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## North America in focus



Industry interview  
Pratt & Whitney

AFI KLM E&M  
scores in Dubai

MTU plans ahead

MRO News  
from around the world

People on the Move  
latest appointments

AVITRADER  
**MRO**

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**Opinion**

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# Solving the pilots crisis

**T**he Its particularly shocking to learn just how deep the global pilot shortage has become. Among the worst hit regions are the smaller communities in the U.S.

According to the Regional Airline Association (RAA), regional airlines are the only remaining source of scheduled, commercial air service at nearly two-thirds of the nation's airports. Although regional airlines are working hard to attract and support the next generation of aviators, career path barriers and the high cost of training have placed this rewarding career out of reach for many Americans. As a result, too few commercial airline pilots are available to fly all of today's routes, let alone meet the demands of tomorrow's air travellers.

As the regional airline industry contracted under the growing pilot shortage between 2013 and 2016, 156 airports (U.S) lost at least 20% of their

departures; 52 airports lost at least half; 29 airports lost at least 75% and 18 airports lost all of their commercial air service. The smallest communities have been hardest hit, in turn, contributing to the concerning urbanisation of GDP in the US as the already marked disparity between rural and urban access to air service grows worse. Without intervention, these impacts will deepen further as U.S. major airlines prepare to hire the equivalent of the entire regional airline pilot workforce within the next three years. The situation looks pretty dire.

In this issue we focus on the U.S to see how the MRO industry there is fairing. With forecasts of shrinking growth, MRO and supply chains organisations will need to be very creative to stay competitive.

Keith Mwanalushi  
Editor



North American MROs must be prepared for the type of work associated with the newer fleet types.  
Photo: United

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Spirit President and CEO Tom Gentile made the announcement with local and state government leaders in Wichita  
Photo: Spirit AeroSystems

### Spirit AeroSystems plans major expansion in Wichita, Kan.

Spirit AeroSystems has disclosed plans for major expansion and growth, including the addition of 1,000 jobs and capital investments totaling US\$1bn over the next five years at its Wichita, Kan. facility. The growth is fueled by a number of factors: increasing production rates on existing commercial aircraft programs, growth in Spirit's Fabrication and Defense businesses, and other new business pursuits. The announcement solidifies Spirit's presence in Wichita and Kansas for decades to come "Wichita is our headquarters and the hub of our operations," said Spirit President and CEO Tom Gentile. "Our workforce is unparalleled, with generations of aircraft employees who have worked in our plant. And now future generations will have those same opportunities. We are proud to partner with the city, county and state to bring new jobs and investment to the community and help ensure Wichita remains the air capital of the world." The memorandum of understanding (MOU) with the city and Sedgwick County includes joint investment in a new building to be constructed on the north side of Spirit's property. The completion of the transactions contemplated by the MOU is contingent on approval by the Wichita City Council and the Sedgwick County Commission, and the execution of definitive agreements between the parties.

### Robertson Fuel Systems and StandardAero achieve FAA certification of Heli Crash-Resistant Fuel Tank

Robertson Fuel Systems and StandardAero announced the milestone attainment of Fed-

eral Aviation Administration (FAA) certification of their retrofittable crash-resistant fuel tank (CRFT) for the Airbus AS350 and EC130 family of light single helicopters. Production deliveries to launch partners Air Methods Corporation (AMC) and WeatherTech Aviation LLC are already underway, with additional orders now being taken from operators worldwide. European Aviation Safety Agency (EASA) certification of the CRFT is expected to follow shortly. The CRFT has been developed by StandardAero and Robertson as a direct replacement for all AS350 models, including the AS350 C, AS350 D/D1, AS350 B/B1/B2/BA/B3 and AS350 B3e (H125), as well as for the EC130 B4. The tank's unique design features a robust crash-resistant fuel bladder, with the same capacity as the legacy fuel cell, and uses several innovations including magnetic field sensor fuel gauging technology and vent system roll-over protection. The CRFT is compliant with the latest FAR Part 27.952 fuel system crash resistance requirements, even when used in combination with a cargo swing. Public and regulatory focus on enhanced helicopter safety has continued to grow since the CRFT was first unveiled in 2015, and the FAA Reauthorization Act now includes an amendment that requires the FAA to make helicopter owners aware of fuel system retrofits and to urge them to install retrofits "as soon as practicable."

### Eirtech Aviation Services cargo loading system cover to be installed on A319 for European airline

Eirtech Aviation Services has designed and manufactured cover panels to install over the existing cargo loading system (FWD and AFT) and to provide a flat cargo floor on which cargo and passenger baggage can

be easily and safely stored. This solution has been delivered to a number of A320 customers, globally, in 2017 and is to be installed on an A319 for a European airline this month. It is the lightest and most cost-effective equivalent solution on the market and can be supplied with EASA and FAA approvals. Available in short lead times, the installation of this solution takes approximately 16 person-hours allowing airlines to avoid unnecessary downtime.

### Sky Airline signs MOU for LEAP-1A Rate Per Flight Hour agreement

Chile's Sky Airline has signed a Memorandum of Understanding for a 12-year Rate Per Flight Hour (RPFH) agreement with CFM International to support the LEAP-1A engines that will power the airline's new fleet of 21 leased Airbus A320neo aircraft. The agreement is valued at about \$600 million U.S., including spare engines. The leased aircraft are scheduled for delivery between 2018 and 2021. Under the terms of the RPFH maintenance agreement, CFM will provide engine maintenance on a dollar-per-engine-flight-hour basis. The LEAP engine family has had an exceptional entry into commercial service with more than 26 customers currently operating more than 140 LEAP-powered aircraft on four continents. Overall, the fleet has logged more than 210,000 flight cycles and 430,000 flight hours while maintaining CFM's industry-leading reliability and the highest utilization rate in this thrust class.

### MTU Maintenance Canada introduces V2500-A5 MRO capabilities

MTU Maintenance Canada has introduced V2500-A5 maintenance, repair and overhaul capabilities and is fully certified by the Transport Canada Civil Aviation Authority. The introduction of the engine line that serves the world's A320 fleet is the result of an agreement between Pratt & Whitney, IAE, and MTU Aero Engines. It enables MTU Maintenance Canada to serve the IAE aftermarket network for the life of the V2500 program. The first engine is already at the facility for overhaul. MTU Maintenance currently provides MRO services to 35% of the world's V2500 fleet in Hannover, Germany, and Zhuhai, China. "By adding capabilities in Vancouver, we are expanding MTU Maintenance's V2500 network into North America and strengthening its leading position globally," said Helmut Neuper, President and CEO, MTU Maintenance Canada.



Airbus new Airspace-XL bin on A320 Family.  
Photo: Airbus

### American Airlines is first retrofit customer for Airbus' new Airspace XL luggage bins on A321 fleet

American Airlines (AAL) has chosen Services by Airbus to provide cabin upgrades for 202 of its A321s in-service. The airline will be the first retrofit customer for Airbus' new Airspace XL bins. The larger bins provide a 40% increase in storage space for carry-on bags, reducing bin crowding and the need to check bags at the gate, allowing for a more relaxed boarding experience to both passengers and cabin crew. The upgrades are part of a project which will standardize American Airlines' A321s with a common seat count and interior, providing passengers with a consistent travel experience. New production A321s for American Airlines will also be equipped with Airspace XL bins.

### Bombardier Aerostructures and Engineering Services selected for new Airbus nacelle program

Bombardier Aerostructures and Engineering Services has been selected by Airbus as a supplier on a new engine nacelle program for the Pratt & Whitney-powered A320neo family of aircraft. Bombardier's Northern Ireland operations (Short Brothers plc) has been chosen to develop and manufacture a new thrust reverser to enable Airbus to offer a new, innovative nacelle and its aftermarket support for Pratt & Whitney's Pure Power PW1100G engine. Bombardier is already a supplier to Airbus on a number of programs. Its Belfast operation has extensive nacelle experience and expertise, having accumulated more than 40 years in the design, development, manufacture and support of aircraft engine nacelles.

