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# MRO

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## Strictly business

### Executive jet MRO

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Pemco World Air Services

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from around the world

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**MRO**

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**Opinion**

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**All that regulatory stuff**

In this edition of AviTrader MRO we have analysed the business aviation MRO market covering a number of issues from NDT capability to interior modification work.

One area we did not visit in our cover story was that of regulatory / guidance issues that need to be addressed or reevaluated in order to more easily gain approvals for executive jet maintenance and repair, so we will discuss this here.

The companies we interviewed, SR Technics, Jet Aviation, Jetaire, MJets, Avianor and JetMS all weighed in on the topic and I've compiled some of the points they raised.

Regulatory guidelines and rules develop every year, which needs to be considered when modifying the aircraft. Most of the rules are coming from the airliner market, so special needs of the VIP customers are not necessarily considered. This is an area which could be improved to make the industry more efficient.

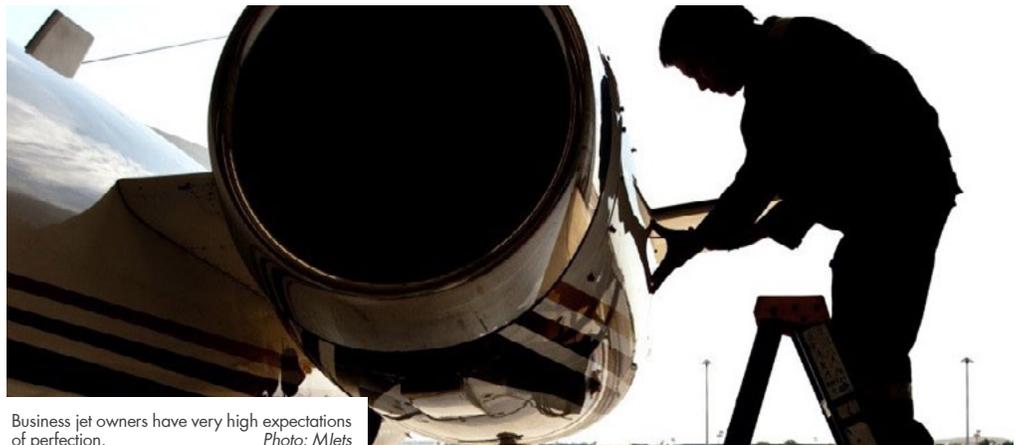
Trying to get an STC through the FAA today is not a fun exercise especially in the completion segment of the business. Minor interior refurb and some avionic modifications are not so bad but it seems that the FAA has lost a lot of their expertise in the completion market segment and is pushing the industry to

go to ODA's for all the review and approval process before they sign off on it. They say it's because they do not have sufficient man-power which may be true with previous budget cuts etc. but now the good ODA companies are becoming overloaded and do not have much schedule elasticity.

One EASA Part 145 certified MRO facility, only sees a possibility to streamline some non-EASA/FAA countries' maintenance and repair approval procedures as well as regulations. Most regulatory and guidance issues that they encounter are related to bureaucracy, sometimes to political situation, rather than strict national requirements for business jet MROs.

And finally a key challenge going forward is achieving open skies throughout Asia Pacific. It is critical that the multiple agencies that govern airspace in the region understand that business aviation brings economic benefits and value to economies different to commercial aviation, yet of equivalent or higher value to regional and global economic growth. A common regulatory platform that ensures freedom of flight movements across borders would be very useful.

Happy reading!  
Keith Mwanalushi  
Editor



Business jet owners have very high expectations of perfection. Photo: MJets

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**WHEN RESULTS MATTER**



E190-E2 system lightning protection tests started Photo: Embraer

### Embraer E190-E2 system lightning protection tests started

Embraer released that the first month-long phase of the two-phase E190-E2 system lightning protection tests has started. The test program involves physical tests to prototype #4. Electrical discharges are simulated from a structure enveloping the aircraft. Induced current passing through a critical components harness is measured to evaluate the effects of lightning strikes. In phase two, test labs validate data gathered from the aircraft. Lightning protection is required for certification by civil aviation authorities. A manufacturer must prove that there will be no catastrophic failure if the aircraft is struck by lightning.

### Werner Aero Services places CFM56-5B and CFM56-7B nacelle assets in Paris

Werner Aero Services has placed additional nacelle assets in Europe, this time in Paris Charles de Gaulle, to support CFM56-5B and CFM56-7B engines. The assets are certified and ready for immediate shipment 24 hours a day. This move is specifically intended to better support Airbus operators in Europe, the Middle East and Africa. The Paris location was carefully chosen as an additional distribution point to be centrally located and reduce turn-around-time.

### Ameco and SF Airlines ink RB211 engine contract

Ameco and SF Airlines has signed a ten-year contract for engine services. The Chinese freight carrier contracted Ameco for repair and overhaul for forty RB211 engines powering its Boeing 757 fleet. As the partner of SF Airlines since the carrier's startup, Ameco provided services in the field of engine, airframe, component, and line maintenance and freighter conversions. Ameco acquired the MRO ability on RB211 in 1993 and has the approvals of CAAC, FAA and EASA to conduct overhaul and modification services on this type.

