AviTrader

MRO

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BIG Business

Large engine overhaul

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EMC Aerospace

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from around the world

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latest appointments

Boom in Asia

This month the aviation industry comes together for the fifth edition of the Singapore Air show. The event returned with a renewed focus on driving global aviation industry trends and developments, while serving as the key gateway for global players looking to tap into the fast growing Asia Pacific region.

The Asian market for commercial airliners and the technologies and services is expected to continue to grow at a fast pace over the next 20 years. Industry figures say 39 percent of the worldwide aircraft deliveries will go to Asia. Country representation at the show this year featured 20 country groups and pavilions, of which the Philippines and Indonesia country pavilions are participating in the Singapore Airshow for the first time

Our key topic in this edition is large engine MRO with particular emphasis on wide bodies. . In fact, the Singapore show saw engines at the centre of new business initiatives. Pratt & Whitney officially opened its first manufacturing facility in Singapore. The facility will produce fan blades and other key components for Pratt & Whitney’s new PurePower Geared Turbofan engine family.

The focus of MTU’s trade show exhibits is on the mega trends for tomorrow’s aviation: reduced fuel burn, lower carbon-dioxide emissions, and less noise. For operators and airlines to be successful, it is important for them to be able to keep the aircraft in their fleets flying – and MTU is aiming to help its customers, notably also in Asia, to achieve this goal.

Asia is definitely a key focus.

Happy reading!

Keith Mwanalushi
Editor

Overhaul capabilities for new large engines require significant investments. *Photo: Airbus*

Contents

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Opinion

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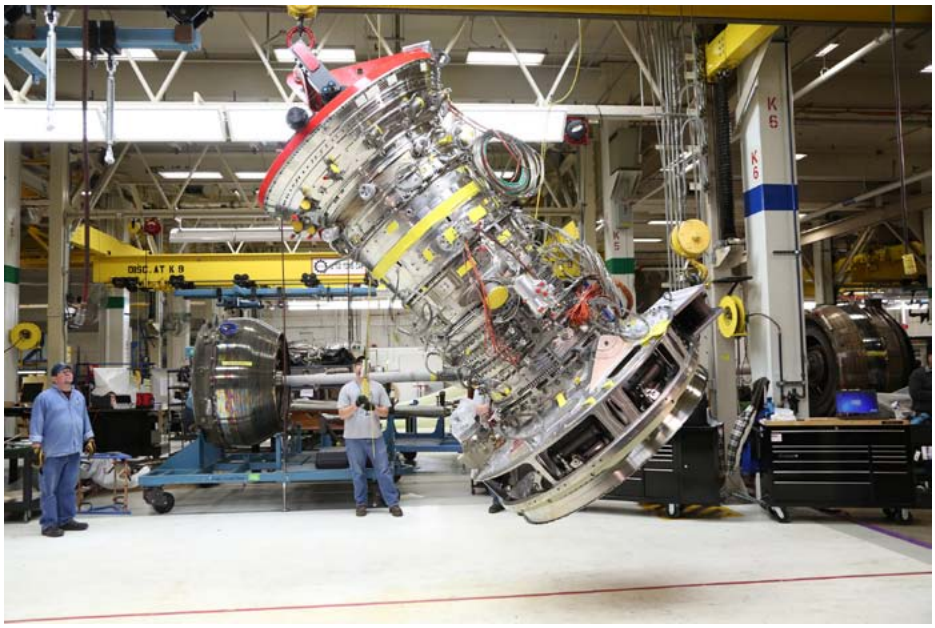

GE9X FETT horizontal move *Photo: GE Aviation*

Final assembly underway on first GE9X engine

Final assembly is underway on the first full GE9X engine that will test in the first half of 2016, four years before the GE9X engine enters service on a Boeing 777X aircraft. The first engine to test (FETT) wraps up the extensive technology maturation program for the GE9X engine program which began almost five years ago and has included component-level, system-level and core demo testing to validate the advanced technologies and materials in the new engine. FETT brings all the technologies together to demonstrate their operability as a complete propulsion system as well as provide early information on the engine's aerodynamic and thermal characteristics. Compared to prior engine development programs, the GE9X FETT is scheduled earlier in the development process, just a mere six months after the engine design was finalized. The second GE9X engine is scheduled to test in 2017 along with flight testing on GE Aviation's flying test bed. This timing assures all learnings from FETT will be captured in all certification engines. Engine certification is anticipated in 2018.

A350-1000 final assembly begins on time while production ramps up for A350-900

It's "full speed ahead" for Airbus' A350 XWB with final assembly start-up for the new-generation jetliner family's longest-fuselage member, the A350-1000, as per planning, in parallel with the baseline A350-900 version's continued production ramp-up to meet market demand. The no.1 A350-1000 is one of three test aircraft that will be utilized for this model's certification process, with the maiden flight scheduled before the end of the year. To facilitate the concurrent A350-900 and A350-1000 production, Airbus has introduced three new "stations" in its Toulouse, France A350 XWB final assembly line, where A350-900 versions have been assembled since 2012. The additions are a third Station 50 (where the forward, centre and aft fuselage sections are joined, along with nose landing gear installation); a fourth Station 40 (for wing-fuselage junction and tailplane installation); and a fourth Station 30 (for ground testing and cabin furnishing activities). Underscoring the high degree of commonality between the A350-900 and A350-1000, all final assembly line stations – including the newest three – can accommodate both aircraft types. As a further measure for accommodating concurrent A350-900 and A350-1000 production, Airbus is increasing the number of A350 XWB final assembly line employees from its current level – approximately 1,500 – to some 1,900 by 2018. Commercial service entry of the A350-1000 is targeted for mid-2017 with Qatar Airways, which was also the A350-900 version's launch customer.

AEI announces order from World Star for 11-pallet position B737-400SF freighter conversion

Aeronautical Engineers has signed a contract with San Francisco based World Star Aviation to provide an 11-pallet position B737-400SF freighter conversion. The aircraft, built in 1990 (MSN 24796), is standard gross weight and is being modified at Commercial Jet's Dothan, AL facility. The freighter will be re-delivered to World Star in June of 2016.

TAT Technologies signs joint-venture agreement with Engineering Holding of Moscow

TAT Technologies, a leading provider of services and products for the commercial and military aerospace and ground defense industries, has signed an agreement with Engineering Holding of Moscow, Russia, to establish a new maintenance facility for heat exchangers. The new company, TAT-Engineering, will be based in Novosibirsk's Tolmachevo airport.

Boeing Shanghai signs maintenance agreement with Thomas Cook Airlines

Boeing Shanghai Aviation Services has signed a maintenance agreement with Thomas Cook Airlines for Boeing 767 fleet maintenance. With this contract, Boeing Shanghai has expanded its airplane maintenance services to the United Kingdom. The first Thomas Cook 767 was inducted for C-check in October, followed by one airplane in November and one in January 2016 at Boeing Shanghai's facilities at Shanghai Pudong International Airport. A C-check is an extensive check of the airplane's systems and components that can require several days to perform. The Thomas Cook Group Airlines consist of four leisure airlines: Thomas Cook Airlines UK, Thomas Cook Airlines Belgium, Thomas Cook Airlines Scandinavia, and Condor Flugdienst. The airlines carry 17.2m passengers per year, generating revenues of £2.7bn (USD$3.8bn). The combined fleet consists of 91 aircraft.

Monarch Aircraft Engineering signs new line maintenance contract with Norwegian

Monarch Aircraft Engineering (MAEL) has signed a line maintenance technical handling agreement with Norwegian. The agreement, which commenced on January 11th, 2016 will see MAEL's highly experienced engineering team provide a full suite of line maintenance services for the low-cost airline's Boeing 737NG operation. The ongoing contract will support up to nine aircraft at London Gatwick where Norwegian is now the airport's third-largest airline.

MTU Aero Engines completes first turbine center frame for GE9X

MTU Aero Engines in Munich has completed the first development turbine center frame (TCF for short) to go into the GE9X engine. "In this engine program, we are not only responsible for the manufacture of the TCF, but also assumed responsibility for its development right from the outset," explained Dr. Jörg Henne, Senior Vice President Engineering and Technology, on the occasion of the last bolt ceremony held in Munich in late January. "On another positive note, to make the deadline, we have completed the first GE9X TCF within record time," according to Theodor Pregler, Senior Vice President Commercial Programs at MTU in Munich. The new GE engine has been selected to be the exclusive propulsion system for the Boeing 777X. Delivering more than 100,000 pounds of thrust, the GE9X will be the most fuel-efficient engine ever produced by GE Aviation on a per-pounds-of-thrust basis. The first run of the engine is slated for this spring, and entry into service is expected for 2020.