### AEI receives order for CRJ200 SF freighter conversion for Regional One

Aeronautical Engineers (AEI) has signed a contract to provide Miami-based Regional One with a CRJ200 SF Freighter. The CRJ200 (MSN 7452) commenced modification last week at Commercial Jet's Miami, Florida facility and will be re-delivered to Regional One at the beginning of April 2018. Regional One will be providing a finance lease of the completed CRJ200 SF to Estonia-based Airest, which will be the first European operator for the CRJ200 SF. Airest plans to acquire and operate up to four AEI CRJ200 SFs.

### GE Additive's first international Customer Experience Center opens in Munich

GE additive has opened its first international Customer Experience Center, in Munich, on December 5. The new 2,700 m<sup>2</sup> center, co-located with GE's European Technology Center, allows current and potential customers to experience every aspect of the additive manufacturing process from design, to prototyping, to operations. GE Additive's Customer Experience Centers are designed to help customers understand the additive process and guide them along the way, allowing them to benefit from hands-on training and instruction at the facility. The Customer Experience Center in Munich, launched with an investment of \$15m, will employ up to 50 GE Additive employees, including technicians and engineers specializing in additive design and production. 10 additive machines from Germany's Concept Laser and Sweden's Arcam EBM have been

installed. The center serves as an enabler for customers to accelerate the adoption of additive in their business, regardless of where they are on their additive journey. The facility also enables customers to start with a concept, design and build a prototype, and then move all the way through production, while enabling them to think through industrializing processes and helping improve their products and supply chain.

The Munich center also offers a modern educational facility for their Additive Academy™ – GE Additive's customer training team. All customers are welcome to visit the center to collaborate with the local team on additive design, process development, prototyping and industrializing their additive operations.

### Czech Airlines Technics now certified to provide Line Maintenance for A320neo and B737 MAX aircraft

Czech Airlines Technics (CSAT), a daughter company of the Czech Aeroholding Group providing aircraft repair and maintenance services, has become the first entity in the Czech Republic certified by the Civil Aviation Authority to provide line maintenance for the new Airbus A320 NEO and Boeing 737 MAX aircraft. Only a few private companies in Europe are authorized and have staff trained to work on the aircraft, which will gradually start their operations this year. The certification process took about a year, out of which about half was dedicated to the training of staff. The Boeing 737 MAX training took place directly at the Boeing facilities in Seattle, USA, while the Airbus A320 NEOs training was performed with approved European training organizations.

### AAR to perform heavy maintenance for Republic Airline

AAR has been selected by Republic Airline to perform heavy maintenance checks on its fleet of 188 Embraer 170/175 aircraft. This is a four-year agreement. Work is set to begin in January and will be performed at AAR's aircraft maintenance, repair and overhaul (MRO) facility in Indianapolis, where Republic is headquartered. Republic Airline operates a fleet of 188 Embraer 170/175 aircraft and offers scheduled passenger service with 900 daily flights to 100 cities in 35 U.S. states, Canada, the Caribbean and Central America. The airline provides fixed-fee flights operated under its major airline partner brands of American Eagle, Delta Connection, and United Express.

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Ground-breaking ceremony for Jet Aviation's new wide-body hangar in Basel  
Photo: Jet Aviation

### Jet Aviation holds ground-breaking ceremony for new wide-body hangar in Basel

Jet Aviation hosted an official ground-breaking for its new wide-body hangar project in Basel on November 21. Jet Aviation's new 8,700 m<sup>2</sup>, state-of-the-art hangar is scheduled to go operational at the end of 2018. Suitable for wide-body projects up to Boeing 747 size, the new hangar is being built to meet increased demand for wide-body completions and refurbishments. The hangar will provide an additional 4,550 m<sup>2</sup> of hangar space to accommodate a number of wide- and narrow-body aircraft simultaneously. The project also extends the tarmac by 5,000 m<sup>2</sup>, while adding 2,000 m<sup>2</sup> for shops and offices. To maintain capacity and capabilities throughout the hangar project, the company has leased additional hangar and shop space. It has also built a pathway to ensure employees have proper access to all hangars.

### GE Aviation and Praxair open new advanced aerospace coatings facility

GE Aviation and Praxair have opened a new facility for their PG Technologies business, which specializes in advanced coatings that enable jet engines to withstand higher temperatures and stresses. PG Technologies is a joint venture between Praxair Surface Technologies, a wholly owned subsidiary of Praxair, and GE Aviation. The 300,000 ft<sup>2</sup> facility is expected to employ at least 250 people to meet demand for the latest generation of jet engines, including the GE9X and the CFM LEAP. "The coating technology at this

new facility is vital to enabling us to meet the demands of our customers, who expect industry-leading performance from GE Aviation," said Tony Aiello, Vice President and General Manager Global Supply Chain, GE Aviation. "The engine components delivered from this plant will be in service for decades to come with our more than 400 airline customers all around the world."

### Jet Aviation receives FAP-285 approval at MRO facility in Moscow-Vnukovo

Jet Aviation's maintenance facility at Moscow-Vnukovo has received certification from the Federal Air Transport Agency (RFAA) in Russia for Federal Aviation Rules 285 (FAP-285). Introduced by the RFAA in 2015, FAP-285 certification confirms adherence to all Russian civil aviation laws. With this approval, Jet Aviation's MRO facility in Moscow is authorized to provide line maintenance and AOG support to Bombardier Challenger 300 series, 600 series and Global 5000/6000 aircraft, as well as to Gulfstream G550/G650 aircraft.

### Concept Laser lays foundation for additive manufacturing of tomorrow

GE and Concept Laser have laid the foundation for a new facility in Lichtenfels, Germany. In the future, the 3D Campus will unite research and development along with production, service, and logistics. The new offices should be ready for move-in early 2019, and around 40,000 m<sup>2</sup> will provide room for

about 500 employees. The future machine production capacity will be four-times higher than today, with the capability of manufacturing car and airplane parts, for example. This will make Concept Laser's Lichtenfels facility a global GE center for the production of 3D metal printing machines. About €105m (US\$124m) will be invested into the location. Additive manufacturing (also called 3D printing) involves taking digital designs from computer aided design (CAD) software, and building them on an additive machine, layer by layer, from metal powder. Additive components are typically lighter, more durable and more efficient than traditional casting and forged parts because they can be made as one piece, requiring less welds, joints and assembly. Because additive parts are essentially "grown" from the ground up, they generate far less waste material. Freed of traditional manufacturing restrictions, additive manufacturing dramatically expands the design possibilities for engineers. Additive manufacturing is a transformative technology – part of the new world of advanced manufacturing. Combined with an entirely new approach to industrial design, additive can help transform businesses by improving their products, manufacturing operations and opening up entirely new business models.

### AAR continues to grow business and capabilities with Air New Zealand

AAR has committed to significantly increasing the volume of contracted component repairs with Air New Zealand. In a 10-year agreement, AAR designated Air New Zealand's component center as its Asia Pacific MRO of choice. This is the latest example of AAR's commitment to grow and strengthen its partnership with Air New Zealand, the country's flag carrier airline. After successfully implementing a long-term repair contract signed in January 2017, AAR and Air New Zealand have moved to another level of component repair collaboration, providing both parties with an opportunity for parallel growth. As AAR's component support agreement customer base has increased, so has the Company's need for a more global repair network. Air New Zealand will also benefit from AAR's relationships with other operators. Early this year, AAR and Air New Zealand signed a significant agreement that establishes a component inventory and repair partnership with AAR in the growing Asia-Pacific region with an AAA-rated carrier. It also marks AAR's first PBH agreement solely focused on the B777 aircraft, the flagship carrier and international workhorse connecting New Zealand to the rest of the world.

### Jeju Air and AFI KLM E&M extend existing CFM56-7 support contract

South Korean low-cost carrier Jeju Air has expanded its partnership with AFI KLM E&M by increasing the scope of its existing engine support contract to include a further ten shop visits. The initial agreement covered an array of maintenance and repair services for the CFM56-7B powerplants equipping Jeju Air's fleet of Boeing 737-800s. Through this contract extension, AFI KLM E&M has become a strong MRO partner for Jeju Air, and is actively assisting the South Korean carrier to expand its operations. As the largest LCC in North East Asia (excluding China) Jeju Air will ultimately operate a fleet of 50 737-800s by 2020, some 30 of which are already in service.