### N3 Engine Overhaul Services receives aviation authority approval for Trent XWB engine powering Airbus A350

N3 Engine Overhaul Services (N3), the joint venture between Lufthansa Technik AG and Rolls-Royce plc. set up for the purpose of maintaining and repairing aircraft engines, has been authorized to maintain and repair the engines of the Airbus A350. The federal aviation office (LBA) awarded N3 the operating license as a part 145 maintenance organization for the Rolls-Royce large engine type Trent XWB. Approval has been secured on schedule, before the planned delivery of the first

Airbus A350 to Deutsche Lufthansa, which is expected in the winter and will be based in Munich. Lufthansa Technik will provide all aircraft maintenance and spare parts for the Deutsche Lufthansa Airbus A350 fleet. As part of this extensive maintenance concept, N3 Engine Overhaul Services is responsible for maintaining the Trent XWB engines. It is expected that N3 will start receiving planned deliveries of Trent XWB engines at Arnstadt in the coming years. N3 mechanics are currently using a Trent XWB training engine to test tools and to apply assembly processes, approved by LBA.

### Maltese jet operator entrusts Jet MS with Bombardier Challenger 850 base maintenance

Jet Maintenance Solutions (Jet MS), a global provider of tailor-made MRO services for business and regional aviation, has signed a Bombardier Challenger 850 base maintenance General Terms Agreement (GTA) with Blue Square Aviation Group Malta. The Maltese company-operated jet has already reached the Jet MS' hangar, where it will undergo E/C/G inspections, OOP inspections, structural inspections as well as defect and corrosion rectification. Cooperation between the companies started back in 2015. Jet MS also supports Blue Square Aviation Group Malta with AOG logistic services and spare parts supply solutions.

### Pattonair gains Pratt & Whitney approval for global supply chain service.

Pattonair has achieved qualified approved supplier status from Pratt & Whitney to supply standard hardware and detail components to Pratt & Whitney globally, and for Pattonair to supply its sub-contractor and MRO base. Pattonair received the approval by meeting Pratt & Whitney's rigorous quality standards and as a result of its excellent relationship and performance supplying "C" class components and value-added services to multiple UTAS facilities globally within United Technologies group.



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Jet Aviation Basel Completions Center  
Photo: Jet Aviation

### Jet Aviation's Completions Center takes delivery of first BBJ 777-300ER for completion in Basel

Jet Aviation's Completions Center in Basel has taken delivery of the first of two BBJ 777-300ERs ready for interior completion, commissioned by Boeing on behalf of a government client based in Asia. The aircraft arrived mid-October and was accepted by the Completions Center following an incoming inspection. This is the first BBJ 777 VVIP completion for Jet Aviation and the first of two aircraft for this Boeing Business Jets customer. The BBJ 777-300ER has a cabin size of 3,641 square feet (338 square meters) and a range capability of 9,220 nautical miles (17,075 kilometers).

### West Star Aviation to overhaul Embraer Phenom 100 and 300 landing gear

West Star Aviation has entered into agreement with Embraer to accomplish Phenom 100 and 300 96-month landing gear overhauls. West Star will have two facilities located in Grand Junction, CO and Chattanooga, TN, dedicated to landing gear overhaul. Grand Junction, CO will be expanding their current landing gear shop into a 21,000 ft<sup>2</sup> state-of-the-art facility. The expansion will include chemical processing, plating capabilities, machining and additional painting operations. Chattanooga will work from their existing facility to include landing gear overhaul. West Star has heavily invested in tooling, fixtures, training, rotables and assets to prepare for full capacity support at both their Grand Junction, CO and Chattanooga, TN locations. In addition, West Star overhauls Hawker, Challenger, LearJet and King Air landing gear.

Furthermore West Star Aviation has reported expansion details for their Chattanooga, TN location. This expansion is set for completion during fourth quarter of 2017. The expansion will consist of a new maintenance hangar with over 65,300 ft<sup>2</sup> incorporating 40,000 ft<sup>2</sup> of hangar and 25,300 ft<sup>2</sup> of office and support space. Additionally, the expansion will include a state-of-the-art paint facility with 41,519 ft<sup>2</sup> consisting of a crossdraft prep bay, downdraft paint bay, office and support space. "This expansion is going to give us the chance to offer one-stop maintenance, paint, avionics and interior refurbishment conveniently to our Eastern territory clients. Our plan is to break ground in fourth quarter of 2016," said Tom Hilboldt, General Manager (CHA), West Star Aviation.

### GAMECO signs contract with Uni-Top Airlines

Guangzhou Aircraft Maintenance and Engineering Company (GAMECO) has signed a contract for maintenance and engineering support with Uni-Top Airlines. The new contract covers base maintenance, engineering service, material support and component repair for Uni-Top Airlines' fleets of A300F aircraft. Wu Rongxin, deputy general manager of GAMECO, said, "Uni-Top Airlines is growing to support the economic needs of China and GAMECO sees them as a very important long-term customer for our business. We are honored to be able to support the growth of Uni-Top Airlines and are very pleased to develop our strategic partnership with them. This type of close partnership is what we want seek to have with our customers as we strategically expand to support the aviation market in China."

