops could begin selling non-CFM-approved parts and repairs, while independent shops could align closer with the engine maker.

“One would like to think that this would have a positive impact on the industry,” Bennett feels. He reckons it could be good news for parts providers and independent MROs providing them with additional material sources and alternative repair options to support their customer base. “We could also see an increase in competition for MRO work as a result. This network expansion could alleviate pressure on shop visit capacity constraints that the entire market is facing right now.

“However, with over 40% of the world’s fleet now owned by leasing companies, they will need to buy into the agreement and agree to fit DER and PMA material into their engines. Only then will we see a significant impact on the industry.”

Mariano Longo, CBO at Aeraset thinks the decision could change

global MRO scenario for licensed CFM products in the future. “It is intended that this decision improves flexibility at exchanges in engine shops, but quality must be considered even deeper than before. These policies will increase inspection workload in production, and the same for spare parts from vendors.”

As an independent MRO, IAI has had the opportunity to use PMA parts and DER repairs prior to the change in CFMI policy. “However, usage of non-OEM approved parts and repairs has been on a very limited scale as it is mostly with CFM56-3 engines and with a very small number of customers,” indicates Marom. He says there is a very limited availability of DER repairs and high value PMA parts for CFM56-5B and CFM56-7B engine types, which are now the large majority of the CFM56 shop visits.

Marom adds: “In addition, a large majority of the shop visits are now leased engines. Lessors are much more hesitant to utilise non-OEM parts and repairs due to their concern that it will lower the value of the engine. Therefore, in the current constellation, we do not see that the new CFMI policy will have a large impact on our customer’s decisions regarding PMA and DER usage.”

Filip Stanistic, Magnetic MRO’s Head of Engine Management argues that the policy will make it easier from a technical point of view but commercially it will stay the same, and that the commercial problem was always bigger than the technical one – “we do not think that the situation with DERs and PMAs will change, maybe slightly change but will not bring anything significant in the market.”

Stanistic sees the PMA market shrinking comparing to what it was some 5+ years ago and there are no signs of some new sizeable PMAs on the horizon.



Mariano Longo, CBO at Aeraset



Eric Mendelson, Co-President, HEICO Corporation.

He says the situation with new DERs is a bit better and there are more of them under development, but he still feels it will not bring much impact to the market.

Eric Mendelson, Co-President, HEICO Corporation feels encouraged. "We applaud the spirit and goal of an open, competitive aftermarket for parts and services and look forward to its effective implementation," he says.

Proper enactment of the agreement will provide the airlines

more choice and alternatives for FAA/EASA approved parts and/or services to better meet their needs, he tells. "This is a first step to stop and reverse the longstanding restrictive practices by engine manufacturers that have resulted in higher costs for the industry and, therefore, the flying public. IATA, the airlines, and suppliers will closely watch the implementation and results, and expect similar policies and practices will be adopted by other OEMs." - The IATA-CFM Pro-Competitive Agreement On Engine Maintenance.

It's estimated that growth in the CFM56 engine leasing market is going to continue for possibly at least another five years before the peak. Seemingly, this trend will have an impact on MRO activities.

There is typically a tipping-point in terms of serviceable spare engine trading values coming to a point where they fall below the cost of a heavy shop visit or overhaul for that engine, considers Rushe. "We saw this play out with the CFM56-3 engine in the early part of this decade and it is quite prominent across widebody legacy engines in more recent years."



David Rushe, Director, Sales and Marketing - Europe at Magellan

Rushe notes the CFM56-5C engine is a perfect example in that serviceable engines can be acquired for sub-\$1m whilst carrying a heavy shop visit cost of approx. \$2m. This type of scenario, he says, is still some way off for the CFM56-5B/7B models, which is a good indicator of sustained leasing demand.

Short-mid-term lease demand is buoyant and will remain so until well into the 2020s with MRO demand following suit, he continues, adding that what is likely to happen in the early 2020s is that there will be reduced shop visit builds compared to engines being built to 8k+ cycles to go as is the case nowadays.

"A note of caution would be recent indicators of a possible slowdown in passenger growth in tandem with a wider global economic paralysis. This is likely to lead to some operator bankruptcies which may increase the number of spare engines on the market," Rushe analyses.