Furthermore, AFI KLM E&M reported that Aeromexico has decided to entrust maintenance of the APS5000 APUs equipping its fleet of Boeing 787s to AFI KLM E&M via EPCOR, the MRO's subsidiary specializing in APU support solutions. The services include APU repairs, plus access to a dedicated spares pool and the sale of a spare APU at preferential conditions.

### HAECO ITM signs agreement with Nippon Cargo Airlines

HAECO ITM, a member of the HAECO Group, has reached an agreement with Nippon Cargo Airlines (NCA) to provide inventory technical management support for the airline's Boeing 747-8 freighter fleet. The scope of the agreement includes component inventory access, component exchange, component repair management, component engineering and AOG support at guaranteed service level to ensure NCA's component reliability and operational efficiency.

### ST Aerospace secures 15-year contract for 787 aircraft component support for Gulf Air

Singapore Technologies Aerospace (ST Aerospace) has been awarded a 15-year contract for Boeing 787 aircraft component support by Gulf Air. Under the agreement,

ST Aerospace will provide comprehensive component Maintenance-by-the-Hour (MBH™) support covering component exchange, repair, overhaul, modification, reliability monitoring and logistics services for Gulf Air's new fleet of Boeing 787-9 aircraft. ST Aerospace provides integrated component support for a fleet of close to 600 aircraft on the MBH™ basis, for over 20 aircraft operators in Asia Pacific, Europe and the Middle East.

### FL Technics launches new line station at Zhukovsky International Airport (ZIA) in Moscow

FL Technics, a global provider of integrated aircraft maintenance, repair and overhaul services, has opened a brand-new line maintenance station at Zhukovsky International Airport (ZIA) in Moscow, Russia. The newly established line station will be capable of handling A320FAM and B737NG aircraft types registered in Europe, Bermuda



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and Aruba, as well as many other locations across the globe. It will offer a wide scope of services up to daily/weekly checks and defect rectification. This is the 4th line maintenance station opened by FL Technics in 2017 which, with STORM Aviation, a Daughter Company, operates more than 30 line stations worldwide.

### Aircraft Philipp Group, Germany receives five-year contract from Boeing

Boeing and Aircraft Philipp Group GmbH have signed a five-year contract to manufacture machine parts for the global fleet of the H-47 Chinook heavy-lift helicopter at its facilities in Bavaria and Baden-Württemberg. This is the first Boeing contract with Aircraft Philipp Group, which joins

Boeing's significant supplier base of more than 35 companies in Bavaria and Baden-Württemberg and almost 100 companies in Germany. As a way of further expanding its supplier base in Germany, Boeing hosted a unique training workshop in May 2017 to familiarize German industry with Boeing's source selection and bid process. The event was attended by 23 companies, including Aircraft Philipp.

## News from Lufthansa Technik

### Lufthansa Technik and MTU Aero Engines launch MRO joint venture EME Aero

Lufthansa Technik and MTU Aero Engines have set up a joint venture for the maintenance, repair and overhaul (MRO) of geared turbofan engines, with each of the partners holding a stake of 50% in the new company. The name of the new JV is Engine Maintenance Europe, or EME Aero for short. The contract, which followed up on

an agreement on the general principles of the cooperation signed in February 2017, was finalized by the two companies on December 4.

EME Aero sp. z o.o. will be based in Poland and will have a workforce of 800 employees in the future. The two parties to the joint venture will invest a total amount of around €150m (US\$177m) by 2020. The company will be headed up by project manager Derrick Siebert (CEO)

from Lufthansa Technik and by Dr. Uwe Zachau (COO), his counterpart at MTU Aero Engines. The facility is slated to be up and running in 2020. The planned annual capacity is over 400 shop visits of PW1000G-series geared turbofans, which power the Airbus A320neo family of aircraft and other airliners. The two joint venture partners, MTU and Lufthansa Technik, have raised their forecast for the number of employees and the annual shop visits over the past few months.

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### Preparations for LEAP operation underway at Lufthansa Technik

Lufthansa Technik in Hamburg, Germany is currently preparing to offer on-wing and MRO services for the CFM International LEAP-1A (Airbus A320neo) and -1B (Boeing 737 MAX) engine. Thus, Lufthansa Technik is one of the first MRO providers to support customers worldwide who are already in the early stages of their operation of LEAP-powered aircraft. In addition to building up repair capacity for the LEAP engine by providing staff training courses and investing in the essential tooling, Lufthansa Technik will also focus on extending its on-wing/on-site Airline Support Team (AST) services. Lufthansa Technik will provide LEAP services for the entire lifecycle. Depending on the MRO requirements and the engine life cycle phase, this covers the complete range of MRO services: from engine overhaul and parts repair to on-wing support and innovative engineering; from work scoping to active cost of ownership. Comprehensive capability is being built up step-by-step from now on.

### LHT receives approval for transponder modification for Airbus A320 Family

Lufthansa Technik AG has received a Supplemental Type Certificate (STC) for modifications on the Airbus A320 Family aircraft to fit them with second-generation "Automatic Dependent Surveillance – Broadcast" (ADS-B) transponders. Completion of this modern airspace surveillance technology modification by 2020 has been prescribed by the Federal Aviation Administration (FAA) and the European Aviation Safety Agency (EASA). The aviation authorities require that, in future, all aircraft can be traced worldwide using GPS-based aircraft data. Lufthansa Technik can now equip the first customer aircraft with the new transponders, which fulfill the DO-260 B RTCA (Radio Technical Commission for Aeronautics) standard. Compared to conventional surface-based radar monitoring, the new technology will significantly improve the localization of aircraft and therefore airspace safety. In the course of modification, it may also be necessary to replace the GPS signal source.

### SOFIA flying observatory to undergo C-check in Hamburg

Lufthansa Technik in Hamburg has taken delivery of the SOFIA (Stratospheric Observatory for Infrared Astronomy) flying observatory for a scheduled C-check. The aircraft is a heavily modified Boeing 747SP and is a joint project between the U.S. National Aeronautics and Space Administration (NASA), and the German Aerospace Center (DLR). Coordination of the operation of SOFIA on the German side takes place at the University of Stuttgart.

The C-check is second to a full overhaul in level of scheduled work required to an aircraft. In this particular instance, the maintenance work will be carried out in accordance with NASA regulations. To fulfil its role, SOFIA was extensively modified, including the installation of special electronic systems as well as a four by six-meter door in the fuselage for the telescope. The aircraft is subject to high loads during operation, thus the work on SOFIA's pressure bulkhead will be especially challenging and various fixtures will have to be moved to provide access.

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### AeroParts & Supply announces acquisition by aviation-based investment & management group

AeroParts & Supply (APS), an aircraft parts distribution and repair station located at Dallas Executive Airport (KRBD), has reported that as of December 1, 2017, it has been acquired by a group of aviation investors led by James Noe of RBR Maintenance Inc. Noe has more than 30 years of experience in aviation maintenance, most recently as the president of RBR Maintenance, a full-service MRO at Dallas Love Field. Additionally, the investment and management team comprises other veteran aircraft maintenance executives and professionals still active in the industry. As of December 4, 2017, the company will be named AeroParts & Supply Southwest (APSS) and will continue to operate as an independent entity under its own unique brand. The company will retain key distributorships such as Gill Battery, Rapco Inc, Kelley Aerospace and more, with plans to expand this list.

### Japan Airlines and Boom sign partnership agreement for supersonic air travel

Japan Airlines (JAL) and Boom Supersonic have agreed on a strategic partnership to bring commercial supersonic travel to passengers. Boom is developing a new-generation supersonic aircraft, which

flies at Mach 2.2 and will cut flight times in half. Through this agreement, JAL will provide its knowledge and experience as an airline to support Boom in developing the aircraft. As part of the agreement, JAL has made a strategic investment of US\$10m in Boom and is collaborating with the company to refine the aircraft design and help define the passenger experience for supersonic travel. JAL also has the option to purchase up to 20 Boom aircraft through a pre-order arrangement. The two companies will cooperate closely to realize faster and more convenient air travel. The JAL Group will continue to embrace new technology to deliver greater customer convenience and comfort, enhance its networks, and improve the quality of its products and services.