### AEI receives FAA certification for CRJ200 SF

Aeronautical Engineers has received an FAA Supplemental Type Certificate for the passenger-to-freighter conversion of the Bombardier CRJ200 aircraft. The CRJ200 SF freighter conversion has been re-delivered to and will enter service with Waterford, Michigan-based IFL Group. AEI's Authorized Conversion Center, Commercial Jet, located in Miami, Florida performed all touch labor required for the modification of the CRJ200 SF conformity aircraft. Subsequently, the aircraft was flown to Commercial Jet's Dothan, Alabama facility for painting in the IFL Group livery. AEI currently has over 45 firm orders and commitments for the CRJ200 SF freighter conversion, and has stated that interest in the platform remains high.

### Lufthansa Technik launches "Smart Lifecycle Program" for VIP aircraft

Lufthansa Technik has launched "Smart Lifecycle Program", a cost per-flight-hour service for VIP and Special Mission Aircraft customers. The company has developed the first holistic and integrative smart service available on the market which can be used for a customer individual "charges-by-the-hour" service program. "Smart Lifecycle Program" covers and integrates the full scope of technical services along the life cycle of Boeing or Airbus VIP or Special Mission aircraft in one application. Depending on the specific customer needs, the new service can cover all relevant tasks from scheduled maintenance, CAMO & engineering services, wear and tear cabin interior works, to personal assignment.

### Flying Colours extends range of airframes for INAIRVATION offering

North America-based Flying Colours Corp. has extended the range of airframes on which it can now install the INAIRVATION pre-engineered retrofit solutions in North America. At this year's NBAA, Flying Colours will be promoting the options now available for Bombardier Challenger 300, Bombardier Challenger 605, Gulfstream G450 and Gulfstream G550 models. This is in addition to the first type confirmed with the Austria-based joint venture at NBAA 2015, the Bombardier Global Express. Following the signing of the launch customer in April this year, work on the first Global aircraft began in late September at Flying Colours' Peterborough, ON, headquarters, and is progressing to schedule for re-delivery in March 2017.



Lufthansa Technik Logistik Services opens new warehouse space in Munich  
Photo: LTLS

### Lufthansa Technik Logistik Services opens new warehouse space in Munich

Lufthansa Technik Logistik Services (LTLS) is extending the warehouse building for the supply of spare parts for the Airbus A350 at the Munich site. The existing spare parts warehouse has been enlarged during the last months by an area of 3,200 m<sup>2</sup> and was opened on November 3. The extension was necessitated by the material supply for the Airbus A350, providing some 700 different components. In addition to the components for the new aircraft type, parts for 15 other aircraft types are also stored here. The reduction in intra-company transport will lead to optimal material flows and transport routes, as well as synergy effects through the centralization of the operative business. The extension is fitted out with modern warehouse technology, such as the automatic storage rack system. This technology is an important prerequisite for developing additional digitally supported optimization potential.

### Rolls-Royce runs Power Gearbox for first time

Rolls-Royce has run its powerful aerospace gearbox for the first time, marking a significant step in the development of its new UltraFan engine design. The first run of the Rolls-Royce Power Gearbox (PGB), at the company's facility in Dahlewitz, Germany, marks the start of a series of tests which will see the gearbox reach up to 100,000 horsepower – the equivalent of more than 100 Formula 1 cars.

Mike Whitehead, Rolls-Royce Chief Engineer and Head of Programme UltraFan Technologies, Civil Aerospace, said: "This is another significant step in bringing our future technology to life. We launched the UltraFan design in 2014 and now we are putting our new infrastructure to work to turn it into reality." The power gearbox is a vital component of the UltraFan design as it enables the engine design to offer efficient power over a wide range of take-off thrusts. The first run took place on Rolls-

Royce's Attitude Rig, which allows engineers to simulate the effects of the gearbox being on the wing of an aircraft that is climbing after take-off, coming in to land, or banking while in flight. The initial run confirmed rig dynamics and oil system functionality at low pressures and speeds. More advanced testing will take place during the rest of the year to provide additional data on low-power high-speed combinations at various pitch and roll angles and at different simulated altitudes. High-power testing will take place next year on the PGB Power Rig where the gearbox will reach full power. UltraFan, available from 2025, will offer a 25% fuel efficiency improvement over the first generation of Rolls-Royce Trent engines.

### Iberia to offer new Premium Economy class on 37 of its long-haul aircraft

Iberia has unveiled its new, extra-comfortable Premium Economy cabin, to be available on 37 of its long-haul aircraft, starting during the summer season of 2017. The new cabin will be installed on eight Airbus A330-300s and 13 of the airline's A340-600s, to be modified in the course of 2017 to 2018, and will come factory-equipped with it in the 16 new A350-900s to be delivered starting in 2018. Seats in the new cabin will be 19" wide and distance between rows will be extended to 37". Seats will recline by an additional 40% over those on the Economy cabin. Customers flying in Premium Economy class will also enjoy the adjustable head and foot rests, noise-canceling earphones, and an exclusive amenities kit. They will have full access to the entertainment programme via 13-inch display screens, instead of the 9-inch screens in Economy class.