Stanisic from Magnetic is of the opinion that MRO activities will depend on a number of engine removals due to engines needing repairs. "As this number is growing – growth of spare engines available for lease

will help to cover spare engine needs during those repairs," he says.

Rather than the lease market having an impact on MRO, Beimfohr from MTU feels this is more the other way around. He reckons, as of today high MRO activity is creating a demand for lease engines.

"MRO slot capacity is currently very tight worldwide as a result of various market forces, including older engines being flown longer and new generation engines entering shops earlier than expected."

Furthermore, Beimfohr anticipates shop visits will peak for the CFM56-5B and -7B engine families in the next two to five years. "The strong MRO demand for these engines also corresponds to high demand for spare engine support while these engines go through the shops. Our leasing arm MTU Maintenance Service Lease Services B.V. has been seeing significant growth since inception in 2014 and is experiencing strong demand for spare CFM56 engines. Furthermore, tight slot capacity can increase the time before induction and in turn, extend the lease periods."

The estimated growth in the CFM56 engine leasing market for at least five years also ensures that the CFM56 MRO market will continue to get stronger and remain strong for the foreseeable future. "We see a severe shortage of MRO capacity and slots for engine inductions," warns Marom from IAI. He explains this is especially the case since there are not many new players entering the CFM56-5B and CFM56-7B MRO market, while established MROs are moving their resources to the LEAP and GTF engines and thus reducing their capacity for CFM56 shop visits.

Marom sates: "This increases the pressure on the remaining MROs, such as IAI, but also presents new opportunities for growth into new markets. We are increasing our capacity for CFM56 in the short term to cover the sharp increase in work, while for the long term we are planning for the LEAP and GTF to ensure our long-term sustainability and expansion.

As part of the growth in the leasing market, IAI has significantly increased its profile in this market and its pool of lease engines. "These are used both to support our customers during shop visits of engines at IAI and as stand-alone leases. We have opened a separate business unit for engine lease and trade, which also trades in aircraft and engine parts," he adds.

IAI have recently signed a long-term agreement with a major Chinese airline for CFM56-3 engines. Also, they have new agreements with Mexican and South American airlines for CFM56-5B and CFM56-7B engines, in addition to extensions of previous long-term agreements with other major operators in Europe and the Americas for these engine types.

Over at MTU, last year announced a CFM56-7 contract with Regent Airways, a Bangladeshi operator, and a CFM56-5B contract with Jazeera Airways from Kuwait as well as a CFM56-5B contract with VietJet from Vietnam. Furthermore, MTU gained 18 new customers on this engine type in total for 2018.



Filip Stanisic, Magnetic MRO Head of Engine Management

# In the hot seat.....

Karl Drusch, CEO True Aero

**AviTrader MRO:** How far has True Aero come since your first facility opened in Florida in 2013 and what has been the industry response since then?

**Drusch:** TrueAero has matured extremely quickly since our inception; Not just in volume of business, but also in the sophistication of our team and how we fulfil the needs of our customers. All lines of business—from Used Serviceable Materials [USM] to asset management—are growing organically at healthy rates, so we have been able to invest in technology and training for our people. It is extremely rewarding to have built a company capable of reaching forward and shaping the future of our industry, and we have been humbled by the level of trust that some of the biggest players in aviation have placed in us.

**AviTrader MRO:** What are your key achievements since then?

**Drusch:** We have offices in six countries around the world, we have deployed over \$1 billion of capital, completed over 130 asset teardowns, and facilitated over 120 contracts.

We have built an incredible team of technical and business professionals that work well together, are experts in their fields, and are eager to grow alongside TrueAero.



The team getting ready to ship an inlet cowl.  
Photo: True Aero

**AviTrader MRO:** What is the biggest trend you are seeing now in terms of airframe teardown?

**Drusch:** We're seeing widebody aircraft retired at higher rates than narrow body, pushing the prices for the widebody airframes and materials down, while the corresponding narrow body prices remain firm. We're also seeing our options for tear down facilities shrink, and among the facilities that remain, there has been a push to make teardowns more ecologically friendly.

**AviTrader MRO:** What is your current strategy for mid to end-of-life services that will put True Aero ahead of the competition?