### Airborne Capital launches targeting US\$5bn of managed assets

Airborne Capital has announced its launch with a strong industry-experienced management team, and with substantial backing from FEXCO Group, Ireland's largest privately owned financial services company. The Airborne Capital has aggressive plans to grow the business to have aircraft assets under management of over US\$5bn within the first five years of being set up. Headquartered in Ireland, and initially with offices in Dublin and London, Airborne Capital is a specialist aircraft lease and asset



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manager with access to deep pools of capital. Airborne Capital will act as a bridge between investors seeking bespoke investment solutions in the aviation space, and issuers requiring aviation financing via differentiated capital solutions.

The commercial aviation industry is predicted to double the size of its fleet in the next 20 years on the back of growing passenger demand (4.7% per annum until 2036). This growth is triggering a financing need that will not be covered by traditional sources of

capital. Airborne Capital will provide solutions to fill this gap, and offer its expertise to new capital providers to meet the aviation industry's growth needs.

Ramki Sundaram will be CEO of Airborne Capital and has over 20 years' experience working in aviation finance, having previously been Head of Aviation at Natixis, one of the leading banks in aviation financing.

## Information Technology

Aviation industry expert **ADSoftware** has signed a contract with **Heli Air Monaco**. The partnership reinforces ADSoftware's position as one of Europe's industry leader in the development and application of ERP software for equipment maintenance and MRO, including CAMO certification.

With 55 airlines across 38 countries utilising its AIRPACK ERP, ADSoftware consolidates its position in the world's top 10 CAMO & MRO solutions with a contract with Heli Air Monaco.

First published in 2001, ADSoftware's innovative AIRPACK solution includes a modular ERP suite, composed of six modules integrated via a single database. Capabilities include a dedicated tool for fleet management & CAMO compliance monitoring (AirTime), inventory control & logistics (AirStock), documentation management (AirDoc), security management (AirUser), reliability and statistical reporting (AirStat), and time-tracking software (AirWork).

**AerData**, a **Boeing** subsidiary, has signed an agreement with **Montrose Global Aircraft Leasing Limited (MGALL)** to support their existing fleet of 45 aircraft and accounting systems with AerData's Corporate Management System (CMS) hosted solution. "We are looking to grow, and CMS will allow us to do that," said Nick Brice, Montrose Global Technical Director. MGALL will consolidate data from multiple sources using the single CMS platform. The platform reduces risk for lessors by giving them full control and oversight of asset values, contract information and technical details. It also helps save time and money by using direct connections to existing financial systems.

**Commsoft** has welcomed UK-based leasing and charter airline, **Titan Airways**, to the fast-growing global OASES community. OASES combines a very high level of technical sophistication with an intuitive user interface and is structured in a modular format to allow for flexibility and scalability. To support its mixed **Airbus** and **Boeing** fleet, Titan Airways has selected the Core, Airworthiness, Planning, Materials, Line Maintenance Control and Production modules which will be installed on local servers. The Core module provides the essential system components that allow operation and integration of all the other functional modules and incorporates the Oracle database, a navigator functionality, a built-in help system, and a security manager which controls access rights and privileges. Between them, the other modules will enable Titan Airways to manage continuing airworthiness processes; predict when all maintenance tasks, modifications and defect limitations will become due; ensure that all material is available when required and replenished or repaired when necessary; integrate OASES with suitable data feeds from operations systems; and log labor time expended. Titan Airways is establishing its own CAMO team to replace an existing third-party service and Commsoft will be providing extensive support in implementing the system for the management of Titan's A318-112, three A320-200s, a A321-211, a Boeing 737-400F, a 737-300QC, two 757-200s and a 767-300ER. It is anticipated that the airline will be expanding its fleet in the near future with the addition of a Boeing 737-400 in January 2018 and further A320 /A321 aircraft later in the year.





Despite the shrinking growth, North America will remain a large, mature market.  
Photo: American

Analysts predict the North American MRO business will contract in the coming years, but the sheer size of the industry means spots of opportunity still exist, as **Keith Mwanalushi** finds.

**N**orth American MRO spend is forecast to shrink from \$18.7 billion in 2017 to \$18.0 billion by 2022, then rebound to \$20.7 billion by 2027 – overall, relatively flat growth with 1.0% CAGR according to experts at Oliver Wyman.

Jim Sokol, President, MRO Services at HAECO Americas remains optimistic that growth will continue at about 4% year over year for the next ten years. “We do expect less maintenance as airlines retire older equipment and replace with newer-generation aircraft that are better built and more reliable,” he anticipates.

Given the rapid transition to new-generation aircraft over the next decade, MRO providers must be prepared for the type of work associated with the newer fleet types or focus their strategy to capture end-of-life markets.

Dany Kleiman, Group Vice President, MRO Services at AAR also feels there will be some growth in relation to MRO work on next-generation narrow-body aircraft as carriers update their fleets. However, he feels most of the growth, albeit single digit, will be focused on wide-bodies, which is why AAR built a new MRO in Rockford, Illinois, to accommodate larger aircraft.

Kellstrom Aerospace predict that the forecasted MRO contraction will derive from the delivery of new aircraft, the majority sold under OEM care packages for airframe and engines, and operated within the initial warranty period.

“Despite the recent trend of airlines operating legacy platforms, once new aircraft deliveries reach capacity, the retirement of legacy airframes and engines will be accelerated and avoid further heavy maintenance,” states Jeff Lund, President and CEO of Kellstrom Aerospace.

Lund warns that companies who rely solely on MRO activities may face a period of contraction where fuel costs, geopolitical landscape and timing of new aircraft and engine deliveries will dictate the timing of the downturn.

“For customers as diversified in the aftermarket as Kellstrom Aerospace, new aircraft deliveries mean a ramp-up of initial provisioning orders for product from our OEM distribution partners. By the time initial provisioning orders start to decline, the aftermarket repair cycle will begin on those platforms helping Kellstrom Aerospace to continue to grow even during any potential downturns due to our solid, and diversified business model,” says Lund.

According to the 2017 CAVOK engine MRO forecast, the North American engine MRO market for commercial jet engines will have a CAGR of 2.2% from 2017-2027. This is low considering the global forecast of 5.1% CAGR. “In terms of shop visits, this remains flat, declares Les Cronin, Senior Director of Marketing and Sales America at MTU Maintenance.

He explains that this is because North America is the most mature





Several American MROs are expanding widebody capabilities.  
Photo: Delta TechOps

market in terms of air transport (compared to emerging markets) and because there is currently a transition period from older to newer aircraft, whose engines generally need significantly less MRO in the early years of life. "Nonetheless, based on current airframe order books and production rates, fleets will continue to grow," says Cronin.



Abdol Moabery, GA Telesis Founder President and CEO

GA Telesis had a record year across all of its businesses in 2017. The robust market has lent itself to many opportunities in the region in both the MRO and supply-chain sectors.

Abdol Moabery, GA Telesis Founder President and CEO reports that firstly, the aftermarket contracted briefly with the demise of a few aftermarket suppliers, but that market share was absorbed quickly, so there was no real market contraction. He says the heavy MRO sector saw a few new en-

trants along with the further growth and development of the USA's largest heavy maintenance provider. "Ultimately, the business continues to see margin pressure that results from both domestic and international competition coupled with higher labour costs in the US market. The long and the short of it, is that there is no relief in sight. Labour rates will continue to rise, international competition will cannibalise the North American share of the MRO market and more regional MROs will develop outside of North America."

In 2017, MTU Maintenance has witnessed increasing demand for its services – from engine maintenance and leasing to component and accessory repair and support. Cronin reports that all its facilities have been receiving significantly higher workload from the North American customer base compared to other regions and for all engine types served from regional (CF34) to narrowbody (e.g. V2500/CFM56) and widebody (e.g. GE90/CF6) engines.

Cronin says the significant highlight for 2017 in the North American market has been the revival of MRO and leasing demand for mature engine types such as the CF34-3, CFM56-3C1 and CF6-80C2. "Only two years ago, these were heading to their final resting place in the desert or destined for teardown."