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Leonardo-Finmeccanica to produce front fuselage for new A321  
Photo: Leonardo-Finmeccanica

### Leonardo-Finmeccanica signs contract with Airbus for new A321 fuselage

Leonardo-Finmeccanica and Airbus have agreed to the commercial conditions regarding the production of the front fuselage, section 14A, for the new ACF (aircraft cabin flex) configuration of Airbus A321 aircraft. Starting in 2018 at its Nola site (near Naples), Leonardo will produce the aero-structure of this new configuration of Airbus A321, the twin-engine single-aisle aircraft capable of carrying 185 passengers in the typical two-class configuration or up to 220 persons in the economy version.

### Haeco Landing Gear Services signs 10-year support agreement with Cathay Pacific

HAECO Landing Gear Services has signed an exclusive 10-year service agreement with Cathay Pacific Airways for their Boeing 777-300ER fleet. Commencing in October 2016, the agreement will cover a comprehensive array of operational, maintenance, repair and overhaul support services for landing gear and components. HAECO Landing Gear Services capabilities include repair/overhaul of Boeing 777, 767, 757, 747, 737NG, 737CL and Airbus A320, A319 and A318 installation-level landing gear.

### STS Component Solutions enters new sales partnership with Ametek MRO

STS Component Solutions (STSCS), a di-

vision of STS Aviation Group, has been appointed as MRO Business Partner with Ametek MRO's Midwest family of companies for customers within the EMEA region. Ametek MRO is a global provider of third-party MRO services for the commercial, regional and general aviation industries. Its operations specialize in a wide range of repair and overhaul services that are FAA, EASA, CAAC and CAAS approved. STS is now able to offer reliable and cost-effective repair solutions to its customers by utilizing Ametek's knowledge and experienced repair network. The Ametek MRO Midwest companies represented in this agreement are Drake Air, Southern Aeroparts, and B&S Aircraft. Drake Air specializes in heat transfer systems of aircraft such as heat exchangers, fuel heaters and pre-oil cooler components.

### Triumph Group receives order to deliver G650 wings through 2018

Triumph Group has received an additional delivery order from Gulfstream for the production of wing and wing components for the G650 program. The add-on work is valued at approximately US\$300m and extends through 2018. Triumph Group assumed production of the G650 wing in January 2015 from Spirit AeroSystems. As part of the original agreement, Triumph Group provides the fully integrated engineering wing design and production for the G650 program. The company also provides wing and wing components, as well as other

aircraft components, for the G450, G550, G500/600 and G280 programs.

### Air Canada signs five-year slide and inflatable maintenance contract with AJW Technique

Air Canada has further cemented its partnership with AJW Technique, the Quebec-based component MRO provider, with a renewed five-year contract for slide and inflatable maintenance. The contract underlines the focus that AJW has placed on building its repair business in North America and its initiative to create specialist modules of contracted repair service that supplement its wide-ranging ATA Chapter capabilities. AJW Technique has been providing component overhaul and repair support to the Air Canada fleets in its facility in Montreal for the past three years and this contract covers both Air Canada and Sky Regional aircraft.

### Airlink to install STG Aerospace LED Lighting

STG Aerospace, the market leader in aftermarket LED cabin lighting solutions, has reported that South African regional feeder airline Airlink has awarded them a purchase order to retrofit 12 of their aircraft with their drop-in LiTeMood LED lighting system. With the first installations completed in October 2016, Airlink becomes the 12th airline to install STG Aerospace's LED lighting solution.

### Boeing opens first St. Louis commercial airplanes facility

On October 13, Boeing formally opened a new composite center on its St. Louis campus, one that will house the company's largest commercial aviation work statement ever placed at the site. The center is a visible representation of the company's efforts to diversify and grow its St. Louis-area operations. The 424,000-ft<sup>2</sup> facility will initially build composite parts for the company's newest commercial jetliner, the 777X. Boeing has committed more than US\$300m in company funds to construct and outfit the center. Production of 777X wing edge and empennage parts will begin at the new composite center in early 2017. The first 777X delivery is expected in 2020. As a result of this 777X work in St. Louis, a total of approximately 700 jobs are expected to be generated in production, engineering, and multiple support areas by the early 2020s timeframe.

## SR Techniks signs multiple new contracts

### VAS Aero Services and SR Techniks to cooperate on supply program for Pratt & Whitney PW4-100

VAS Aero Services and SR Techniks will cooperate on a comprehensive supply program for PW4168 engine maintenance operations. Helping SR Techniks, the Swiss MRO to provide best-quality, timely maintenance services on PW4-100" engines for its airlines customers, the comprehensive supply program agreement calls for VAS to position engines at SR Techniks' facilities for teardown and green time leasing. The cooperation guarantees not only the availability of spare engines to SR Techniks' customers while their engines are undergoing maintenance, but it also provides a minimum stock level of serviceable spare parts, prompting quick turn-around service for SR Techniks' customers.