**Drusch:** We have a world-class team, streamlined fulfilment, and excellent prices, so now our focus is on excellence in asset acquisition. We have extremely solid financials, which allow us to purchase large packages without financing contingencies and with zero execution risk to sellers. Our partners care about timely deal closures and white glove service, so that is what we provide.

**AviTrader MRO:** Are you still supporting A340 operators and how are you seeing this market in the near and medium term?



Karl Drusch, CEO True Aero

**Drusch:** Absolutely, we still support A340 operators. The demand for A340 material is buoyed by commonality with similar platforms, so we see the market remaining relatively flat for the next 3-5 years before it starts to taper off.

**AviTrader MRO:** How is the engine business progressing?

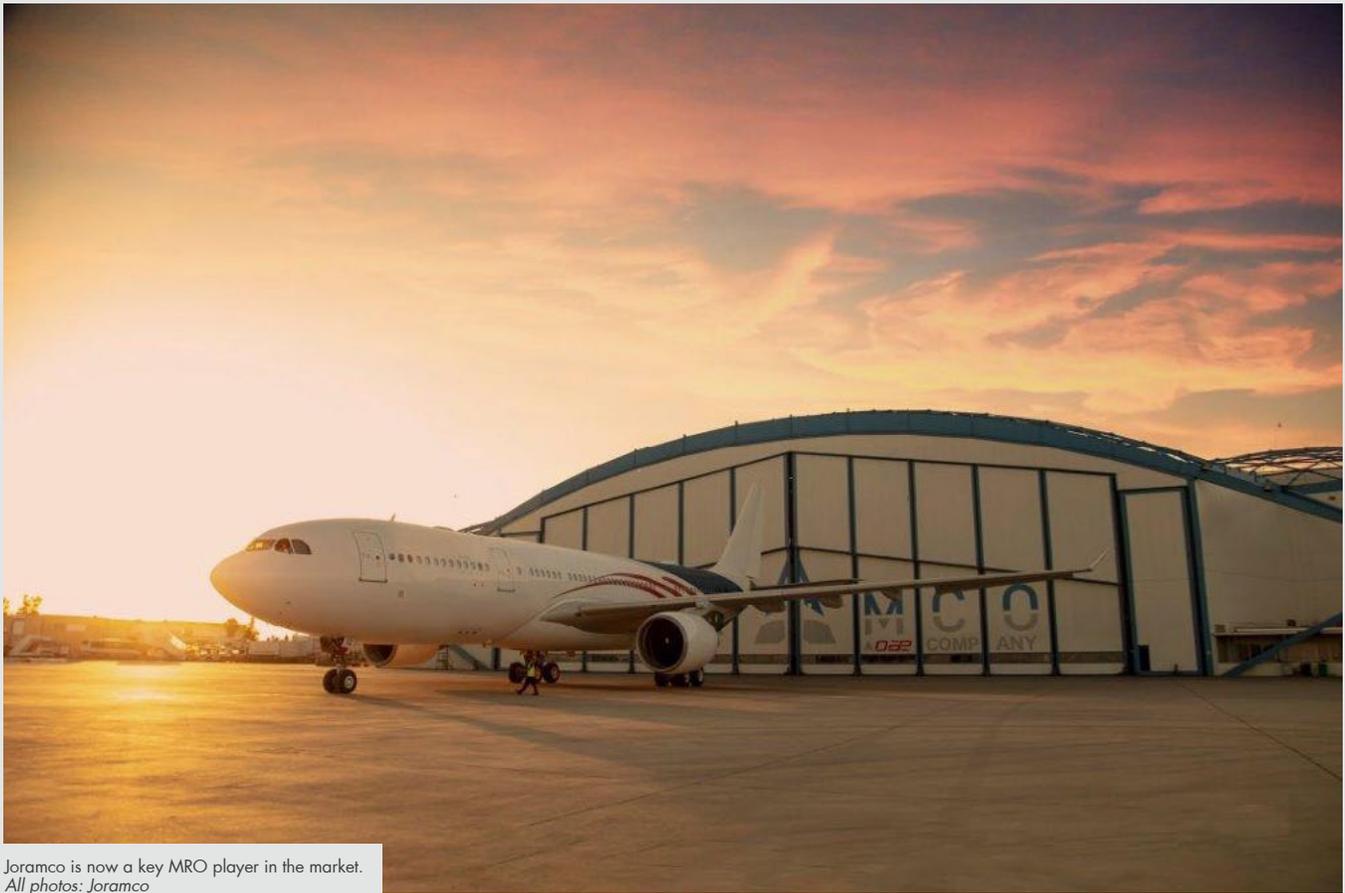
**Drusch:** The engine business is progressing very well and continues to be our primary revenue driver. Demand for assets is so high that we're seeing engines being rebuilt and returned to service more frequently than ever, driving up the demand for materials.