In 2017 however, the industry has seen many of them returning to active service – "in some cases resulting into an immediate need for MRO services, from smaller work scopes to heavy maintenance. Leased engines with green-time are also currently in high demand," Cronin suggests.



Legacy engines will have higher utilisation rates.  
Photo: Kellstrom Aerospace

Kevin VanLowe, Director of Supply Chain at Exostar says the most important trends observed in North American supply chain programmes in 2017 can be boiled down to a single word: digitalisation. "The embrace of supply chain digitalisation leads to a pair of significant organisational initiatives that have impacted end-user priorities – and our business – over the past year."

The first is the imperative for supply base management. VanLowe explains that the automation that accompanies digitalisation offers the potential for cost, schedule, and visibility improvements, but it also opens the door even wider for malicious activity. "Organisations simply must do a better job of vetting the security hygiene of their partners to harden their supply chains against cyber threats – or run the risk of being the next security breach headline."

The second initiative, as VanLowe states, is the desire to truly rationalise end-to-end supply chain management processes and systems. He says MRO service companies are looking to use visibility to supplier capacity, inventory and response times to optimise their global service delivery. "Eliminating inconsistencies and silos presents the opportunity to migrate to all-in-one supply chain solutions. This approach makes the dream of master data management feasible, while also easing the burdens of vendor management, system integration, transaction security, and regulatory compliance."

Bottom line - managing the MRO supply chain continues to be a complex challenge requiring supply chain best practices. "Digitalisation has made 2017 a watershed year for supply chain organisations. Now that the genie is out of the bottle, there's no turning back," VanLowe stresses.

At HAECO Americas the most significant highlight of the year was the completion of a new hangar in Greensboro, N.C. This structure will be LEED certified to be more efficient and to better accommodate a diverse fleet of aircraft models.

"As for trends, we've seen lower fuel costs leading to better utilisation, and thus, more necessary maintenance. One not-so-positive continuing trend is our challenge in finding and retaining



Walmsley - The availability of skilled labour is a challenge.  
Photo: Volo



Lund says the forecasted MRO contraction will derive from the delivery of new aircraft.  
Photo: Kellstrom Aerospace

growth rates for passenger traffic and fleet growth than Asia and the Middle East, but it's still a very large market, Walmsley reminds. "With logistics costs it makes sense to have MRO activity in the region that the aircraft operate in, assuming there is the necessary volume of work to support the demand.

"Historically labour rates have been lower in Asia than North America, but with an increase in automation and efficiencies in process, plus the increase in cutting edge technology use in MRO (with its escalation in costs), the biggest impact will be driven by the OEM's business strategy," says Walmsley.

Kellstrom Aerospace has undergone a phase of aggressive expansion and diversification into every area of the aftermarket. With the expansion of its OEM distribution portfolio through the acquisition of Transaero Commercial business, to the purchase of The Aircraft Group (TAG) and Vortex Aviation with three hospital type engine shops in global locations and the establishment of Kellstrom Aerospace Technical Services (KATS) providing engineering services and engine management, Kellstrom seems well placed as



Dany Kleiman, Group Vice President, MRO Services at AAR

a qualified workforce," Sokol notes.

The shortage of skilled labour is in fact an on-going issue. Andrew Walmsley, President at Volo Aero MRO highlights that currently the challenge in north American MRO is the availability of skilled labour at an economic price point. "With the current high demand for new production and MRO there are significant issues with ageing workforce, and labour rates and employment cost such as medical," he states.

There are no doubts that the US market has lower

an aftermarket partner for OEM's airlines, lessors, financial institutions and MRO's.

Lund says the key trends experienced in 2017 is the rise in MRO activities on legacy and newer generation aircraft and engines as airlines utilised the green time of assets. "Airlines decision to continue operations of older aircraft has seen impacts on the aftermarket supply chain, particularly for suppliers based on aircraft and engine disassembly model, as fewer aircraft have been retired."

He adds that competition for the available assets that have been retired from airline fleets has also been affected by mid-to-end of life lessors purchasing assets to return to service and limiting the supply of used surplus inventory into the global supply chain.

One of the most significant business highlights for AAR in 2017 has been the acquisition of two MRO facilities in Canada from Premier Aviation in September. The two facilities – one at Trois-Rivières Airport in Québec and the other at Windsor International Airport in Ontario – represent an expansion of AAR's MRO network of five facilities in North America and extends its airframe maintenance of commercial aircraft outside the U.S. for the first time. "The acquisitions will help us meet our objectives of expanding service offerings to our current customers and form new relationships to grow our presence worldwide," declares Kleiman.

Although rising recently, jet fuel prices are still down approximately 45% over the previous three year average. Kleiman feels lower jet fuel prices have incentivised airlines to delay phase outs of older fleets, which has led to additional opportunities for independent MROs like AAR to provide heavy maintenance and modifications of legacy platforms to help airlines meet passenger expectations.

Walmsley, says low fuel prices are still allowing the operation of older fleets which require higher maintenance needs, but for the larger carriers it is also allowing them to build a stronger balance sheet to fund replacement aircraft. "When we return to higher fuel costs and a change in the economic cycle it's going to be the facilities focused on the legacy platforms that are going to significantly impacted."

Mr Cronin from MTU expects fuel prices to remain relatively stable in the mid-term. "Generally, there has been little to no impact from raising fuel prices in terms of airline results in North America, as traditionally, costs have been passed to passengers via ticket surcharges," he observes.

In terms of MRO, he says low fuel prices tend to mean that mature engines continue being flown. "MTU Maintenance has a mature engine programme perfect for such engines, which incorporates our extensive repair capabilities, customised builds, leasing, teardown for parts and asset management services. The range of options is made possible by the amount of surplus material and engines available on the market – they can be used to reduce MRO costs or substitute shop visits."

The North American MRO market has always struggled with labour cost. As Moabery from GA Telesis indicates, with a booming economy, wages for skilled positions rise and it becomes more difficult for MRO companies to compete against low-wage countries in South America, Eastern Europe and Asia. Additionally, as the industry grows and more countries develop their airline industries,



Cronin - The north American market has seen a revival of MRO and leasing demand for mature engine types.  
Photo: MTU



Kellstrom Vortex Fort Lauderdale.  
Photo: Kellstrom Aerospace

they also develop their own MRO sectors, which adds globally capacity. "Now, it does not make a lot of sense for an airline to fly 10,000 miles to do maintenance on a short-haul aircraft, but let's say that an aircraft is returned from lease and the North American lessor wants to bridge maintenance for the next customer. That lessor now has regional MRO options that cannibalise a once robust North American MRO market," says Moabery.

Experts project the next 10 years will see a significant shift in the relative distribution of passenger traffic, moving the epicentre of demand and related fleet activity away from North America to strong emerging markets in the Middle East and China for instance.

Moabery highlights the growing middle-class in countries like China and India that are fuelling the growth of air travel in those regions. "This will drive airline growth in those regions at a faster rate than airlines in North America," he states.

Additionally, over the next five years, there are major airports being built that double and triple the capacity capabilities of North

American airports. Moabery adds: "This is being done to accommodate the air travel growth in those regions and the development of large network hubs to capitalising on the growth. Ultimately, the result is that global maintenance capacity will grow and if those regions can continue to develop a labour pool, the long-term horizon will reflect a North American MRO market that supports airlines within a tight perimeter of the continent. The days of airlines flying in to North America to perform maintenance are gone forever."

If the forecasters are correct about fleet activities in North America declining in favour of emerging markets in the Middle East and China, then the MRO requirements will go the same way reckons Kleiman. "This trend is partially what is driving AAR's global expansion in those regions."

In the past year, AAR has further expanded its global reach by signing a long-term contract with Dubai-based flydubai for comprehensive flight-hour component support for its new Boeing 737 MAX aircraft, and a global supply chain network with a new warehouse in Shanghai. AAR has also been approached by local partners in these regions to provide expertise on the establishment and operation of heavy maintenance MROs.