### SR Techniks and Aviation Cosmetics Malta launch Lease-End Transitioning Services, LETS

SR Techniks has announced the launch of Lease-end Transitioning Services, LETS, a new product developed in cooperation with Aviation Cosmetics Malta, an Aircraft paint-

ing company under Dutch management. Whether it is a carrier seeking a smooth hand back or a leasing company transitioning the aircraft into its next lease, SR Techniks offers this novel set of bundled services, responding to an increasing demand for one-stop-shop solutions designed with changes of operator in mind. The LETS services include transition maintenance checks & repairs (A, C, IL, D-Checks and structural repairs), interior upgrades and cabin reconfiguration, part 21J engineering design services up to STC (Supplemental Type Certificate), paint and livery, full engine BSI (Borescope Inspection), engine replacement, conservation, storage and parking and, finally, consulting. The service is available for the Airbus A319, A320 and A321 at the SR Techniks Malta facility and as single integrator for the Airbus A330, A340 and for the Boeing 777 at the company's Zurich facility in Switzerland.

### SR Techniks completes modifications for 12 of Air Europa's Airbus A330 fleet

SR Techniks has completed modifications for 12 of Air Europa's Airbus A330 fleet. Following Air Europa's request for three business

class cabin modifications and the installation of a new Inflight Entertainment System (IFE) on a total of twelve planes, the SR Techniks specialists began the job at the company's facilities in Zurich in February 2016. Besides enhancing the in-cabin comfort of business class passengers for three Air Europa aircraft, passengers on all 12 planes are now enjoying Wi-Fi connectivity with Panasonic's ground connectivity system (GCS), thus improving their overall flight experience. A new crew rest modification was also performed on all the aircraft.

### SR Techniks signs a range of maintenance agreements with easyJet

SR Techniks has signed several maintenance agreements extending its partnership with easyJet. The signed contracts include line maintenance agreements for a range of easyJet's stations in the UK, including London Gatwick Airport which is easyJet's largest base, and Switzerland, as well as a light base maintenance agreement in Geneva. These contracts are for three years, strengthening the strategic partnership between the two companies.



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(left to right), Steen Karsbo, Vice President Business Development, Satair Group and Adam King, General Manager, Asset Management for Pratt & Whitney Photo: Satair Group

duties on December 17, 2016. “Through this agreement with Pratt & Whitney, we will add the thrust reverser component distribution into our parts portfolio to provide an even broader product scope offering to our customers. We look forward to the expanded relationship and the opportunity to provide great value-added service to both our customers and Pratt & Whitney,” said Steen Karsbo, Vice President of Business Development at Satair Group.

**Kenya Airways awards MTU Maintenance CF34-10E6 engine maintenance contract**

MTU Maintenance and their new customer, Kenya Airways, have concluded negotiations on the contract for the maintenance of the CF34-10E engines used on the airline’s Embraer 190 aircraft, for a period of five years. Kenya Airways is the Republic of Kenya’s national flag carrier and was founded in 1977. Kenya Airways operates a fleet of 15 Embraer190s – the largest CF34-engine fleet in Africa. It uses these Embraer aircraft to serve national and cross-border routes.

**Pratt & Whitney signs thrust reverser component distribution agreement with Satair Group**

Pratt & Whitney has entered into an agreement with Satair Group, a leading provider of aftermarket services and solutions for the civil aerospace industry, for the exclusive dis-

tribution of PW4000 100-inch engine thrust reverser spare parts. Under the agreement, Satair Group will distribute the spare parts to Pratt & Whitney’s worldwide customer base. Satair Group will also maintain customer orders and fulfillment for the life of the program. The parties currently anticipate that Satair Group will commence its distribution

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Inauguration of MTU's new final assembly line with (from left to right) MTU CEO Reiner Winkler, Ilse Aigner, Bavarian State Minister of Economic Affairs and Media, Energy and Technology and Dr. Rainer Martens, Chief Operating Officer MTU  
Photo: MTU

### MTU Aero Engines inaugurates new final assembly line for the PW1100G-JM

MTU Aero Engines has accomplished one of the most significant milestones in its corporate history: The company has delivered the first Pratt & Whitney PurePower PW1100G-JM Geared Turbofan engine assembled on its own final assembly line to Airbus. On October 20, the new assembly line for the A320neo engine at the MTU headquarters in Munich was officially inaugurated by Ilse Aigner, Bavarian State Minister of Economic Affairs and Media, Energy and Technology. This marks the completion of the last pivotal stage in the ramp-up of the cutting-edge propulsion program at MTU Aero Engines. The final assembly line developed by MTU is characterized by a high degree of flexibility. Given the high rate of production, the work is carried out at six assembly stations using a system resembling a flow line, where the engine is successively put together from pre-assembled components and modules. This way, several engines in various build stages can be assembled and completed concurrently. The ramp-up of PW1100G-JM engine assembly is expected to be complete by the end of 2018, and around 100 employees will be working in a six-day and multiple-shift pattern. A total of about 400 people will then be working in the production of the PW1100G-JM engine program at MTU. "The PW1100G-JM engine is our most important engine down the road," MTU CEO Reiner Winkler emphasizes. "We are going to profit from the high order backlog for the A320neo and from the strong demand for the PW1100G-JM engine. Predictions are that in the future, the 'neo' engine aftermarket business will also see above-average growth. For us, this translates into a high sales volume over the entire engine life cycle." The decisive impetus for the development of a new propulsion system to power