**AviTrader MRO:** Where do you see the business going in 2019?

**Drusch:** We have set the stage for big moves in 2019. We have begun support for E-170/190s, we will deploy at least \$400 million, our growth is fast yet organic and manageable, and our investment in people is paying dividends. We expect to see an increase in the number of assets available for teardown and green lease as well as an increase in mid-life assets available for purchase. However, rising interest rates, fuel prices, backlog, and passenger traffic will prevent a flooding of the market in favour of measured fleet changes and delivery delays to offset retirements.

The name of the game in 2019 will be: Choose deals wisely, do more for your customers, and embrace change.

## A transformational journey



Joramco is now a key MRO player in the market.  
All photos: Joramco

Joramco has evolved following the strategic acquisition by Dubai Aerospace Enterprise (DAE) in 2016. During 2018 the company embarked on “Our Transformation Journey” which is part of a continued focus on a newly launched commitment to excellence theme.

In line with the vision of the new majority owner, Dubai Aerospace Enterprise (DAE), and in order to provide best-in-class quality services to customers, multiple transformation projects have been initiated across the entire company. These changes have taken effect and have allowed Joramco to improve the service offering and enhance the ability to meet and exceed customers’ expectations.

Recently, Joramco has obtained the Jordanian Civil Aviation Authority (JCARC) and FAA approval for Boeing 787 C checks, with the most recent addition being EASA Boeing 787 approval. Joramco has also added 737 MAX approval to complement its existing NG/Classic. Joramco is also a Boeing Gold Care base maintenance partner for 737 MAX and 787 and will soon add 777 approval, with the first aircraft due to arrive during this year. In addition, the A320neo and LEAP-1A capability will be added soon.

The hangars have recently been reinvigorated by introducing multiple changes including; Repainting of the hangars (Internal & External) with the new corporate colours, Improved lighting levels, New white resin floor coverings, Hangar 1 was modified to allow additional wide body access, while more efficient use of space in hangars 2 and 3 saw an additional narrow body aircraft slotted in around a wide body, increasing total slots from 12 to 15.



The company was acquired by Dubai Aerospace Enterprise in 2016.



There are multiple transformation projects in the works.

Ground support equipment is being upgraded, with new passenger door access steps and 737 access platforms already in use and all access stands have been replaced by equipment from UK-based Semmco. A mobile inflatable shelter has been acquired, which increases efficiency of check planning by allowing paint applications to be carried out on nacelles without having to stop other work on the aircraft. Safety standards have been raised with new fall arrest systems from WinGrip and Mobile

Elevated Work Platforms and a Safety Management System has just been launched.

A major change has seen the introduction of a second shift system in order to gain efficiencies in the available hours per day whilst recognising the importance of both human factors and work/life balance.

Furthermore, Joramco continues to invest in its people and training. Joramco's in-house Academy which has run 51 courses in 2018, with 5,000 training hours for 952 employees. These range across type ratings, regulatory requirements and safety awareness. Leadership training courses will start next year.

In order to make the company more customer focused; the entrance to the facility has been completely remodelled to house a customer support centre, with individual offices for customer airline representatives. It sits alongside a relocated commercial department, to help maintain close customer links.

This transformation was showcased during Joramco's participation at various exhibitions and industry events during the last year and the feedback from Industry has been exceptional.



Refurbishment of the facility.

# Cash converters

The freighter fleet will grow by more than 70% over the next 20 years.  
Photo: Ameco

The passenger to freighter conversions market continues to boom, some aircraft types are experiencing feedstock limitations while others are seeing a revival due to e-commerce trends **AviTrader MRO** looks at the market.

According to experts at Boeing, in the next 20 years, 2,650 freighters are forecast to be delivered, with approximately half replacing retiring aircraft and the remainder expanding the fleet to meet projected traffic growth.