"AAR has also expanded our parts supply inventory, which is already the largest volume of new and used parts in the industry, to include ATR parts for a platform more commonly used outside the U.S. We also expanded AAR's in-house component repair network to Southeast Asia through a partnership with Air New Zealand's component centre," says Kleiman.

Ultimately, it's widely agreed that the North American market will remain attractive, and while the region might not be growing as quickly, it will remain a large, mature market.



# Dubai raises the stakes

Innovation and knowledge-sharing characterised the Dubai Air Show.  
Photo: Dubai Air Show

The 2017 Dubai Air Show was a busy event for the AFI KLM E&M team as *AviTrader MRO's* editor **Keith Mwanalushi** recaps.

Innovation, knowledge-sharing and billion-dollar deals characterised the week-long aviation event in November. The 2017 edition saw trade visitors to the event up 20% over 2015, with some 79,380-people entering the purpose-built hall at DWC, Dubai during its five-day run with an order book of US \$113.8 billion.

Of specific interest was the MRO sector, where notably AFI KLM E&M took the lead position in terms of contracts announced.

The show kicked off to a flying start when AFI KLM E&M announced it is to provide maintenance and overhaul for the GE90-115B engines powering Kuwait Airways' ten Boeing 777-300ERs. It's under a support by the hour contract covering engine removal management, shop visits, logistics/AOG support.

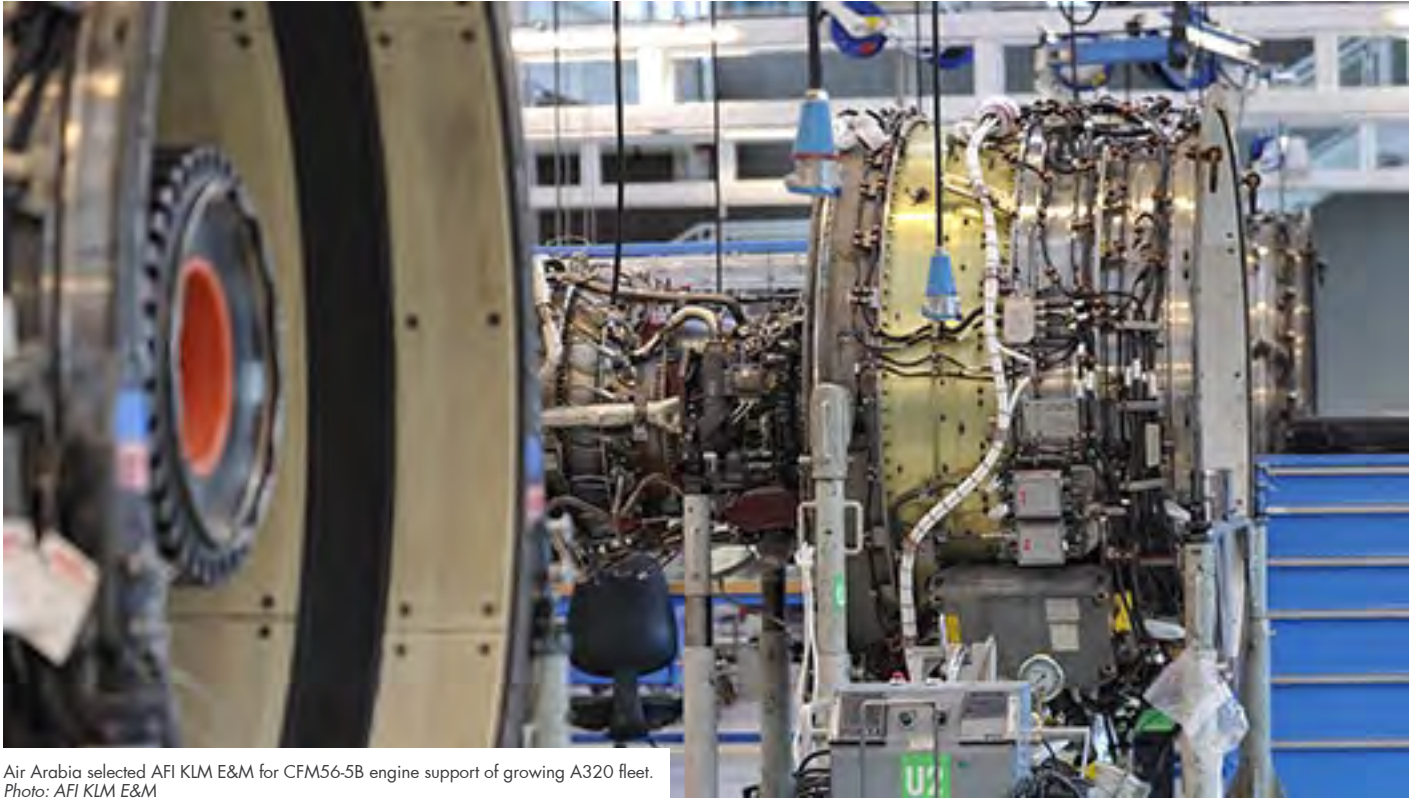
Mr. Faisal Al-Azmi, Engineering Director Kuwait Airways, highlighted, "the excellence of the support developed and delivered by AFI KLM E&M for our fleet in recent years. The ability of the MRO group to show flexibility and satisfy our specific requirements to guarantee our operational continuity is equally crucial for Kuwait Airways."

AFI KLM E&M has dual operational and technical expertise on GE90 family powerplants, from the operational support provided for its AIR FRANCE and KLM parent airlines (launch airlines for the 777-300ER in particular), to services provided for dozens of third-party airlines operating versions of the GE90 worldwide.

Shortly afterwards, it was announced that Gulf Air, the Kingdom of Bahrain's national carrier, has entrusted maintenance of the APS5000 auxiliary power units (APU) equipping the airline's 10 new, incoming, Boeing 787-9s to AFI KLM E&M. The long-term contract includes a guarantee covering APU replacement. The repair services will be provided by AFI KLM E&M subsidiary EPCOR, global market leader for MRO support for APUs.



SAEI calls on AFI KLM E&M 787 expertise.  
Photo: Boeing



Air Arabia selected AFI KLM E&M for CFM56-5B engine support of growing A320 fleet.  
Photo: AFI KLM E&M

EPCOR Managing Director, Dennis Wetjens said: "Our leadership position for APU maintenance and repair means we can guarantee unrivalled reliability and experience for our clients. The renewed trust Gulf Air has honoured us with is most definitely a bonus for our development in a region with fast-growing MRO requirements."

MRO services for new technology aircraft, like the Boeing 787 are becoming increasingly vital as the type continues to enter the global fleet at a high rate. In response to the growing demand for 787 services, Saudia Aerospace Engineering Industries (SAEI) signed an agreement with AFI KLM E&M in Dubai for full component support for a fleet of Boeing 787-9s. Operated by SAEI's sister company, Saudi Airlines, the fleet will ultimately comprise 21 787s. AFI KLM E&M will provide component maintenance and repair services, along with the related logistics, as well as access to its spares pools in Europe, Asia and the Americas.

SAEI and AFI KLM E&M have been working together since 2004. "This new phase is the start of a different model in the relationship with our suppliers, where our two companies are considering the option of a

long term strategic partnership, and to develop industrial activity in KSA following the guidelines of Kingdom's Vision 2030" said, SAEI President, Mr. Jose L. Quiros.

EVP KLM E&M Mr. Ton Dortmans added: "We are delighted with this strengthened cooperation with SAEI, which we are proud to support in this period of rapid development of Saudi aviation in the framework of the Kingdom's Vision 2030 strategic plan."

Wrapping up the deals in Dubai, Air Arabia announced that it would entrust its full engine support for its growing Airbus A320 fleet with AFI KLM E&M.

The agreement was signed by Adel Abdulla Al.Ali, Group CEO of Air Arabia and Fabrice Defrance, S VP Commercial of AFI KLM E&M at the Dubai Air show. The contract covers engine maintenance of Air Arabia's current and expanding fleet of 50 A320 aircraft. The new contract covers the full array of Air Arabia's fleet requirements, from shop visits to worldwide on-wing support. Real-time engine monitoring will also be on offer via the Prognos® for engine predictive maintenance solution developed by AFI KLM E&M at its innovation platform, The MRO Lab.