(from left to right) Dr. Jörg Henne and Theodor Pregler at the last bolt ceremony for the GE9X TCF in Munich
Photo: MTU Aero Engines

Alcoa wins fourth Boeing contract

Lightweight metals leader Alcoa (AA) today announced a long-term supply agreement with Boeing for multi-material aerospace parts. Under this agreement, Alcoa will supply components for the 777X—Boeing's newest commercial airplane, the 737 MAX—scheduled for first delivery in 2017, and the 787 Dreamliner. The deal draws on capabilities gained through the Firth Rixson acquisition and the Company's new aluminum-lithium facility in Lafayette, Indiana. Under the new agreement, Alcoa Forgings and Extrusions will supply differentiated components for Boeing's airplanes, including the wing, fuselage, and landing gear. These include: advanced titanium landing gear parts and complex titanium nacelle fittings for the 737 MAX, made using specialized presses gained through the Firth Rixson acquisition; Boeing's first-ever aluminum-lithium extrusion produced at Alcoa's Lafayette facility for the 777X cargo floor, helping save weight and improve corrosion resistance; and large, near net shaped parts that improve the efficiency and help reduce the costs of Boeing's in-house machining.

HAECO Group launches VectorY+ passenger seat with Cathay Pacific Airways

HAECO Cabin Solutions announced that Cathay Pacific Airways will become the launch customer for its new Vector Y+TM economy class passenger seat on Cathay's A350-1000 aircraft. The new seat, designed for long-haul operations, is the latest model from the Vector seat platform featuring carbon fiber construction, recline with seat pan articulation and industry-leading living space. The Vector platform was formally introduced at the Aircraft Interiors Expo in Hamburg in April 2015 and the first order for the Vector Y model, designed for short-haul operations, was booked shortly thereafter. A third seat model is expected to be introduced in 2016 for premium economy cabins.

Nova-Tech Engineering to provide fourth A320 Family production line in Hamburg, Germany

Nova-Tech Engineering, a leader in the design and manufacture of aerospace tooling and automation, has received an order from Airbus to provide a fourth production line for the final assembly of the A320 family of aircraft to its Hamburg, Germany plant. Nova-Tech is responsible for providing all components of the new production line, including the equipment to move and position aircraft components through the process, align and join fuselage sections, and align and join wings to the fuselage. In addition to delivering these items, Nova-Tech is also responsible for providing the robotic drilling, automated logistics system, aircraft test equipment, mobile access platforms, hand tools and even the work orders, making Nova-Tech's scope of supply a truly fully-integrated FAL operation, thus exceeding Nova-Tech's competition for a holistic solution.

AEI signs contract for B737-400SF freighter conversion

Aeronautical Engineers (AEI) has signed a contract with an aviation fund for an 11-pallet position B737-400SF freighter conversion. The aircraft, built in 1992 (MSN 26071), is a high-gross-weight B737-400 and is being converted by Commercial Jet in Miami, Florida. The conversion commenced on January 11th and will be re-delivered to the aviation fund in April of this year.

Jet Aviation St. Louis completes installation of three FANS systems in Challenger 604s *Photo: Jet Aviation St. Louis*

Jet Aviation St. Louis completes three FANS installations in Challenger 604s

The industry's first three installations of Future Aircraft Navigation Systems (FANS) in Bombardier Challenger 604s by Jet Aviation St. Louis are complete, with three more already scheduled. The installations are possible after Jet Aviation St. Louis received FAA approval for a Supplemental Type Certificate (STC). Jet Aviation St. Louis teamed with Rockwell Collins to develop the STC for the Challenger 604 FANS 1/A aftermarket solution. It includes the Automatic Dependent Surveillance-Contract (ADS-C) and Controller Pilot Data Link Communication (CPDLC), which reduces pilot workload and enhances the clarity and accuracy of pilot communications with Air Navigation Service Providers in oceanic and remote airspace worldwide.

Sabena technics and Braathens Regional sign component support agreement

Starting this month, Sabena technics will provide Braathens Regional with an exclusive range of component solutions including a comprehensive access to its rotable components pool, warranty management, test, repair, overhaul and/or modification of rotable components and logistic services. The airline currently operates a fleet of ATR72-500s as well as a growing fleet of ATR72-600s in Scandinavia. The work will be carried out at the MRO's dedicated facilities in Dinard (France). The agreement with Sabena technics secures Braathens Regional's goal to optimize the operation of existing ATR72-500s and their new ATR72-600 fleet, maintain their level of Technical Dispatch Reliability and continue delivery on-time operation for their customers.

GKN Aerospace qualifies 10% lighter windshield for Airbus single-aisle aircraft

Following a comprehensive three-year design and certification programme with Airbus, GKN Aerospace has qualified a new 10% lighter, higher-performance, main pilot (No 1) windshield for the Airbus single-aisle aircraft family (A318/A319/A320/A321).

GKN Aerospace has achieved this 10% weight saving by manufacturing the window from chemically-toughened CE120 glass, replacing the heavier, thermally-toughened glass of previous generations of the window. The company has also incorporated modifications to the detailed design of the windshield that will extend its performance and simplify its manufacture. This new windshield will be fully interchangeable with existing windshields making it available to operators of all Airbus single-aisle aircraft – over 6000 of which have been manufactured to date. In addition, by combining this new windshield with the company's established No 2 and No 3 cockpit windows, GKN Aerospace can now offer, from a single source, the lightest complete cockpit window set on the market for single-aisle aircraft.

Rolls-Royce to invest over £30m in new Washington aerospace facility

Rolls-Royce has announced plans to invest more than £30m (US$42.6m) at its site in Washington, Tyne & Wear, UK, creating a new facility to manufacture a range of aerospace discs for in-service engines. The new Fleet Support plant is expected to be fully operational in 2018 and will sit alongside its UK discs manufacturing facility, which officially opened in June 2014. The new investment is part of Rolls-Royce's ongoing industrial transformation and marks the final stage of the modernization programme for disc manufacturing in the North East of England. The construction of a new facility will allow Rolls-Royce to make use of their specialist workforce and agile manufacturing techniques. It will also complete the planned closure of the existing site in nearby Sunderland, which is over 60 years old. The new 8,000 m² facility will have the capacity to manufacture well over 1,500 fan and turbine discs a year for use in a wide-range of existing engines, including Civil Aerospace applications (Trent 500, Trent 800 and the RB211 engines) and alongside the Defence Aerospace applications (EJ200 and Adour engines). Fan discs and turbine discs are at the heart of the engine, operating in extreme conditions.

Triumph Group delivers first fully joined Embraer E2 CFIII/AFT fuselage to Embraer

Triumph Aerostructures-Vought Aircraft Division has delivered its first fully joined Embraer E2 CFIII/AFT fuselage to Embraer from its Red Oak, Texas facility. The company entered into a contract with Embraer in 2013 to design and build the E2 CFIII/AFT fuselage shipsets for the life of the program. Daniel J. Crowley, Triumph's President and Chief Executive Officer, said, "We achieved a critical milestone with the on-time delivery of Triumph's first shipment of the fully joined fuselage in support of Embraer's E2 program. Our Triumph team is proud to be participating on the next generation of Embraer's E-Jet class of passenger jets and remains focused on delivering a quality product to meet our customer's expectations and to ensure the success of this Embraer program." The contract is worth approximately US$1.7bn in revenue over its lifetime and the program is expected to enter service in 2018.

Assembly of the main airframe sections of the first A350 XWB for China Airlines is advancing at Airbus' Final Assembly Line in Toulouse *Photo: Airbus*

First China Airlines A350XWB takes shape on Airbus' Final Assembly Line

Assembly of the main airframe sections of the first A350 XWB for China Airlines is advancing at Airbus' Final Assembly Line (FAL) in Toulouse, France. This involves the assembly of the wing-fuselage junction, the installation of the tailplane and also the tailcone. The aircraft will then be moved to the next assembly station for structural completion, ground testing of mechanical, electrical and avionics systems, and then the start of cabin installation. First delivery of Airbus' latest-generation wide-body airliner to China Airlines is scheduled for the 3rd quarter of 2016. China Airlines has 14 A350-900 twin engine wide-bodies on order. The aircraft will be deployed on the carrier's long-haul routes to Europe, Australia and the United States, as well as on selected regional routes. China Airlines currently operates 24 A330s and six A340s on regional and long-haul services.

ST Engineering's aerospace arm secures US$415m worth of new contracts in 4Q2015

ST Engineering's aerospace arm secured new contracts worth US$415m in the fourth quarter of 2015, for projects ranging from airframe maintenance and cabin interiors reconfiguration, to engine wash and landing gear overhaul. The total contract value includes the recently announced cabin reconfiguration contract awarded by Air Canada, the landing gear maintenance contract from Scandinavian Airlines and the heavy maintenance contract for Virgin Galactic's 747-400. Included in the 4Q2015 contracts are line and heavy airframe maintenance agreements for various customers, supporting aircraft types such as Airbus 300, A320, Boeing 747-400, 757, 767, 777 and MD-10, as well as cabin interior modifications of an international airline's fleet of E175s. Separately, its Hondo-based facility was awarded a 737-300 aircraft part-out contract. For component support, in addition to the landing gear maintenance contract from the Scandinavian Airlines fleet of Boeing 737-600/700/800 and Bombardier CRJ900 aircraft, ST Aerospace secured several ATR landing gear overhaul contracts from customers in the Asia Pacific region. The aerospace arm also won additional contracts for landing gear services with ASEAN airline operators, and expanded its engine component support for East Asian customers. Multiple contracts have also been sealed with customers in Asia Pacific, Europe and the US for EcoPower engine wash services. In particular, following a long-term Do-It-Yourself franchise agreement recently signed with Japan Airlines Engineering Company, a second unit of the EcoPower wash equipment is now deployed at Haneda Airport, in addition to one earlier deployed at Narita Airport, to carry out engine washes for aircraft operators in Tokyo, Japan. The aerospace sector redelivered a total of 308 aircraft for airframe maintenance and modification work in 4Q2015. This included the redelivery of two converted freighters to SF Airlines.