With air cargo traffic more than doubling in the next 20 years, the Boeing analysis shows that world freighter fleet will grow by more than 70%, from the current 1,870 to 3,260 aircraft. More than 63% of deliveries will be freighter conversions, of which nearly 70% will be standard-body passenger types. Also, growing demand for regional express services in fast developing economies will boost the standard-body share of the freighter fleet from 37% today to 39%.

Vallair, with its MRO facility in Montpellier in Southern France is particularly strong in the narrowbody conversions market. In November last year, the company completed delivery of their first B737-400F to Guangdong Longhao Aviation Group of China. The aircraft was converted at Gameco in Guangzhou under a PEMCO STC.

The aircraft is one of several Boeing 737 aircraft that Vallair has purchased for cargo conversion, and the first Vallair B737-400 to be converted at Gameco's facility. Vallair has already converted other 737-400s with AEI and PEMCO. "Basically, we deliver turnkey solutions for airlines that do not want to undertake the conversions by themselves or may not have the capabilities to do so," states Peter Koster, Head of Cargo Conversions at Vallair.

Looking ahead, it's clear that the -400, as popular as it might be for cargo conversion, will see availability levels dry up. "Yes, indeed, this is a feedstock driven business – we may see some aircraft that we would consider for conversion but frankly speaking its getting more difficult to find spares and more difficult to find the right feedstock," Koster affirms.

As for the recent Chinese delivery, Koster says Vallair, highlights the focus on leased cargo converted assets as it follows a controlled growth strategy. "Vallair takes a long-term view with regards to its Chinese portfolio, we are carefully building a fleet of Boeing and Airbus commercial aircraft that will form the bedrock of our cargo conversion programme. As these mature aircraft come to the end of their operational lease agreements, we are extending the life of these assets in the most economically beneficial way through our cost-effective conversion programme."

Key to the growth strategy at Vallair is the A321. Vallair sees huge potential in the A321 P2F, not only as a replacement of the B757F, but as a key tool for the cargo industry to achieve the projected growth rate of the air freight market in general – driven by express services and e-commerce. The A321 P2F will be the first aircraft to introduce



Demand for the 757-200 converted freighter business is growing.  
Photo: Ameco



Vallair has delivered several 737-400 converted freighters.  
Photo: Keith Mwanalushi

a containerised lower deck to the market segment of narrow body freighters: a significant game changer for any hub and spoke operation, the company indicates.

Vallair has purchased several A321s and placed them on lease agreements with various operators to expand the cargo conversion portfolio. These aircraft will ultimately serve as ongoing feedstock for the company's launch of the P2F cargo conversion programme.

Staying in the Chinese market, Ameco Beijing developed its passenger-to-freighter conversion on the Boeing 757-200 in 2014 and completed its first conversion in May of that year at the three-bay hangar in Chengdu. Air China Cargo, SF Airlines, China Postal Airlines were added to Ameco's conversion list and by the end of 2018, Ameco had completed conversions on twelve 757s.

Demand for the 757-200 converted freighter business is growing in Ameco, and the MRO specialist expects a continuous workload of ten aircraft within the next two years.

Clearly, feedstock levels for the 757 as with the classic 737s are numbered and Ameco will be looking to the A321 programme too in addition to the 757s. Besides conversion, Ameco also supports repair and overhaul of RB211 engines powering Boeing 757 aircraft.

Observers note there are some A321s trickling in for conversion but very few available for sale or for trading. The industry expectation is that when the programme matures, and the prototypes are delivered, the market will provide the feedstock. And also, residual values are still high for the A321 as the type is still very successfully operated by the passenger sector.

Conversion specialists EFW, based in Dresden, Germany have been busy ramping up demand for their various passenger to freighter programmes.

Thomas Centner, Director Sales Aircraft Conversion at EFW tells AviTrader MRO that the A330P2F is certified and in production ramp up. "We have re-delivered both prototype A330-200P2F and -A330-300P2F conversions on time, which was the outcome of extraordinary team-achievements. There are three units flying and two more to be re-delivered to customers very soon."

The very first A330-200P2F was handed over to Egyptair during the summer of 2018 and went into operation by October following painting and training activities by the carrier. "It has proven its freighter capabilities during the first weeks and we are happy to highlight its better than projected structural payload capability."