Adel Abdulla Al.Ali said "Our decision to opt for AFI KLM E&M to fulfil this large-scale and long-term contract demonstrates our confidence in their ability to deliver the level of quality we expect. Working with the right partners will help us grow our fleet and the routes we serve at a faster pace."

This agreement strengthens the carrier's existing partnership as AFI KLM E&M provides airframe support to Air Arabia via its specialised Moroccan joint venture, Aerotechnic Industries (ATI).



Kuwait Airways signed a GE90 engine support contract for its 777s.  
Photo: AFI KLM E&M

# In the hot seat.....

Joe Sylvestro, Vice President, Aftermarket Operations, Pratt & Whitney

**AviTrader MRO: Pratt & Whitney Turkish Engine Centre recently signed its largest contract with Turkish Airlines. What is the scale of work to be covered and is there capacity to accommodate other airlines?**

**Sylvestro:** In November, we announced that the Pratt & Whitney Turkish Engine Center signed one of its largest maintenance contracts in recent history. Turkish Airlines selected the engine center, a joint venture between Pratt & Whitney and Turkish Technic, for up to a five-year EngineWise™ service agreement covering 100% of the airline's V2500® and CFM56 -7b engine overhaul requirements.

The Pratt & Whitney Turkish Engine Center started operations in 2010 and draws on decades of maintenance experience from both Pratt & Whitney and Turkish Airlines.

Our customers are not just limited to Turkish Airlines and its joint venture partners. The Pratt & Whitney Turkish Engine Center is currently overhauling a wide range of engines from customers around the globe.

We look forward to offering Turkish Airlines the same high standard of service that they have come to expect from Pratt & Whitney under our EngineWise service brand. This agreement highlights both parties' long-term commitment to high-quality maintenance services for Turkish Airlines.

**AviTrader MRO: How important is mobile engine maintenance capability and what is its purpose?**

**Sylvestro:** With more than 7,000 V2500 engines delivered and the number of Geared Turbofan™ (GTF) engines in service continuing to climb, we are investing in smart, straightforward mobile services through our EngineWise service brand that help operators more quickly address unscheduled engine maintenance while optimising fleet readiness.

To alleviate operational disruptions for customers, we are providing creative solutions to resolve, replace or repair engines either on-wing, near-wing or at network repair facilities worldwide.

For engine maintenance between scheduled overhaul visits, we are performing quick-turn surgical strikes to replace engine modules or components that our customers need, while maintaining our high-quality and high-performing engines.

**AviTrader MRO: P&W recently announced teaming up with Lufthansa Technik for light engine maintenance. What does this entail?**

**Sylvestro:** In 2016, we announced that Lufthansa Technik would become Pratt & Whitney's principal provider of mobile engine maintenance services for V2500®, PW1100G-JM, PW1500G and PW1900G engines.

The cooperation provides Pratt & Whitney customers with more efficient and cost-effective engine maintenance.

**AviTrader MRO: How far has P&W gone to address the glitches experienced with the GTF engine on the A320Neo platform?**

**Sylvestro:** The GTF engine is revolutionising modern flight with the most fuel efficient, quietest, most sustainable engine on the market: 16% reduction in fuel, 75% reduction in noise footprint, 50% reduction in regulated emissions. Around the world we are seeing unprecedented demand from customers who recognise unique benefits of GTF.

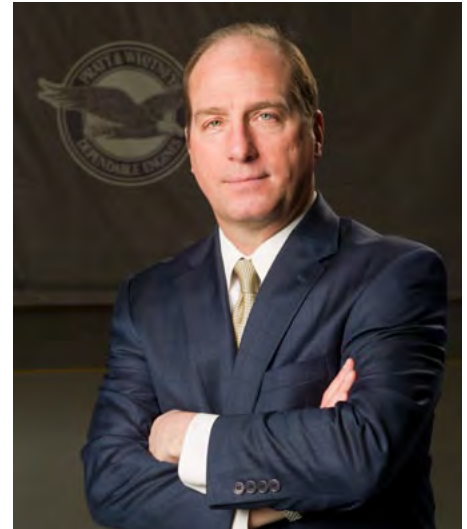
While we've had a few issues – which is common in new engine programmes - the good news is that we've identified them and we'll have fixes in place. Further, we are working with Airbus to increase the number of spare engines back from our MRO facilities to minimise any potential disruptions to our customers. These are programmes that will be out there 30 years, and we've been working closely with our customers during these first 21 months since the GTF entered service to lay the groundwork for a successful 30 years for us and our customers.

**AviTrader MRO: Are you developing any other global MRO capacity to support the volume of GTF engines that are coming online?**

**Sylvestro:** Today, the GTF MRO network includes some of the industry's top MRO companies to provide the highest quality maintenance support for GTF engines. As of today, network members include Pratt & Whitney, MTU, JAEC and Lufthansa Technik.

Earlier this year, we announced the expansion of the network to include Pratt & Whitney's Eagle Services Asia in Singapore. The engine centre will provide engine maintenance for the PW1100G-JM engine. Given that Asia is home to a large base of carriers that will fly GTF-powered A320neo aircraft, expanding the MRO network to support customers in this region was a strategic decision for us.

Over time, as the volume of overhauls continues to increase, the network is expected to expand to include airlines and other MRO shops. New members of the network will be announced as agreements are finalised.



Joe Sylvestro, Vice President, Aftermarket Operations, Pratt & Whitney.

**AviTrader MRO: What are your key priorities for 2018?**

**Sylvestro:** One area where we are growing our support of customers is with our EngineWise services portfolio, which we announced in April. Pratt & Whitney's EngineWise brand is all about sharing our engine expertise and fleet intelligence with Pratt & Whitney customers so they can optimise engine performance and keep their operations running smoothly. Essentially, EngineWise better represents what we offer, and how we're evolving to improve the predictability, reliability and health of our customers' fleets.

Another big focus for us is building our GTF MRO network to support the growing number of GTF engines entering service. Facilities strategically located around the globe are quickly becoming tooled, trained and ready to support airlines with a variety of aftermarket services resulting in long-term, sustainable value for operators.

We will also continue to support the flying fleet of mature engines. EngineWise is about supporting customers' evolving needs throughout the entire engine life cycle, including mature engines like the PW4000 and V2500.

Big data has also been a large focus for us for many years. We're using state-of-the-art data analytics and real-time intelligence to proactively monitor the health of our engines in order to predict and prevent engine disruptions before they occur.

These are examples of technologies, investments and support we're offering to improve the services we offer operators through EngineWise now and into the future.

# MTU Aero Engines substantiates outlook to 2025



2017 is the last year of MTU's investment phase.  
Photo: MTU

**A**t its investor and analyst day 2017, MTU Aero Engines AG provided a concrete outlook for the period to 2025. 2017 marks the end of the company's most substantial investment phase, from which it emerged with an increased adjusted EBIT margin. In 2018, MTU will move into a consolidation phase during which the company expects a continuing rise in earnings and substantially higher free cash flows. Between now and 2025, the company aims to boost its average cash conversion rate into the high double digits through the combined effect of a moderate increase in working capital and a decrease in the cash flow from investing activities. The cash conversion rate measures the proportion of net income converted into free cash flow.

MTU Aero Engines AG CEO Reiner Winkler comments: "During the consolidation phase, we expect to see more stable growth in the new engine business, accompanied by improved profit margins. The strong growth in our highly profitable spare parts sales and commercial maintenance business is likely to continue, even though margins in our commercial MRO business will remain under pressure. There are signs of potential growth in our military business as of 2020." Looking ahead to a next investment phase, Winkler says: "Our long-term objective is to acquire higher shares in future engine programs than before."

2017 is the last year of MTU's investment phase. During the period from 2014 to 2017, the company experienced its strongest growth in the commercial maintenance business. Spare parts sales also grew substantially. "Business in both sectors developed better than we had assumed when we embarked on our investment phase," says Winkler.