the A320 family came in late 2010 when Airbus decided to go forward with the A320neo (new engine option). "We have succeeded in passing a crucial milestone by shipping the first engine for the A320neo. Up to date, we have invested about €15 million (US\$16.5 million) into the new assembly line," reported Dr. Rainer Martens, MTU Chief Operating Officer. "With our stake in the GTF programs, our production volume will double within five years' time. While last year, we handled about 2,000 engines and modules across our entire product range, this figure will already go up to around 4,000 by the year 2020." MTU contributes the high-speed low-pressure turbine, the forward four stages of the high-pressure compressor and brush seals to the GTF engines.

### KLM UK Engineering signs service agreement with Corendon Dutch Airlines on base maintenance checks

KLM UK Engineering and Corendon Dutch Airlines have signed a contract for two heavy-maintenance checks during 2016 & 2017 on the Airline's Boeing 737-800's as well as signing a long-term GTA. This news follows the new deal with Air France Industries KLM Engineering & Maintenance (AFI KLM E&M) to provide Corendon Airlines Turkey and Corendon Dutch Airlines with engine maintenance services for twelve CFM56-7B engines in their fleets. With a current fleet of 11 Boeing 737-800 aircraft operated at Corendon Airlines, Turkey, and 3 Boeing 737-800 aircraft at Corendon Dutch Airlines, Corendon operates charter flight services to destinations throughout Europe, Africa and the Middle East. Corendon flies to more than 40 countries and 150 destinations, including major German, French, Dutch, Belgian, Polish, Israeli and Nordic airports.

### Rockwell Collins signs support contract for Airbus Beluga fleet

Rockwell Collins has signed a repair agreement with Airbus SAS to support its fleet of five A300-600ST (Super Transporter) Beluga aircraft. The Beluga fleet is responsible for transporting aircraft parts between Airbus facilities. The agreement includes support for the following Rockwell Collins systems on board the Beluga: Communication systems, including Iridium SATCOM; HF Radio and Link 2000+ capable datalink with VDL Mode 2; radio navigation systems; surveillance systems including weather radar, traffic collision avoidance system (TCAS) and Mode S Transponder.

### Praxair Surface Technologies and GE Aviation launch joint venture company

Praxair Surface Technologies, a wholly owned subsidiary of Praxair and GE Aviation has announced the formal creation of PG Technologies, LLC, a joint venture. Praxair Surface Technologies and its subsidiary will hold the majority interest in the venture, with GE Aviation and its subsidiary holding the remainder. PG Technologies will focus on development, support and application of specialized coatings tailored for GE Aviation's and CFM International's current and future engine models, including the GE9X and LEAP engines. CFM International is a 50/50 joint venture company between GE and Safran Aircraft Engines of France. Coating operations for PG Technologies will be based in Ellisville, Mississippi, Indianapolis, Indiana, and the Republic of Singapore. PG Technologies services will also be supported by the global facility network of Praxair Surface Technologies.

### AFI KLM E&M's subsidiary EPCOR extends contract with Honeywell

European Pneumatic Component Overhaul and Repair (EPCOR), a wholly owned subsidiary of Air France Industries KLM Engineering & Maintenance, has extended a long-term Auxiliary Power Unit service center license agreement with Honeywell. The contract supports the AIR FRANCE KLM group and third-party fleets. As part of the new license, EPCOR will enhance its maintenance, repair and overhaul service center offerings for customers with Honeywell's industry-recognized auxiliary power unit (APU), which provides compressed air to start the main engine and power the Environmental Control System.

### Volo Aero MRO receives EASA approval

Volo Aero MRO has received its EASA approval allowing it to issue dual release certificated repairs. Currently Volo Aero MRO provides precision machining and overhaul services to the aerospace industry with greater than 98% on-time delivery. The focused capability covers the overhaul of gears, disks, rings and housings for both engine and accessories

support OEM's and MRO's.

### Blue Panorama and Meridiana order Andromeda seats on B767

Aviointeriors was awarded an order for the B767 Andromeda Business class seat which will be used in a derived version as crew rest seat for both Blue Panorama Airlines and

Meridiana. The Andromeda seat will be fully compliant with CS FTL.1.205 (C) Flight Duty Period (FDP) regulations 'Class 2 rest facility'. This means a seat in an aircraft cabin that reclines at least 45° back angle to the vertical, has at least a pitch of 55 inches (137.5 cm), a seat width of at least 20 inches (50 cm) and provides leg and foot support.