Centner points out that the payload (structural) has increased by roughly 4t to approximately 63t. "We now hope to receive the same positive post-conversion weighing results for the next units to come to maximise the payload potential for our customers operations, and finally to update our conservative marketing numbers."

Meanwhile, EFW have started the conversion of the A321 which will be followed by the first A320 conversion by end of this year. Both Airbus single-aisle P2F types will complement the A330P2F line-up.

"All P2F family members will share the same technology, fly-by-wire architecture and cockpit philosophy which is making this conversion family unique to the market in terms of commonality," Centner explains. Whereas the A330P2F is more an evolutionary step based on its successful A300/A310 predecessors, it is a huge step forward in the narrowbody freighter market driven by the A321/A320P2F.

He adds the A321/A320P2F family for instance will be able to accommodate freight on two decks (main and lower deck) using container ULD's which is all new to the market. "We believe this volumetric capability will be game-changing and one of the key drivers for the success of this aircraft family besides the basic aircraft efficiency and low operating cost."



The Dash 8 -100PF modification can take about 12 weeks.  
Photo: Voyager

## Propelling regional freighters

Due to the boom in e-commerce activity, the industry is seeing a revival of the turboprop P2F conversion sector. Hawaiian Airlines for instance are now deploying converted ATRs for all-cargo operations.

Interestingly, the early Dash-8 models are also seeing an upswing in demand for conversion.

Eric van den Berg from Voyager Aviation Corp in Canada feels the Dash 8-100 is a proven rugged airframe with reliable and fuel-efficient engines. In addition, the Dash 8-100 has recently been approved for an extended service programme that extends the life of the aircraft by up to 50%, up to 120,000 landings. These market advantages are significant factors in aircraft selection for many carriers, he reckons.

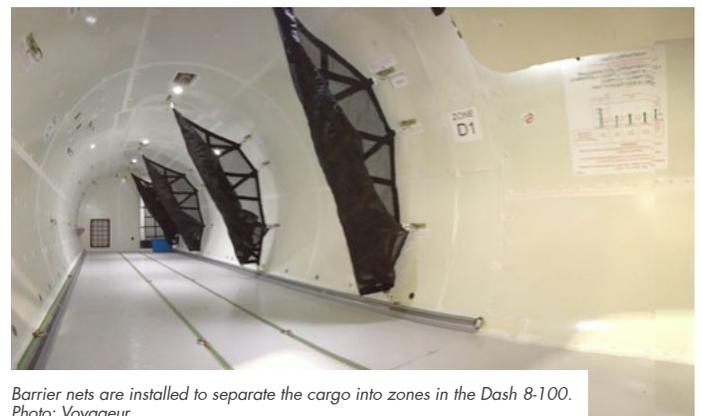
The Dash 8-100 PF is designed to include a Class E cargo compartment separated from the crew areas. The weight and volume capacities are roughly 5,000 kilogrammes (11,200 lb) and 39 cubic meters (1380 cubic feet) respectively. Access for loading and unloading is through a 1.27 x 1.52 m (50" x 60") rear cargo door which sits approximately 1 meter (3.2 ft) from the ground. The cargo compartment provides a comprehensive smoke detection / indication system, crew-controlled ventilation shut off system, fire resistant liners, and is separated from the crew areas by a fire / smoke barrier. Within the compartment, a total of five 9G barrier nets are installed to separate the cargo into zones and to prevent load shift in flight. Floor tracks are included to allow for strap down attachments. Additionally, a timer actuated LED lighting system is installed to provide a luminescent cargo compartment, while ensuring battery drain is minimised. Also, the floor structure is reinforced to provide a 75 pound per square foot rating (366 kg/m<sup>2</sup>) and the floor panels are covered with an anti-slip coating to facilitate safe manual cargo handling.

Mr van den Berg explains that options can be installed to cater to unique operations, including the installation of a fuel bladder restraint

system, integrated roller floor options for bulk load or pallet load operations, increased floor load capacity to 125 lb/ft<sup>2</sup> (610 kg/m<sup>2</sup>), and provisions to support supernumerary crew members.