Delays led to a moderate growth in the commercial engine business and to declines in military engine business. MTU had initially projected strong growth in the commercial engine business and a stable military engine business. Winkler adds: "This mix enabled us to improve our adjusted EBIT margin during the investment phase." The original forecast was for a stable level of margins.

In 2018, the commercial OEM business is likely to achieve the strongest growth, with a predicted 30-percent increase in revenues. The commercial maintenance business is also expected to grow, with revenues increasing by a percentage in the high teens, while spare parts sales are expected to increase by a mid-single-digit percentage. Revenues in the military engine business are forecast to remain at the same level as in 2017. "This makes 2018 a transition year with a moderate increase in adjusted EBIT and a growing cash conversion rate," says Winkler.

The amended version of the IFRS 15 reporting standard is effective for annual periods starting on or after January 1, 2018. The main changes concern the recognition of payments to customers, including concessions, the acquisition of program shares and development costs. In future, such expenses will be recognized as deductions from revenue, rather than costs. "This has an impact on reported revenues, which will be lower than before when calculated on the basis of the amended version of IFRS 15," explains Peter Kameritsch, the designated CFO and CIO of MTU Aero Engines. "However, this will have little impact on earnings, and even lead to an improvement in our profit margins." If the amended version of IFRS 15 had been applied in 2016, group revenues would have amounted to €3,288 million rather than the reported €4,733 million, while adjusted EBIT for the year would have





MTU expects its commercial maintenance business to continue growing faster than the market.  
Photo: MTU

been €485 million instead of €503 million. Other changes concern the definition of order backlog. Apart from the effect of the amended IFRS 15 reporting standard, the growing number of engines covered by long-term service agreements will also be included. However, the new definition leads to an almost unchanged order backlog of €14.3 billion for 2016 (2016 reported: €14.2 billion).

In the consolidation phase from 2019 onward, MTU expects its commercial maintenance business to continue growing faster than the market. At the same time, MTU expects a shift away from independent maintenance to the MRO services within the OEM service networks. "To minimize the impact of these changes on our earnings, we are focusing on best-cost locations when expanding our MRO capacity. The latest example is EME Aero, our joint venture with Lufthansa Technik for the maintenance of Geared Turbofan™ engines, which will be based in Poland," reports Chief Program Officer Michael Schreyögg. "At the same time, we are continuing to expand our portfolio of repair and maintenance services, with a view to better satisfying customer needs."

As far as the production activities are concerned, MTU expects the unprecedented growth of the Geared Turbofan™ programmes to reach a peak in 2018, at the beginning of the consolidation phase. "After significantly increasing throughput in recent years, we expect growth to normalize during the consolidation phase," says MTU COO Dr. Rainer Martens. His optimism is based on the high order backlog and MTU's excellent market position.

The military engine business, which has been declining recently, can be expected to grow again from 2020 onward and reach a level of around €500 million by 2027. "The prospects in this sector are more of a long-term nature," says Schreyögg. Future sales are most likely to arise from export deals under existing programs such as the EJ200 Eurofighter engine or the TP400-D6 for the A400M military transporter, and from new engines such as the T408 for the CH-53K heavy-lift transport helicopter or engines for a next-generation weapon system.

From the mid-2020s onward, MTU expects the development of new aircraft. As in the previous investment phase, this will give MTU the opportunity to further expand its market position. "To optimize our positioning, we are constantly building up our expertise and our competencies as technological leaders," says Lars Wagner, MTU's new COO as of January 2018. "We are intensively working on our technology roadmap, use our experience from the Geared Turbofan™ programs and promote a culture of innovation".

One of the ways in which MTU utilizes its innovative strength is by reorganizing its business units in such a way that they can draw maximum benefits from modern-day digital technologies. Unlike companies in other sectors of industry, digitalization will not fundamentally change MTU's business model.



Liebherr-Aerospace office in Hamburg, ribbon-cutting, on November 30, 2017  
Photo: Liebherr-Aerospace

**Liebherr-Aerospace** has officially opened its new liaison office in Hamburg's **Center of Applied Aeronautical Research (Zentrum fuer Angewandte Luftfahrtforschung, ZAL)**, on November 30, 2017. The office of the Liebherr-Aerospace liaison team is now closer to the facilities of **Airbus** in Hamburg (Germany), and will enable the engineering and R&D teams of Liebherr and the aircraft manufacturer to further boost their close cooperation. Liebherr-Aerospace will conduct engineering as well as testing, and will support fast track development works on site. Peter Eusemann, Liebherr-Aerospace's Liaison Manager for Airbus, said: "Fast, efficient development of new

technologies will be an essential driver of tomorrow's aircraft. Being able to work closer with Airbus' engineering teams is expected to foster new ideas, enable their immediate realization, and implement such technologies quickly into the market. It will be a key contributor to our ability to propose the best technologies and products to Airbus for their next aircraft."

**Panasonic Avionics Corporation** has introduced a major advance in inflight connectivity, with the entry into service of its first High Throughput Satellite (HTS) capacity over the Pacific Ocean. The EU-TELSAT 172B satellite, which launched in June, is operated by Eutelsat Communications. Leveraging its unique design, Panasonic will deliver greatly enhanced inflight broadband connectivity, live television and mobile phone services to aircraft flying high traffic routes across the Asia Pacific region spanning the West Coast of North America to Asia, and down to Australia and the Pacific islands. High Throughput Satellites use a combination of spot beams and high-level frequency re-use to provide much improved economics, more bandwidth and faster data speeds as passengers browse the Internet and benefit from other online services, and airlines increasingly utilize connectivity for operational purposes. The satellites also use a broad overlay beam, which is used to economically deliver up to nine channels of live television to passengers in flight.

## People On The Move



John Leahy



Eric Schulz

Airbus has appointed **Eric Schulz**, EVP, Chief of Sales, Marketing & Contracts for the company's Commercial Aircraft business. In this function, he will join Airbus at the end of January 2018 and will report to Chief Executive Officer **Tom Enders**. Schulz comes from Rolls-Royce where he has been serving as President – Civil Aerospace since January 2016. At Airbus, he will succeed **John Leahy**, who has been at the helm of the Commercial Aircraft's Sales organisation since 1994.

Spairliners, a leading component provider in the after-sales market, has appointed **Thies Moeller** as new Managing Director and CEO. He succeeds **Sven-Uve Hueschler** effective November 1, and from now on will head the business, alongside Benoit Crombois, Managing Director and CFO of the company.

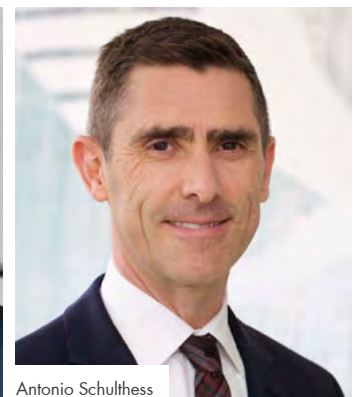
AJW Group has appointed **Martyn Haines** as Technical Director. Haines takes up the new role this month, and will be responsible for technical standards and best practices across all divisions of the business, focusing on driving performance and continuous improvement of its supply chains

and innovative solutions to airline MRO challenges. He joins AJW from Kenya Airways, where he was Technical Director, responsible for the delivery of a cost-effective operation for their circa 40 fleet of Boeing 737, 777, 787, and Embraer E190 aircraft, and associated MRO facilities.

At its meeting on November 17, the Supervisory Board of Lufthansa Technik AG appointed **Dr. Johannes Bussmann** as Chairman of the Executive Board of Lufthansa Technik AG for a further five years until March 31, 2023. **Antonio Schulthess** was also appointed as Chief Human Resources Officer for a further five years until March 31, 2023. Dr. Johannes Bussmann has been Chairman of the Executive Board of Lufthansa Technik AG since April 2015. In addition to Strategy and Innovation, as well as Communication and Marketing, his responsibilities include Corporate Sales, Digital Fleet Solutions and Original Equipment Innovation. Antonio Schulthess has been a member of the Executive Board of Lufthansa Technik AG since April 2015, and is responsible for Human Resources and Technical Services, including the engine business, the Aircraft Systems division and Lean Management.



Dr. Johannes Bussmann



Antonio Schulthess