Lufthansa Technik news

Emirates and Lufthansa Technik sign Boeing 777 landing gear exchange and overhaul contract

Emirates has contracted Lufthansa Technik to overhaul the landing gear of its Boeing 777-200ER/300 classic fleet. The 5-year agreement covers 13 shipsets. The formalization of this contract reflects Emirates' long-standing relationship with Lufthansa Technik, which dates back to 2005. The work will be performed by Lufthansa Technik Landing Gear services UK (LTLGS) located in Hayes, London, in the United Kingdom. LTLGS has the capability to overhaul all modern Boeing aircraft landing gears and has supported the Boeing 777 fleet from the beginning of market introduction, allowing for a wealth of technical experience and extensive repair capabilities. LTLGS has performed over 200 Boeing 777 Landing gear shipset overhauls of all variants and weight configuration since 2003.

Lufthansa Technik provides support for Eurowings long-haul fleet

Lufthansa Technik AG is to provide comprehensive technical support for the new Eurowings long-haul fleet. The agreement was reached with SunExpress Germany, which operates intercontinental flights from Germany for the Lufthansa Group under the Eurowings brand. In the framework of a Total Technical Support (TTS), Lufthansa Technik will, among other aspects, handle component supply, aircraft maintenance, engineering services and the supply of consumables for up to seven Airbus A330-200 wide-body aircraft belonging to the airline.

Philippine Airlines and Lufthansa Technik sign Total component maintenance contract

Philippine Airlines and Lufthansa Technik AG have signed a five-year Total Component Maintenance (TCM) contract for the Airline's Airbus A320 and A340 fleet. The services will be extended end of 2016 to support additional Airbus 320s operated by Philippine Airlines. Lufthansa Technik will support Philippine Airlines at its main base in Manila, the Component Service offices in Manila and Shenzhen will coordinate the customer support. Maintenance, repair and overhaul services will be carried out at Lufthansa Technik's component Centres in Hamburg, Germany and Shenzhen, China.

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Personalized solutions customized to meet your aviation business needs.

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Aircraft Propeller Service opens Brazil facility

Aircraft Propeller Service, one of the leading commercial propeller Maintenance Repair Organizations (MROs), continues its global expansion. The company announced the opening of its new facility in Atibaia, Brazil, located approximately 90 kilometers from São Paulo's international airport and less than 60 kilometers from Viracopos, a major hub for the region's largest ATR operator, Azul. Serving as General Manager for the APS Brazilian facility is Fabio Nascimento, who formerly served as Operations Manager for the facility when it was owned by UTC. The new APS facility is fully-staffed with all tooling and machinery already in place. The facility's full 568F blade repair capability is online for ANAC certification by the end of April, 2016. According to APS Vice President of Sales and Marketing, Dennis Santare, "Our goal with the Atibaia facility is to provide a convenient, cost-effective logistics point for our existing Brazilian customers. It is part of our overall business plan to build out our network of facilities in key locations worldwide." In addition to the new Brazil shop, APS is planning to open a new facility at Kuala Lumpur International Airport in Malaysia later this year.

Aircraft Propeller Service opens new Atibaia, Brazil facility *Photo: APS*

ThyssenKrupp further expanding production and logistics capacities at Varel location

ThyssenKrupp Aerospace, a company in the Materials Services business area, is further expanding production and logistics capacities at its Varel location. This year, the aviation experts of the ThyssenKrupp Group are expected to move into an additional production and logistics building for the manufacture, storage and transhipment of aircraft components at the Aeropark. Garbe Logistic AG, investor and project developer, has already started work on the approximately 4,400 m² logistics facility. "At Varel we supply a comprehensive line-up of materials and materials-processing services for Premium AEROTEC, extending from the just-in-time delivery of processed metals to the kitting of finished parts," explained Hans-Josef Hoss, Management Board member of ThyssenKrupp Materials Services GmbH, who added, "Following the extension of the contract in June 2015 for the takeover of supply chain management over the next decade, the expansion of the production and logistics capacities is an important step in order to cope with rising customer demands and further optimize Premium AEROTEC's processes." The combined production and logistics building at Aeropark in Varel, in the German district of Friesland, is the extension of an already existing property. The Aeropark, situated directly in a commercial and industrial area, is in immediate proximity to the plant of aircraft manufacturer Premium AEROTEC.

SR Technics wins major turnkey cabin modification order

SR Technics has signed a major turnkey cabin modification integration contract with Intrepid Aviation, a leading global aircraft leasing company. SR Technics will now manage and implement all the design engineering and embodiment work required for the major redesign and enhancement of seven of the lessor's Airbus A330 cabin interiors. This innovative cabin modification turnkey contract provides Intrepid Aviation with dedicated and optimum hangar slots to meet their customers' critical delivery requirements. SR Technics' Engineering Centers of Excellence in Dublin and Zurich will formulate all the complex cabin modification design specifications, supply chain management sourcing and organizational planning. Working closely with the Airworthiness Authorities, SR Technics will obtain all the required Supplemental Type Certificate (STC) approvals. SR Technics' Center of Excellence in Zurich will perform the Cabin Modification Installation, including fitting state-of-the-art In-Flight Entertainment systems and wireless capabilities and all the other embodiment work required on the seven Airbus A330 cabin interiors. Additionally, SR Technics will conduct heavy maintenance checks and aircraft painting as part of the contract.

G&G Aviation becomes European representative of Global Engine Maintenance

Global Engine Maintenance (GEM) has appointed G&G Aviation of Rome as its exclusive representative for the European Union, Norway and Switzerland. GEM, based in Doral Florida, specializing in the maintenance, overhaul, leasing, trading and exchanging of CFM56 and JT8D aircraft engines. With the benefit of its new facility, experience of its personnel and management of its inventory, GEM can produce engines with quick turn-around time and excellent performance. In addition, GEM has trained mechanics ready to be deployed anywhere in the world at a moment's notice to deliver unsurpassed service for unscheduled maintenance events. As a result, GEM has managed to repair hundreds of commercial jet engines and built a reputation for superior service and reliability.

HEACO XIAMEN carries out 120th passenger-to-freighter converstion for HAECO Group *Photo: HEACO*

HAECO XIAMEN carries out 120th passenger-to-freighter conversion for HAECO Group

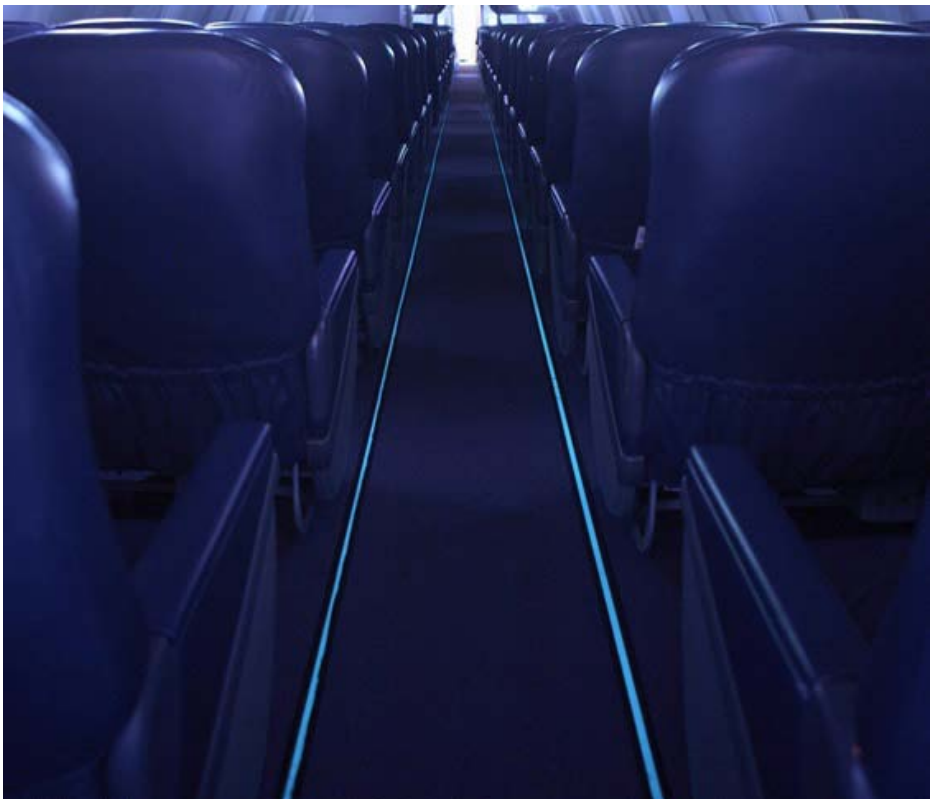
HAECO Xiamen has carried out a landmark 120th Passenger-to-Freighter (PTF) conversion for the HAECO Group, delivering a Boeing 757-200PCF to Chinese freight carrier, SF Airlines. As the world's first Maintenance, Repair and Overhaul (MRO) service provider to conduct a 747-400BCF conversion, HAECO Xiamen is an industry leader in the field and a centre of excellence for PTF conversions for the HAECO Group. The company has more than 20 years' operational experience carrying out PTF conversions on Boeing 737-300/400, 747-200/300/400 and 757-200 aircraft in association with Original Equipment Manufacturers (OEMs) and Supplemental Type Certificate (STC) holders. Modification work is supported by comprehensive on-site parts manufacturing capability for sheet metal as well as sub-assembly and wiring shops.