He says Voyager undertakes the conversion at its facility in North Bay, Ontario, Canada. "The modification includes removal of all interior furnishings, all redundant systems and wiring, removal of the cabin windows, and the installations of the package freighter cargo compartment and related systems. The installation typically takes about 12 weeks and can be combined with a comprehensive inspection of the aircraft."

Voyager is looking at opportunities to expand expertise in cargo conversions to other aircraft models, Van den Burg anticipates. Voyager are content with the provisioning of our Dash 8-100 PF STC (which is Transport Canada, EASA and FAA approved). "We feel this experience has made us well suited to take on new design challenges for aircraft that fit other portions of the market, and we continue to closely monitor market developments."



Barrier nets are installed to separate the cargo into zones in the Dash 8-100.  
Photo: Voyager



Bruno B ergoend

Effective January 1, 2019, **Bruno B ergoend** has been appointed Senior Vice President, Airbus and ATR Programs at Safran and Vice President, Public Affairs for the Occitanie region of France. He succeeds **André Guiraud**, who has retired, and reports to **Stéphane Abrial**, Senior Executive Vice President, International and Public Affairs. Bruno B ergoend is now responsible for overseeing, coordinating and developing Safran’s business with Airbus. He is assisted by **Peter Detjen**, previously at Zodiac Aerospace in Hamburg.

**Robert Clare**, Director of Sales for Universal Avionics (UA), has announced that **Ms. Kim Stephenson** has been appointed to the position of Regional Sales Manager, Canada. Stephenson is based in Grand Rapids, Michigan USA and joins UA with over 20 years of experience in the aviation industry. Before joining UA, she held various sales and business development positions at L-3 Aviation Products, Mooney International Corporation, and Team Aircraft. Stephenson holds a Bachelor of Science in Aeronautics and is an Instrument Rated Commercial Pilot. She has also served on the Board of Directors for the Aircraft Electronics Association (AEA).

AerSale, a global supplier of mid-life aircraft, engines, used serviceable material, and maintenance, repair, and overhaul (MRO) services, has promoted **Basil Barimo**, formerly Chief Operating Officer, to Chief Executive Officer, and **Craig Wright**, formerly Chief Commercial Officer, to President, to facilitate rapid expansion of the business. AerSale founder **Nicolas Finazzo** will serve as Executive Chairman and co-founder **Robert B. Nichols** will serve as Executive Vice Chairman. “Unburdened from the responsibility of day-to-day management, Bob and I will continue to steer AerSale’s overall direction and seek new synergistic acquisitions while we expand the platform,” said Finazzo. “Barimo and Wright are fully capable of leading the operations of our highly integrated, multi-faceted business model.” In November 2018, the company announced its fourth strategic acquisition of an MRO business with the purchase of Miami-based component specialist Avborne.



Leo Koppers (r) and his successor Martin Friis-Petersen

On January 1, 2019, **Martin Friis-Petersen** took on the role of Senior Vice President MRO Programs at MTU Aero Engines, heading up the sales and marketing organization for MTU Maintenance. He takes over from **Leo Koppers**, who is retiring after 16 years with MTU. Koppers successor, Martin Friis-Petersen, has been the Managing Director of MTU Maintenance Lease Services B.V. since 2014. Friis-Petersen joined MTU in 1999 and has held various leadership roles throughout the company, including as Chief Financial Officer of MTU Maintenance Zhuhai and SVP MRO Operations at MTU Maintenance Hannover.

including as Chief Financial Officer of MTU Maintenance Zhuhai and SVP MRO Operations at MTU Maintenance Hannover.

GA Telesis has announced the promotion of **Alex Tuttle** to Chief Operating Officer and **Andreas Bauer**, Ph.D., to Senior Vice President Operations, Logistics and Quality. Both positions will report to Jason Reed, President, Component Solutions Group (CSG). Bringing over 22 years of aviation engine management and operations experience, Tuttle joined GAT in 2002 and has held several positions of increasing responsibility, the most recent as vice president of the Engine Solutions Group (ESG). As COO, he will be responsible for oversight of all engine and airframe product line sales, asset management & disposition, procurement, repair & repair management, as well as all flight hour program activities. Bauer’s experience in aviation operations management, inventory control, logistics and quality control spans the greater part of 20 years, five of those at GAT. With this promotion, he will expand his responsibilities from his previous position as VP, Operations, Logistics & Quality Control to include Quality Assurance and Facilities management under his realm.