## Finance News

### Trenchard Aviation acquires Reheat International

Trenchard Aviation, a civil aircraft maintenance business focusing on cabin services, has acquired Reheat International, a specialist repairer of on-board galley equipment and cabin interior products. The acquisition is the third since Graphite Capital, a leading mid-market private equity specialist, financed the management buy-out of Aero Technics in November 2015. The acquisition of Reheat marks another step towards Trenchard's stated goal of building a group of businesses in aircraft servicing with an initial focus on cabin maintenance services. Graphite provided support to Trenchard in completing the acquisition.

Reheat, based in Alton, Hampshire, provides a one-stop shop after-market solution for an extensive range of aircraft galley equipment and cabin interior products for a wide range of airlines. In addition, Reheat acts as an authorized repair station for a growing number of OEMs and, in particular, services Europe, the Middle East and Africa for the Adams Rite range of cockpit door strikes.

### Air BP and BP Ventures announce investment of US\$30m in biojet producer, Fulcrum

BP has announced the creation of a strategic partnership between its BP Ventures and Air BP businesses with Fulcrum BioEnergy, a pioneer in the development and production of low-carbon jet fuel, in which BP will invest US\$30m. As an equity investor, BP has secured a 10-year offtake agreement with Fulcrum for 50 million US gallons per year, from their plants under development across North America. In addition, as a preferred supply chain partner, Air BP will distribute and supply biojet to aircraft at key hubs across North America. Fulcrum has developed and demonstrated a reliable and efficient process for producing low-cost, sustainable biojet from municipal solid waste (MSW). The company has secured long-term access to large volumes of MSW feedstock and is actively developing its plan to build waste-to-fuel plants in North America, initially, with growth potential around the world. Fulcrum's first plant is currently under construction.

### Spirit AeroSystems posts third-quarter results

Spirit AeroSystems reported third-quarter 2016 financial results driven by strong operating performance of mature programs. During the quarter, Spirit purchased 7.4 million shares for US\$332m, which

concludes the current US\$600m share repurchase program. Spirit's third-quarter 2016 revenue was US\$1.7bn, up 7% compared to the same period of 2015, primarily driven by higher production deliveries on the A350 XWB and Boeing 767 programs and higher revenue recognized on certain non-recurring Boeing programs, offset by lower production deliveries on the Boeing 747 program. Spirit's backlog at the end of the third quarter of 2016 was approximately US\$46bn, with work packages on all commercial platforms in the Boeing and Airbus backlog. Operating income for the third quarter of 2016 was US\$214m, compared to US\$192m in the third quarter of 2015, reflecting higher production deliveries. Reported EPS was US\$1.16, compared to US\$2.24 EPS (or US\$0.89 adjusted EPS excluding the impact of Deferred Tax Asset Valuation Allowance) in the same period of 2015. On an adjusted basis, EPS is up 30% year over year.

### Ontic acquires part of GE Aviation's avionics business

Ontic, a BBA Aviation company and the aerospace industry's leading provider of 'Extended Life Solutions' for OEM legacy products, has reached an agreement to acquire a portfolio of legacy avionics products (the "Business") from GE Aviation.

The Business incorporates a portfolio of legacy avionics parts servicing the military and commercial aviation markets, including electro mechanical, barometric, gyroscopes and electronics products. Key platforms include Boeing 737, Sikorsky Sea King and Leonardo AW101 helicopters, Lockheed C130/J transports and BAE Hawk aircraft. The portfolio has a strong fit with Ontic's existing business, and the acquisition is aligned to Ontic's strategy to deliver continued profitable growth in mature avionics and electronics products with high intellectual property content. With significant experience of acquisitions, including a similar business bought from GE Aviation in 2011, Ontic has proven processes to ensure the seamless integration of new product lines, which will be supported in this case by a transitional services agreement with GE Aviation. The transaction is expected to complete early in the New Year, subject to the satisfaction of certain conditions.

### Avolon adds five banks to acquisition debt facilities for transaction with CIT Group

Avolon, the international aircraft leasing company, has placed 35% of the US\$8.5bn debt financing facilities, led by Morgan Stanley

& Co. (Morgan Stanley) and UBS Investment Bank (UBS), for the acquisition of the aircraft leasing business of CIT Group Inc. Avolon successfully placed US\$2.975bn with five banks: Barclays; JPMorgan Chase Bank N.A.; BNP Paribas; Credit Agricole Corporate and Investment Bank; and SunTrust Bank. The placement was increased from an initial target of 30%. Concurrent with the closing of the placing, Avolon has also increased its unsecured revolving credit facility to US\$950m.

### Satcom Direct agrees to acquire TrueNorth Avionics

Global aeronautical communications provider, Satcom Direct (SD), has agreed to acquire TrueNorth Avionics, a company based in Ottawa, Canada that offers the latest technology in cabin communications solutions. With the purchase of TrueNorth, SD significantly expands its ability to provide advanced communications systems for business aviation aircraft. Founded in 2006, TrueNorth Avionics designs, develops, and manufactures satellite communication solutions for business jets and avionics OEMs. Its latest innovation, the Optelity family of cabin communication systems, delivers high-fidelity voice, fax, and Wi-Fi solutions that enable intuitive connectivity for mobile devices. TrueNorth will become a business unit within the SD family of companies focused on advanced avionics development. The transaction is expected to close in the fourth quarter of this year.