A320 operators now able to upgrade to saf-Tglo SuperSeal UltraLite emergency floorpath lighting

Following certification by the FAA and EASA, operators of Airbus A320 Family aircraft are now able to upgrade the emergency floor path marking to the latest version of STG Aerospace's market-leading saf-Tglo photoluminescent system, SuperSeal UltraLite (SSUL). First launched in 1995 and with continuous evolutions ever since, saf-Tglo stores and simultaneously emits light and marks the way to the emergency exits after a short charging period. Requiring no power source, saf-Tglo is a low cost, maintenance free solution for emergency floor path lighting and features a unique fully-sealed design that eliminates fluid ingress and can reduce maintenance costs by up to 80%. Now installed on over 10,000 aircraft operating for over 300 airlines worldwide, saf-Tglo is one of the market-leading photoluminescent floor path marking systems.

Active winglets certified for Cessna Citation jets

Tamarack Aerospace Group has released that the European Aviation Safety Agency (EASA) has granted a Supplemental Type Certificate (STC) for its ATLAS brand Active Winglet system to be installed on the Cessna (model CE525) CitationJet and its variants; the CJ; CJ1; CJ1+. EASA certification for the Cessna M2 will follow in March, 2016. US certification by the FAA for all four variants is expected by this summer. Certification of Tamarack Aerospace's Active Winglet technology culminates a three year effort that included more than 300 hours of test flights on its testbed aircraft N86LA, a 'straight CJ' C525-0012, built in 1992. During that time the jet has consistently flown at Max Takeoff Weight to its ceiling limit of FL410 in around 30 minutes or less.



Saf-Tglo SuperSeal UltraLite emergency floorpath lighting *Photo: STG Aerospace*

Gulf Air extends heavy maintenance agreement with Joramco

Gulf Air, the Kingdom of Bahrain's national carrier, has announced a 3-year extension of its Maintenance, Repair and Overhaul (MRO) agreement with Joramco under which Joramco will provide Gulf Air with Heavy Maintenance checks for its current fleet of 28 aircraft – A330s, A320-ERs, A320s and A321s. The agreement, originally signed in January 2013, has been extended for three more years, ending 31st December 2018. All maintenance will be performed in Joramco's regional MRO facility at Queen Alia International Airport, Jordan.

Active winglets certified for Cessna Citation jets

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Finance News

Aircastle posts fourth quarter and full year 2015 results

Aircastle has reported total revenues for the fourth quarter of US$208.3m, a decline of US$30.0m, driven by lower maintenance revenues, which typically arise at lease end. Maintenance revenues were US$37.1m lower due to fewer aircraft coming off lease during the fourth quarter of 2015, as compared to 2014 when they early terminated the leases of several aircraft that had been leased to airlines based in Russia and Ukraine. Adjusted EBITDA for the fourth quarter was US$211.0m, down US$22.2m from the fourth quarter of 2014, due primarily to lower maintenance revenues, partially offset by a US$5.9m increase in lease rental and finance lease revenues,

and an increase of US$5.2m from gains on sale of flight equipment. Adjusted net income for the quarter was US$54.3m, down US$25.9m year-over-year. The decrease was due primarily to lower maintenance revenues and a US$7.1m increase in depreciation expense, partially offset by a US$9.5 million reduction in non-cash impairment charges arising from the early return and sale of several aircraft during the fourth quarter of 2014.

Total revenues in 2015 were US$819.2m, essentially level with the previous year. Lease rental revenues increased US$18.8m versus the previous year, reflecting the growth in flight equipment. However, this increase was largely offset by a US$17.0m reduction in maintenance revenues caused by a lower number of aircraft coming off lease in 2015 compared to the previous year. Adjusted EBITDA for the full year was US$832.1m, up US$39.8 million versus 2014, primarily reflecting US$34.9m more in gains from the sale of flight equipment and a US$6.5m increase in other revenues which included termination fees associated with the disposal of freighter aircraft during 2015. Adjusted net income for the full year was US$142.3 million compared to US$167.6m in 2014, a decrease of US$25.4m. Adjusted net income in 2014 excluded a US$36.6m charge associated with the early repayment of 9.75% debt.

ATSG issues outlook for stronger 2015 results

Air Transport Services Group said that due primarily to better-than-expected results from its airline operations in the fourth quarter, its financial results for 2015 are likely to exceed management's earlier guidance. ATSG now projects that its Earnings Before Interest, Taxes, Depreciation and Amortization (EBITDA) from continuing operations, adjusted for unrealized effects of interest rate derivative gains and losses, will likely be in a range of US$196-200m for 2015. That compares with Adjusted EBITDA guidance first provided last November of US$190-195m for 2015. Adjusted EBITDA from Continuing Operations for 2014 was US$179.5m. The change in ATSG's 2015 outlook reflects increased demand for ATSG's services, primarily for the 767 freighters it operates on a contracted Aircraft, Crew, Maintenance & Insurance (ACMI) basis. Results from the ACMI Services segment were greater than projected in the fourth quarter. The fourth quarter also benefited from more 767 freighters that were dry-leased to external customers at year-end: three more compared with the start of the quarter, and six more than at the end of 2014.

Magnetic MRO acquires MAC Interiors

Magnetic MRO, an Aircraft Maintenance and Repair Organization, has completed its acquisition of MAC Interiors, a UK-based aircraft interiors production and engineering company. Aircraft modifications, interior upgrades and retrofitting are expected to outgrow the general pace of development of the global MRO industry. Thus the acquisition of MAC Interiors is a strategic step for Magnetic MRO in building its presence in this fast-developing segment of premium MRO services. With more than 50 years of trading history, MAC Interiors operates under EASA Part 21J, Part 21G, Part 145 certificates, and owns STC rights to a number of completed aircraft interior projects. Over the last 18 months Magnetic MRO expanded into full aircraft painting, engines on-wing and off-wing services, components solutions, and other areas of MRO activities. The newly acquired interiors business accelerates the overall goal of being a natural first choice for Total Technical Care solutions for airlines, asset owners, and OEMs. In addition to the strategic fit, it also expands its Magnetic MRO presence in the UK market, which is strategically important for access to customers, aviation specialists, efficient warehousing, and logistics services.

DVB Bank and Challey Group close financing facility amounting to US$121m for purchase of five aircraft

DVB Bank, a leading international transportation finance specialist, and Challey Group, a wholly-owned Irish subsidiary of Alitalia, Italy's national airline, have announced the closing of a financing facility amounting to US$121m for the purchase of five aircraft. The facility includes one Airbus A330-200 aircraft which is operated by Alitalia mainline, and four Embraer regional aircraft (two E175 variant and two E190 variant) operated by Alitalia's regional subsidiary Alitalia CityLiner, and covers a financing term of eight years. DVB Bank and Investec Bank acted as joint underwriters of the transaction. DVB Bank acted as sole arranger and agent of the transaction.

Monarch Aircraft Engineering extends maintenance contract with La Companie

Monarch Aircraft Engineering (MAEL), the engineering division of The Monarch Group, has extended its agreement with La Compagnie to include airframe heavy maintenance. Under this extended agreement, MAEL will perform a C Check on the Boeing 757-200 ER at its maintenance facility at London Luton Airport. MAEL currently supports La Compagnie's transatlantic operation with a full suite of line maintenance services at London Luton Airport. La Compagnie operates an All Business Class Boeing 757-200 ER on this route.

US$1.2bn fresh equity injection into Avolon

Avolon, the international aircraft leasing company, has issued an update for the 2015 fourth quarter ('Q4') and full year and has announced that Bohai Leasing is investing an incremental US$1.2bn of equity capital in the business, bringing Avolon's total available liquidity to US$2bn to accelerate growth in 2016 and beyond. Avolon begins 2016 as a wholly-owned, indirect subsidiary of Bohai Leasing, a global leader in transportation (container and aircraft) leasing and is entering an exciting phase of growth. Following the completion of the merger on January 8th, 2016, Avolon has assumed management of Hong Kong Aviation Capital (HKAC) with a total fleet of over

400 aircraft. Avolon is now the core aircraft leasing brand for Bohai Leasing and its parent, HNA Group. Together with HNA Group and Bohai's other aircraft leasing interests, Avolon is the world's fourth-largest aircraft leasing business by asset value. Transactions in the 4th quarter included the delivery of 2 aircraft to 2 airlines in 2 countries, the sale of 5 aircraft with letters of intent in place for 16 aircraft disposals in 2016. Furthermore, Avolon Capital Partners (ACP) acquired one aircraft on lease during the 4th quarter, bringing the total aircraft under management by ACP to 9.