Werner Aero Services has reported that **Mr. Jeremy Gonzales** has joined its Singapore team as a Business Development Manager to continue growing its Asia Pacific business. Gonzales has previously worked with major airlines and MROs in the region and possesses extensive knowledge and background in powerplant and fleet management, particularly in the A320 and ATR platforms. Gonzales will be responsible for developing new strategic business in the Asian Pacific region as well as strengthening existing customer relationships.



Christopher Lloyd

Lease Corporation International (LCI), the aviation division of the Libra Group, has appointed **Chris Lloyd** as Vice President Marketing. He will be based at LCI’s Singapore office, with responsibility for the South East and North East Asian markets. Lloyd, who joined LCI in early December, has 25 years’ experience in the international helicopter market, with a proven track record in aircraft sales and leasing, working with contacts across the globe and particularly in the Asia Pacific region. He was previously Managing Director of Lloyd Aviation Ptd – a helicopter and fixed-wing sale and brokerage company, based in Singapore and offering consultancy and valuation services across the Asian and Oceania regions.



Philippe Mhun

Airbus has appointed **Philippe Mhun** as Chief Programmes and Services Officer for Airbus Commercial Aircraft, effective January 1, 2019. Mhun, currently Head of Customer Services at Airbus, will succeed EVP Head of Programmes, **Didier Evrard**, who retires around the turn of the year after 41 years associated with Airbus, 20 of those in top management positions. Mhun will report to **Guillaume Faury**, who is due to succeed **Tom Enders** as Airbus CEO following the Airbus Annual General Meeting on April 10, 2019. Mhun will also become a Member of the Airbus Executive Committee.



Kevin Brickner

American Airlines announced that **Kevin Brickner**, who currently serves as Vice President of Safety and Operations Integration as well as the airline’s certificated Director of Safety, has been promoted to Senior Vice President of Technical Operations (Tech Ops). He takes over the role from **David Seymour**, who was named Senior Vice President of Integrated Operations in 2016. Brickner will be responsible for overseeing line and base maintenance; engineering,

planning and production support for airframes, engines and components; and aircraft supply chain operations, among many other responsibilities. American has promoted Capt. Ron Thomas to Vice President of Safety to assume Brickner’s previous position.

Woodward has reported that **Robert F. Weber, Jr.**, Vice Chairman and Chief Financial Officer, has announced his intention to retire effective January 3, 2020, after more than 14 years as the CFO of the company. As part of the company’s succession planning for the Chief Financial Officer role, **Jonathan “Jack” W. Thayer**, has joined the company as Vice Chairman, Corporate Operations, reporting to **Mr. Gendron**. Thayer will also be appointed to Chief Financial Officer on October 1, 2019, the beginning of Woodward’s fiscal year 2020. Weber will then transition into a senior consultant role supporting Gendron and the senior leadership team through his January 2020 retirement date.

C&L Aerospace, a C&L Aviation Group company, has released that **Isham Salim** has joined C&L Aerospace in the new position of Regional Sales Manager, Asia. Salim will lead sales and marketing activities in the commercial and regional airline segments for Asia. Salim has more than 20 years of experience in the Asian airline market, most recently as managing director of Avia Singapore Aircraft Parts (A.S.A.P.), an aircraft parts supplier. Prior to A.S.A.P. Salim was Regional Sales Manager for Werner Aero Services Asia Pacific and Marketing Manager for Aerospace Distributors Inc.

Panasonic Avionics Corporation (Panasonic Avionics) has appointed **Kimberly Chainey** as its General Counsel. Chainey is a legal leader and corporate generalist with over 15 years of experience advising senior executives of Fortune 500 companies, venture businesses and government entities. As chief legal officer and a member of the executive team, Chainey will advise Panasonic Avionics’ leadership on the company’s strategic direction. Her responsibilities will include overseeing legal issues, promoting a disciplined compliance culture and analyzing legislation and its effect on the company. She will also manage commercial contracts and lead complex projects and transactions. Chainey will report directly to **Jessica Hodkinson**, the General Counsel of Panasonic Corporation of North America (PNA) with a dotted-line reporting structure to Panasonic Avionics’ Chief Executive Officer, **Hideo Nakano**.



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