Transactions for the full year 2015 included: the delivery of 32 new aircraft to 17 airlines in 14 countries, the signing of new sale-and-leasebacks for 38 aircraft, of which 22 deliver in 2016 and 13 in 2017. In total ACP sold 17 aircraft in 2015. Additionally, the company replaced three US$125m unsecured debt facilities at a margin of 200bps, with a single US$525m unsecured debt facility at a margin of 175bps and an extended availability period until 2019.

Other News

Airbus Helicopters has partnered with **Thales** and **Helisim** (Helisim is a Joint Venture between **Airbus Helicopters, Thales and DCI**) to develop and deploy the full flight simulator (FFS) for the H160. In line with the "born ready" strategy implemented by the H160 since the beginning of its development, the FFS will be available to support the H160's entry into service. This partnership between experienced and recognized companies will offer a complete range of training services based on a level D FFS using Airbus Helicopters' Simulation Package "Expertise" to future H160 operators.

REVIMA, a leading landing gear MRO established in France, has launched its dedicated "On Wing Services" Team. Capitalizing on over 60 years of MRO experience and supported by one of the most comprehensive landing gear repair and overhaul capabilities, REVIMA offers a full suite of On Wing Services: AOG Support, on site gear servicing, aircraft configuration check, partial disassembly for parts replacement, etc. An experienced team of REVIMA experts is on standby to fulfill customer requirements and can be contacted via email or through the usual communication channels. To further improve the services offered to its customers, REVIMA has labelled EAS Services – a Perpignan (France) based Line & Heavy Maintenance Service provider – as an approved Partner.

Honeywell Aerospace's JetWave wireless in-flight connectivity system has received U.S. Federal Aviation Administration approval for the Boeing 757. Honeywell's JetWave is the exclusive hardware for aircraft to connect to **Inmarsat's Global Xpress**, the high-speed broadband satellite network spanning the globe that will provide fast, seamless and reliable connectivity over both land and water. The certification validates the reliability and capability of Honeywell's hardware to connect to Global Xpress (GX) Aviation service to provide passengers with the same high-speed Wi-Fi experience they get at home or in the office, while traveling at 35,000 feet. JetWave and GX Aviation will enable fliers to have seamless access to onboard Wi-Fi to browse the Internet, check emails, stay connected on social media, watch videos and more, even on transcontinental flights. It also simplifies the path for U.S. government approval for the use of JetWave hardware on other aircraft.

Information Technology

Boeing has reported the full integration of its Electronic Logbook (ELB) within **Air New Zealand's** 787 Dreamliner fleet, replacing paper logbooks with electronic records that improve operational efficiency and reliability. Air New Zealand is among the initial airlines that have gained operational approval for use of the Electronic Logbook application with the 787 Dreamliner. The airline currently operates a fleet of six 787-9s, with an additional six on order.

Gogo, a leader in providing broadband connectivity solutions and wireless entertainment to the aviation industry, added nearly 1,100 commercial and business aircraft with broadband connectivity technologies to its installed fleet in 2015. In addition to a record number of installs in 2015, Gogo has also grown its awarded backlog of 2Ku aircraft to more than 800 aircraft. The company is ramping-up installations and expects to have most of those aircraft installed by the end of 2018. Across commercial and business aviation, Gogo operates more than 11,000 connected aircraft systems all over the world.

Kalstar Aviation, an Indonesian airline based in Jakarta, has selected **Alkym Management and Control System for Aircraft Maintenance** to ensure it has world-class software at the core of its technical operation. Alkym Management and Control System for Aircraft Maintenance is one of the most comprehensive and cost-effective solutions designed specifically for the MRO industry. It has over eighteen different modules that are aimed at increasing operational efficiency, reducing costs, improving performance, and maximizing productivity while enhancing growth and meeting future challenges. The Seabury MRO Solutions' project team will be on site in Jakarta in early 2016 with the team ensuring that Kalstar Aviation gets the maximum benefit from the twenty concurrent users of Alkym license they have elected to begin with.

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Size matters

Large engine MRO is very dynamic. From complex new materials and technologies to developing solutions to keep mature engines flying more efficiently. ***Keith Mwanalushi*** finds that the large engine overhaul market couldn't be any bigger.

Full year results issued by Rolls Royce for 2015 show just how challenging it has been for the engine manufacturer. Underlying revenue stood at £13.4bn (FY 2014: £13.9bn), down 1% and underlying profit before tax £1,432m (FY 2014: £1,620m), down 12%. Rolls-Royce has cut its dividend payment to shareholders for the first time in almost 25 years.

In the meantime however, Rolls Royce has won a $2.7bn order from Norwegian for Trent 1000 engines and long-term service support for 19 new 787 Dreamliners.

Big engines mean big business. MROs are quickly adding capacity for new and upcoming large engines. Lufthansa Technik (LHT) and GE Aviation are working on a JV engine shop to service GEnx-2B and GE9X Engines for 2018. In the meantime LHT has established capabilities in Frankfurt to perform GEnx-2B quick turn shop visits.

AFI KLM E&M have invested more than €100 million with the introduction of a new engine shop "Constellation" at Orly, and "Zephyr" test cell at Charles de Gaulle and specific GEnx tooling in Amsterdam.

Regarding widebody engines, MTU Maintenance currently serves GE Aviation's CF6-50/-80C2 and GE90-100/-115B engines on an independent basis. Further, MTU Aero Engines is a key risk and revenue sharing partner (RRSP) of the OEMs for the development and production of several major (next generation) engine programmes.

Joe Sylvestro, VP Aftermarket Operations, Pratt & Whitney

LHT is encouraging Engine OEMs to improve interchangeability of Fan modules. *Photo: Lufthansa Technik*

On the CF6 and GE90-110/-115B, MTU has full in-house capabilities – "from disassembly, cleaning and inspection, parts repair to assembly and test," tells Uwe Zachau, Director Industrial Engineering at MTU Maintenance in Hannover. "Further, we offer the full suite of supporting services such as spare engine support, on-site and on-wing services, fleet management, accessory repair and line replaceable unit (LRU) management, as well as engine condition monitoring."

On the GE90, Zachau says MTU owns two spare engines to support MRO customers. "For all other engine types, we specialise in the repair of the modules we are responsible for as an OEM, which includes the development of OEM repair schemes."

Pratt & Whitney's (P&W) Geared Turbofan (GTF) engine is probably the most advanced, high-tech propulsion system flying today. "It is designed with maintenance in mind," assures Joe Sylvestro, VP, Aftermarket Operations at P&W. Sylvestro says the GTF engine has 2,000 fewer air foils, six fewer stages and lower engine core temperatures versus conventional turbofan engines.

"From a line maintenance perspective, we have gathered worldwide operator input to design the GTF engine internals and the externals to simplify line maintenance. The fan drive gear system is designed to run for infinite life with no life limited parts," Sylvestro states.

AAR's supply chain group has been investing heavily in inventory that supports some of the future engine maintenance requirements. "Where suitable we have purchased engines to support the demand for surplus overhauled used contents and spare engines," says Carl Glover, VP Sales and Marketing – Americas, AAR's Aviation Services Group.

Also, Glover adds that AAR's OEM distribution business is heavily involved in working with many of the OEMs the company represents for operators of the newer large fan engines. "AAR does not own an engine MRO, so our focus for capacity has been aligned to our spares and component maintenance activities such as for engine LRUs and components in our Amsterdam and New York component repair shops," Glover clarifies.

FL Technics is investing in direct engine manage-

Big data will help maintain new engines. *Photo: GE Aviation*

ment capabilities. The company launched CF6-80C2 material and engine management solutions.

Asta Albrichte, Head of Engines and Components Management at FL Technics: "We have also invested in several CF6-80C2 teardowns and these steps are already returning the investment."

Furthermore, FL Technics took on the development of one-stop solutions for Airbus A330 base maintenance services that will be launched at its hangar in Kaunas. "This will connect our PW4000-100 and CF6-80E2 capabilities in consumables, tooling as well as engine and line maintenance with QEC and LRU support. We also invested in replenishment as well as tooling and expect first fruits from this investment already this year," Albrichte reports.

New engine types entering service will see advances in parts repair technologies and methodologies. With the introduction of new engine types, OEMs have a grip on the aftermarket.

"Increased focus in DER technology development as well as main focus in engine parts repair according to OEM technologies is visible," says Albrichte. "Keeping in mind the active implementation of improvements and industry upgrade programmes, we foresee active new-for-used programme developments introduced by the OEMs."

FL Technics sees a lot of independent DER repair holders switching their development and strategies from alternative solutions to becoming subcontractors of OEM – sub-repairs, OEM services centres for coatings or casting manufacture.

Generally, entering new engine programmes is highly capital-intensive, especially for newer or upcoming engine models: depending on the engine type, the required infrastructure investments and services' and extent to be offered, investments can run from USD 15-20 million.

> "We will benefit from very first operational experience being among the launching customers to fly these new types in our own LH Group."
>
> Claus Bauer VP Engine Service, Lufthansa Technik AG

From a technology standpoint, according to MTU, next generation engines have the following characteristics:

• Complex new materials/technologies, such as single-crystal or composites. These materials lead to higher thermodynamic cycles and require new processes to be developed in order to become repairable. One can assume that only high-tech companies will have the technical ability to develop and introduce such repair capabilities in-house. As a consequence the engine MRO provider landscape is likely to change: on the one hand, providers focusing on engine disassembly, assembly and test; on the other hand, a few select companies (also) specialised in high-tech repairs.

• Lower part count, which in turn should lead to less parts repair as such, as well as more high-tech versus standard repairs. As those require significant investments, it is very likely that such repairs will be performed in centres of excellence in order to reach a higher level of economies of scale. This means that some providers will no longer provide a comprehensive portfolio of repairs but specialise on certain repairs, either specific components or specific processes. In other words: a lower range of distinctive repairs but higher volumes of specific repairs that may even be performed on an exclusive basis (on behalf of the OEM).

• Optimised design for on-wing repair: MTU estimates that proportionally less visits will be performed off-wing, to the benefit of increasing on-site and on-wing repairs.

"Repairs will be evolutionary from the types we see in today's engines," comments Cliff Topham, SVP of Sales and Business Development at Werner Aero Services, on the subject of new engines.

He says differences are mainly due to the higher cost of parts, due to high technology thus driving potential DER and third party repairs to lower operational costs for those engines out of warranty or PBH type agreements.

Glover feels the focus is on the repair technologies that will be needed to return parts back to service during maintenance practices. "Certainly ceramics and composite materials represent some clearly sophisticated demands for repair schemes and solutions."

He says the hypothesis from some parties is that some components "will not have repair schemes introduced into the manuals," which will impact repair technologies entirely.

"The counter to this is that these items should (by design) last longer in the engine lifecycle. AAR has been in the component repair business for decades and evolved as engines and aircrafts have evolved so we anticipate that will be the case with this next

Claus Bauer VP Engine Service, Lufthansa Technik AG.

generation of engines" Glover foresees.

Sylvestro adds that the repair technology advancements are evolutionary and continue to focus on hot section components to extend engine time on wing with coating enhancements, wear issues and welding and joining technologies. "As more composites are used, repairs with these materials continue to be developed," he observes.

The opinion at Magnetic MRO (like elsewhere) is that new engines will be much more controlled and driven by the OEM compared to previous engines. "It may be that there will be some parts that will be less expensive to replace compared to repair, based on new manufacturing technologies," suggests Filip Stanisic, Head of Engine Maintenance at Magnetic MRO.

Geography has always played an influencing role in MRO. The Asian market and the technologies and services for their engines is expected to continue to grow at a fast pace over the next 20 years. According to Airbus and Boeing, 39% of the worldwide aircraft deliveries will go to Asia.

LHT shares the view that much of the new large engines will be operated from the Asia Pacific region. "The implementation of overhaul capabilities for new large engine types require significant investments," notes Dr. Claus Bauer, VP Engine Service at Lufthansa Technik.

Bauer reveals that LHT and its potential investment partners where applicable will carefully select engine shop sites to be competitive for many years rather than short term optimisation. "Today's logistics allow transportation of engines around the globe to cost efficient MRO providers – being in Asia or elsewhere."

Albrichte feels more joint ventures between OEMs and big operators will create strong local engine maintenance centres in Asia. In addition to that, due to cheaper labour cost and already extensive MRO network of engine parts repair providers in Singapore, China, Malaysia, Thailand and OEM experience, engine maintenance shops "could become good alternative for clients from the CIS, the Middle East, EU and even the US," notes Albrichte.

Engine lease and exchange avoids costly shop visits. *Photo: Lufthansa Technik*

Boom in Asia - MTU Aero Engines at the Singapore Airshow. *Photo: MTU*

In terms of demand trends for large engine MRO Bruno Lesgourges AFI KLM E&M Marketing Manager sees demand for GE90 engine type increasing as the engines get more mature. "Most of VBE engine support agreements have been contracted at the EIS for at least 10 years. At the end of the first long term contract, new discussions start based on experience and perspectives of the airlines with their VBEs," Lesgourges explains.

Glover from AAR observes the continuum of some fleets with a large installed base (CF6 / PW4000) is interesting particularly in the freighter markets. "The 747 demise alongside the twin engine ETOPS fleet preferences are driving demand but also allowed some operators to become very flexible with regards to maintenance solutions and switching to T&M solutions to capture the benefit of the surplus market as fleets mature."

Glover continues and says other carriers are opting for deferral or displacement on some engine types. "GE90, Trent 7& 800, and PW4168 engines have all come on the market recently as some aircraft have been parted out."

LHT will be able to serve large engine types like the GE9X and RR Trent XWB operating on brand new large twin jets. "We will benefit from very first operational experience being among the launching customers to fly these new types in our own LH Group," Claus Bauer tells AviTrader.

For ageing engines, it's imperative to know the right solutions that keep the cost of flying the engines as low as possible. MTU offers two solutions MTUPlus Mature Engines Solutions and MTUPlus Asset Value Maximisation.

For mature fleets, such as the PW4000 and PW2000 engines, operators are demanding more support to drive cost of ownership to a minimum. Sylvestro from P&W agrees: "We are providing new services such as engine lease and engine exchange in which the expense of the shop visit is avoided. Surplus material, including serviceable LLPs, has also become a major force in reducing mature engine maintenance cost."

An area of dramatic innovation will come with the use of "big data" to help maintain engines with much more sophistication, predicting and addressing failure modes well in advance. P&W are working to make engine maintenance events highly predictive and move the focus from reactive to proactive maintenance.

"The tools we have developed proactively look at these types of events and give us an early warning on potential fleet trends. We only expect further growth and integration of our predictive analytics capabilities. At maturity, the GTF engine fleet will be generating more than two petabytes of data annually. That is the equivalent of a new American Library of Congress every year," Sylvestro compares.

EMC on the upswing

EMC Aerospace, Inc. (EMC), based in North Miami Beach, Fla, is an FAA-EASA certified repair station that specialises in the repair of a wide range of components.

In June 2015, Velocity Aerospace Group, Inc., (Velocity), a global provider of MRO services, announced the strategic acquisition with management of EMC. The acquisition expands Velocity's repair capabilities into a variety of key systems, such as power generation, pneumatics, hydraulics, blue water, and electromechanical.

Like Velocity, EMC serves commercial, regional airlines, air cargo, corporate business aircraft, and military and helicopter markets, both directly and through OEMs and other repair companies. EMC also operates a facility in Pompano Beach, Fla.

Edward Monserrat, President at EMC tells AviTrader MRO that the acquisition was the right move that brings several opportunities. "I was really sold on the idea that Velocity would take me and EMC Aerospace to the next level of being the best MRO in the world through the process of merging all the companies we own together and sharing all of the resources available to us. These include access to large sums of capital from our investment group," says Monserrat.

Edward Monserrat, President, EMC

EMC is part of the Velocity Aerospace Group. *Photo: EMC*

Velocity, which has an 80-year history in aviation MRO excellence, operates FAA-certified repair stations in Burbank, Calif., Van Nuys, Calif., and Ft. Lauderdale, Fl., that offer a broad range of test, repair, and overhaul services, including capabilities in avionic, electronic instrumentation, cockpit, and system repairs. In April, 2014, Velocity also acquired E.D.N. Aviation, Inc., a leader in the repair and manufacture of backlit control panels.

Speaking on the benefits of the EMC merger to aircraft operators, Monserrat observes that in today's environment, all the operators are trying to reduce their vendor base and go to a one stop shop.

"Becoming just that is the vision for us going forward," states Monserrat. "We are going to continue to acquire companies until we have the entire aircraft covered from tip to tail. This will help our customers in many ways while allowing them to focus on other things rather than chasing repairs sent out to a myriad of different component shops."

"We at EMC are constantly adding capabilities organically or through acquisitions and mergers. I feel 2016 will be a phenomenal and record year for EMC and the Velocity group, we have assembled a world class sales team that is committed to growth and continued success by following our vision of being the number one MRO in the world," Monserrat foresees.

In the hot seat.....

Keith Mwanalushi speaks to David Barnes, COO, Thomas Global Systems.

AviTrader MRO: What attracted you to this business?

Barnes: I was attracted to Thomas Global because they operate in a segment of the aviation industry that I had previously had very limited exposure to. My history is 20 years + in MRO of Engine Controls, Actuation Systems and Power generation / distribution with large corporations. With TGS, I saw the scope for innovation in Avionics to be both an interesting and challenging niche market, one that TGS is already a key player in. In addition, the fact that TGS is not a massive OEM allows it to be very agile and responsive to the needs of its customer base and the broader market.
It is a rare thing to find an organisation that manages to strike the right balance of professional governance versus responsiveness without becoming too staid or rigid to be able to support compliance and customer needs, I feel that we have this balance right at TGS.

AviTrader MRO: What does a typical day's work entail in your job?

Barnes: My first response would be what is a typical day? Due to the diverse portfolio of products and projects that TGS undertakes the scope and breadth of topics covered can be vast.
- Meeting with our customers and key strategic partners, calls and web conferences to discuss status and obtain feedback.
- Ensuring our activities and efforts are aligned to the customer and our corporate needs
- Coordinating departmental collaboration to get results for TGS and our customers

Along with these rolling activities there is, of course, a strong focus on compliance and regular review and where required revision of our approach, the ongoing review and analysis of financial performance, assessment of market developments and development of related business development activities, oversight of procurement and contractor engagement. I do get time to enjoy a coffee now and then as well.

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

Barnes: Whilst the juggling of multiple technical, commercial and financial priorities is a challenge, I think all leaders become accustomed to this and it becomes 'normal challenging' whereby we just don't notice or acknowledge it as challenging any more. The area which often challenges me is keeping in touch with the people and ensuring we are on top of the issues which are important to the individuals that may not be on our radar. I find the best way to address this is to be present and available as much as possible, not always easy but it is something I'm working toward. A simple example of this is that I choose not to have an office and can be found in various departments within any given week.

AviTrader MRO: What is the core business activity at Thomas Global Systems today?

Barnes: Thomas Global designs, produces and supports innovative electronic systems solutions for aviation and defense. TGS has four broad areas of focus:
- MRO activities on legacy avionics equipment including Cockpit Display Units, CRT Assemblies, High Voltage Power Supplies and Radar Components. All of these activities are subject to the ongoing review and oversight of multiple international regulatory bodies across our Sydney, Australia and Irvine, California facilities; we host a lot of audits!
- Design and production of new avionics products, we currently manufacture a range of cockpit displays focused mainly on operators of legacy cockpits – aligned closely with supporting our customers and operators of older airframes as the original manufacturers cease support. We can offer the combination of support of CRT displays as well as cost effective, plug-and-play CRT-to-LCD replacements for multiple platforms.
- Defence systems activities. TGS has a long and successful history of supporting all branches of the military in Australia, US and other countries with product development, systems integration, manufacturing and ongoing product support. There are several development projects underway on land based, submarine and defence aviation platforms where TGS is either partnering, or acting as prime, in support of customer needs.
- Research and development activities. There is a huge focus on innovation at TGS. Our engineering group consists of Mechanical, Electronics, Electrical, Software & Firmware designers who are currently working on multiple projects and product developments for commercial aviation and military applications. Thomas Global holds several patents and has additional items in the pipeline which we feel will offer innovative solutions in complex aviation and defence electronics.

AviTrader MRO: Cheaper fuel is keeping older aircraft in service longer so what are the challenges of ageing CRT screens in the current environment?

Barnes: TGS has unparalleled experience in the maintenance of CRT displays, and is committed to providing the best long term support for these products. We will be the "last man standing" in avionic CRTs! We are able to offer this due to extensive planning and supply chain development to ensure that we can support our customers' ongoing needs for these legacy systems. The main challenges we are told that operators face with these product lines is the retreat from support of the units by the original manufacturers and the prohibitive cost of full cockpit upgrades. In order to support our customers and the global fleets our approach is twofold:
1. Work with operators who wish to sustain their CRT displays, offer the most cost effective support and the best service levels
2. Develop cost effective LCD retrofit solutions which are truly plug and play, minimising display change out times and negating the need for aircrew training or more expensive full cockpit upgrades.


David Barnes, COO, Thomas Global Systems

AviTrader MRO: What's next in the pipeline at Thomas Global Systems? What are some of the LCD retrofit solutions offered by Thomas Global to the commercial aircraft sector?

Barnes: TGS is developing a family of retrofit display units and related cockpit upgrades which will offer the market an opportunity to guard against obsolescence of CRT display units whilst also allowing operators to cost effectively future proof their existing aircraft with regards to changing air traffic mandates. An example of this is the scope for our products to support the upcoming mandates for Automatic Dependent Surveillance Broadcast (ADS-B), an air traffic surveillance technology that enables aircraft to be accurately tracked by air traffic controllers and other pilots without the need for conventional radar and Required Navigation Performance (RNP) which allows an aircraft to fly a specific path between two 3D-defined points in space. TGS has incorporated these mandated requirements in our design philosophy. In the defence and R & D space, our team has several proprietary concepts under development which we feel will offer innovative solutions for multiple platforms.
This year TGS will be celebrating its 60th anniversary, we anticipate further partnerships with airlines and airframe manufacturers and several product launches are planned, it is a busy and exciting time. We will continue to innovate, support our customers and work with our industry partners.
We look forward to sharing our upcoming products and news with the market during 2016.

Infrared Heating: An alternative approach to drying and curing aircraft parts

Infrared drying and curing can deliver more precise heat, greater speed and greater control than conventional convection processes.

For many drying and curing applications, the improved efficiencies of using infrared radiation (IR) – rather than conventional convection systems – are becoming increasingly important to aerospace manufacturers and MROs, who are always seeking new ways to trim costs and improve production efficiencies.

The availability of a wide range of IR heating elements, standard and custom heating panels, ovens and dryers into which heaters are placed (either new or retrofit) makes the conversion from convection to IR heating for a wide range of drying and curing operations easier than ever.

Used as a highly efficient heat source for many decades, IR heating systems are capable of drying and curing various coatings including primers and other undercoats, thermoset resins, polyurethane "wet look" coatings, urethane and other clear coatings.

In addition to various paints and coatings, some aircraft industry composite materials specialists foresee that the finishing and repair of composite materials used in a variety of aircraft structural components could also benefit from the use of IR heating systems.

Integral benefits of IR

The use of gas or electric IR rather than traditional convection systems enables manufacturers and rebuilders of aircraft parts to improve productivity and throughput by dramatically reducing drying and curing time – a benefit that should be particularly attractive to volume manufacturers of new components. Using IR heat, drying time is often reduced to mere minutes (depending on paint or other coating requirements) versus many hours for convection drying systems – a reduction that can reach the 90+ percent range.

"Due to its vastly improved efficiency, drying and curing with infrared can greatly reduce energy costs," explains Jesse Stricker, founder of Intek, Corp., a manufacturer that specialieses in designing and building electric infrared heating elements, heaters, ovens and dryers. "Infrared heaters require little or no induced circulation (e.g., blowers, fans), are extremely 'zone-able' and less susceptible to humidity."

Stricker adds that IR systems generally save on space. Convection ovens require blowers and ductwork to deliver heated air that serves as the medium of distribution from the heat source to the substrate. The heat from infrared heaters travels invisibly through the air directly to the substrate saving energy, time and

The finishing and repair of compositematerials used in aircraft structural components can benefit from the use of IR heating systems.

Using more efficient infrared radiation (IR) ovens is becoming increasingly important to aerospace manufacturers and MROs.

space. This also makes them more versatile. Plus, in addition to directly heating surfaces, the heat from IR emitters can be reflected onto parts, providing added drying coverage, thereby making additional energy savings and processing efficiencies possible.

"IR drying and curing is cleaner, providing a higher quality finish on coated products," Stricker explains. "Because IR heat transmission is line-of-sight and doesn't depend on large fans or blowers - which are frequently required for conventional convection systems - contamination on the coated surface is virtually nonexistent. This eliminates product rejects and reworking. "

Better control, better results

One of the primary reasons why aerospace parts manufacturers and MROs are converting to IR drying and curing is that it is easier to monitor and control than many convection hating systems.

"It is necessary to understand the behavior of the heat coming from a source, and the fact that the heat must be monitored," Stricker explains. "Each heat zone, for instance, has its own temperature control and thermocouple, the thermoelectric device used to measure the temperature. In the case of infrared heating technology, this allows our zoning to be very tightly controlled. This provides a full-surface reference of the actual IR emitter temperature; you can correlate that by running tests on customer's actual parts prior to presenting our design. This way, you know, for example, 800 degrees at the emitter correlates with 350 degrees at the part, over a specific period of time."

Another critical difference, in drying and curing of paints and other coatings, well-defined heating zones are often required. Multiple zones are trickier with convection heating because it is more difficult to monitor and control multiple blowers and heat sources. IR heating is much more "zoneable," because each emitter module is a kind of building block of the oven or array, it is much simpler to create as many zones and controls as required to achieve the desired results.

Yet, there are drying and curing applications where convection heating can be combined with IR panels to create a hybrid system. One example of such a system is when IR is used at the beginning of a process line to preheat the products before going to a convection oven for drying. This hybrid system may be advantageous when the products have "hidden" surfaces that can be dried more evenly by convection heating. In some instances hybrid systems require a small IR heating chamber to be added before the convection oven; in others, relatively compact IR heaters can be placed within the first section of the convection oven.

Drying and curing of composites

Many of the same benefits, particularly accurate control of drying/curing profiles and flexibility of configuration also apply to using IR systems for composite materials.

These layered or sandwiched carbon-based materials are often used to improve the structural properties of aircraft fan cowls, undercarriage doors, trailing-edge wedges on flight control surfaces, and fuselage undercarriage structural components. Because they are considerably lighter in weight than traditional metals such as aluminum alloys, composites also promise to add significant fuel savings to next generation aircraft such as the Boeing 787 Dreamliner.

Michael Donnelly, an aerospace composite repair specialist, views IR curing of both new and refurbished aircraft components and assemblies using composite materials as providing many of the same benefits as the drying and curing of paint and other surface coatings.

"The tolerances for composite temperature profiles used for curing parts are normally extremely tight from start to finish," Donnelly says. "I have seen convection ovens constructed for that purpose that have ended up being an expensive misstep. On the other hand, the use of a correctly-configured oven or even external heating arrays using highly controllable IR heat sources to tightly match various surfaces may be able to meet those tight profiles more consistently and also accelerate the speed and throughput of curing."

Source: Power PR

Still flying high

End of life solutions are increasingly evoking interest from mature fleet operators. ***Keith Mwanalushi*** finds out how SR Technics' and AerFin's **Beyond.Fleet.Services™** responds to this challenge.

Lower fuel prices could keep A340s operational beyond 2020. *Photo: Airbus*

In July 2015 SR Technics and AerFin announced a joint solution branded Beyond.Fleet.Services™ which is aimed at extending the life of maturing fleets. Initially the programme focused on reducing the operational costs for A340-200/300 aircraft, including engines, airframe and component maintenance, as part of a flexible and comprehensive set of end-of-life managed services.

Ensuring the economic optimisation of maturing aircraft is, as always, a critical factor to consider when airlines begin planning to introduce newer aircraft into their fleet. The A340, for instance, is an interesting aircraft but it has suffered a poor reputation as a result of high operational costs, meaning that airlines supposedly prefer the efficiency advantage of twin-engines.

Klaus-Peter Leinauer VP Sales Europe and CIS at SR Technics believes, however that the A340 has suffered a reputation for high operational cost partly due to high fuel prices at that time. But he says that "today's operational environment has changed significantly and the feedback we now receive from airlines is that the A340 is currently, for some of them at least, the most profitable aircraft." He maintains that this was not only a consequence of very low fuel prices, but also of the fact that in many cases the aircraft were already depreciated.

Leinauer states that "at current fuel prices, the operational costs an airline has with an Airbus A340 aircraft are now lower than with a Boing 777-200. That is also the reason why flag carriers wish to continue operating their A340 aircraft beyond 2020. Another reason," he adds, "why the aircraft proves to be an excellent platform is the fact that used serviceable materials and engines with remaining green-time have become more and more available to help keep operating costs low." Beyond.Fleet.Services™ can combine structured asset acquisition and disposition strategies with leasing and other service options for managing engines, airframes, components and inventory challenges. Beyond.Fleet.Services™ also provides operators with sale and leaseback opportunities for both aircraft and engines, whilst committing to purchasing aircraft at the end of its lease or working life.

Since the launch of Beyond.Fleet.Services™, Leinauer reports that the response for A340 support has been overwhelming. "AerFin and SR Technics are engaged in progressive discussions with numerous operators with sizeable A340 fleets. Announcements regarding significantly large transactions for those fleets will follow shortly, although, smaller transactions involving green-time engines for lease have already been closed for our customers."

Leinauer also stresses that Beyond.Fleet.Services™ is not limited to the A340 platform. "The reason we started with this platform is from feedback received from our customer survey, which clearly identified the pressing need for us to develop this particular end of life solution."

Bob James CEO AerFin adds "combining the commercial and technical expertise at AerFin plus access to significant capital through a major institutional investor with the extensive capabilities of SR Technics, Beyond.Fleet.Services™ could provide operators and owners with substantial opportunity to reduce the cost ownership whilst maximising their earnings potential with mid to end of life assets.

AerFin is already engaged in E-Jets, A320 and B737NG platforms and are looking to expand Beyond.Fleet.Services™ to include these platforms. The CFM56-5B engine would be a prime target for Beyond.Fleet.Services™ considering the introduction of the A320neo."

"The concept of Beyond.Fleet.Services™ works for all platforms which are maturing, thus also the 737 Classics, and later on the A320ceo," concludes Leinauer.

Philippe Couteaux

Philippe Couteaux has joined Aircelle in the roles of Vice President for Strategy, and Vice President of the company's Customer Support and Services operation. Couteaux will direct Aircelle's processes and innovation to expand and strengthen the company's position in its core markets as Aircelle develops additional nacelle systems and ramps up their production.

After 4 years heading up several KLM E&M's Aircraft Hangar Maintenance divisions, **Dennis Wetjens** has taken up his new position as Managing Director at EPCOR, the AFI KLM E&M subsidiary specializing in the repair and maintenance of pneumatic systems and Auxiliary Power Units (APUs). He takes over from **Romain Helmer**, now AFI KLM E&M VP Sales Europe & Key Accounts.

Effective immediately, **Dr. Roland Schütz** has been appointed Chief Information Officer (CIO) of all Lufthansa Group airlines. Alongside the premium hub airlines Lufthansa, Austrian Airlines and Swiss, are the flight operations of the second brand, Eurowings, which is to be developed into the number 3 in European point-to-point traffic. In this new role, Schütz, to date CIO of Lufthansa Passage Operative Business, will consolidate all relevant digitalization programmes in the IT sector. Thus the digital transformation of all airlines in the Lufthansa Group is to be accelerated. The aim is to serve customers of all airline brands with the most modern digital interfaces, mobile applications and user-friendly booking and handling processes.

Bombardier has appointed **Chris Milligan** as Vice President, Services Sales and Authorized Service Facilities (ASFs). Mr. Milligan will be based in Dallas, Texas. Mr. Milligan began his career with Bombardier in 1996 within its then fractional jet ownership division, and has since held diverse positions of increasing scope and complexity. Most recently within the Service Centre Network, Mr. Milligan was Director, ASFs, Mobile Response & Services Growth, establishing and leading maintenance relationships with more than 50 ASFs in 26 countries.

SR Technics, one of the leading providers of technical solutions to airlines, has enhanced its management in the fast-growing markets of the Americas, Europe and Asia Pacific by creating three new Regional Head of Sales positions. Reporting directly to SR Technics' Chief Commercial Officer, **Andrew Best**, they will be responsible for boosting the sales drive and further improving customer relationship management in the Americas, Europe and Asia Pacific. In this role they will lead their respective regional sales teams and support SR Technics' major business units, including Aircraft Services, Component Services and Engine Services. The three new Regional Heads of Sales are **Caroline Vandedrinck** in the Americas, **Klaus-Peter Leinauer** in Europe, and **Thomas Kennedy** in the Asia Pacific region.

Philippe Keryer

Thales has appointed **Philippe Keryer** as Executive Vice-President, Strategy, Research and Technologies. He succeeds **Hervé Multon** who has been appointed Executive Vice-President, Europe and International Operations.

Willis Lease Finance has released that **Brad Forsyth** will be resigning as Chief Financial Officer, effective February 18th, 2016. A search for a permanent replacement has been initiated. Following his departure and during the Company's search for a permanent replacement, functions previously performed by Mr. Forsyth will be managed with existing personnel. The Company will also bring in qualified temporary assistance as needed.

OHS Aviation Services, the refurbishment specialist from Berlin-Schönefeld, has appointed **Dennis Neumann** as Chief Commercial Officer (CCO). Neumann, who succeeds **Stuart Burrows**, has already worked for ten years in business aviation and aircraft refurbishment and will be responsible for developing market opportunities and project management. Neumann has joined OHS Aviation Services with immediate effect. Prior to this appointment Neumann worked in senior sales positions at Jet Aviation Basel, Lufthansa Bombardier Aviation Services (LBAS), and Altenrhein Aviation. He started his career at Lufthansa Private Jet.

Wojciech Stradowski

On January 1st, 2016, **Mr. Wojciech Stradowski** was appointed as Workshop Manager at LOTAMS. Mr. Stradowski has 18 years of work experience in a wide range of ISO production processes, lean manufacturing and production planning. He started working at LOTAMS, in the second half of 2013, as a section leader in production special services workshop, executing together with his team the structural repairs of aircraft components. The main task to perform in Mr. Stradowski's new job will be the implementation of manufacturing process control and maintenance processes.

Willis Lease Finance Corporation has reported that **Brian R. Hole**, its current Chief Investment Officer, will be promoted to President following the retirement of **Donald A. Nunemaker**, effective March 31st, 2016. In his time with the Company, Brian has spearheaded efforts to more-actively manage and trade from within Willis Lease's existing portfolio of jet engines, developing important strategic relationships for the Company along the way. In addition, he has led efforts to increase asset diversification within the portfolio, resulting in the acquisition of over US$100m of mid- to late-life commercial aircraft both for lease and trading. Mr. Hole will continue the Company's focus on these areas as President.

TrueAero has appointed **Stratton Borchers** as their new president. Mr. Stratton's vast experience and industry knowledge of finance will guide TrueAero's global expansion as the company extends its sales into new aviation product lines tailored to serve airline operators and MROs worldwide.