### Global Aviation Services acquires D&D GSE

Global Aviation Services (Global) has acquired D&D GSE Support(D&D), a leading ground support equipment maintenance provider, serving Fort Lauderdale-Hollywood International Airport (FLL). The acquisition further enhances Global's market position in South Florida and marks the company's first acquisition. Global intends to pursue continued expansion by acquiring high quality GSE maintenance businesses across the country. Effective immediately, D&D will become Global Aviation Services. Global's transition team is already in place, ramping up for the airport's peak season. The operation will have 14 – 18 technicians and will serve as a primary hub for GSE Maintenance in South Florida and the Bahamas.

### Embraer releases third quarter 2016 results

During 3Q16, Embraer delivered 29 commercial jets and 25 executive jets (13 light and 12 large). The company's firm order backlog ended the quarter at US\$21.4bn versus US\$21.9bn in 2Q16. Revenues in 3Q16 grew 17.9% on a year-over-year basis to US\$1,514.3m, driven by higher revenues in the Commercial Aviation and Defense & Security segments. Consolidated gross margin in 3Q16 was 18.8%, an increase from the 17.5% registered in 3Q15. In 3Q16, the company booked in other operating income (expense), net an additional US\$5.5m loss contingency related to finalization of negotiations related to the U.S. Foreign Corrupt Practices Act (FCPA), and a US\$118.1m provision related to costs for the first round of voluntary dismissal. Adjusted EBIT and Adjusted EBIT margin in 3Q16, excluding the impacts of the loss contingency and provision listed above, were US\$94.7m and 6.3%, respectively. Adjusted EBITDA and Adjusted EBITDA margin in the quarter, excluding these impacts, were US\$187.3m and 12.4%, respectively. 3Q16 Net loss attributable to Embraer Shareholders and loss per basic

ADS totaled US\$ (33.7) million and US\$ (0.1848), respectively;

### GE reaches agreement to acquire 75% stake in Concept Laser GmbH of Germany

GE has reached an agreement to acquire a 75% stake in Concept Laser GmbH for US\$599m (€549m). The agreement allows for GE to take full ownership in a number of years. Privately-held Concept Laser has more than 200 employees and is headquartered in Lichtenfels, Germany, with significant operations in the United States (Grapevine, Texas), China, and a global network of more than 35 distributors and agents. Concept Laser is a pioneer in the field of metal additive manufacturing. Concept Laser designs and manufactures powder bed-based laser additive manufacturing machines. Its customer base is focused on the aerospace, medical and dental industries, with a meaningful presence in automotive and jewelry. Concept Laser's machine range incorporates both the largest and smallest build envelopes currently available on the market and is capable of processing various powder materials including titanium, nickel-base, cobalt-chromium and precious metal alloys, as well as hot-work and high-grade steels, and aluminum.

### Airbus Group posts nine-month 2016 results

Airbus Group reported nine-month 2016 results which reflect the ongoing ramp-up and transition from current to new aircraft models (NEO). Group order intake in the first nine months of 2016 was €73.2bn (9m 2015: €111.9bn), with the order book value totaling €986bn as of September 30, 2016 (year-end 2015: €1,006bn). Airbus received 380 net commercial aircraft orders (9m 2015: 815 net orders) with gross orders of 566 aircraft including 35 A350 XWBs and 14 A330neos. In the third quarter alone, 250 gross orders were booked for A320neo (new engine option) Family aircraft. Airbus Helicopters received 211 net orders (9m 2015: 181 net orders), including 47 H145s and 42 H135s. In August, an agreement was announced by Kuwait for 30 H225M Caracal helicopters. Group revenues were stable at €42.7bn (9m 2015: €43.0bn). Revenues at Commercial Aircraft reflected higher A350 and A320 volumes but lower A330s and were supported by the more favorable US dollar environment. In all, 462 commercial aircraft were delivered (9m 2015: 446 aircraft). Group EBIT before one-off amounted to €2,415m (9m 2015: €2,804m). Commercial Aircraft's EBIT before one-off was €1,838m (9m 2015: €2,226m), driven by the lower A330 rate, delivery profile, transition pricing on A330 and A320, and higher ramp-up costs, while research and development (R&D) costs decreased. In Helicopters, EBIT before one-off was €200m (9m 2015: €241m), burdened by an unfavorable mix and lower commercial flight hours in services as well as the H225 accident in Norway and some campaign costs. Net income was €1,811m (9m 2015: €1,900m) with earnings per share of €2.34 (9m 2015: €2.42). The finance result was €-342m (9m 2015: €-536m). (€1.00 = US\$1.09 at time of publication.)

### Boeing reports third-quarter results and raises full year guidance

Boeing has reported third-quarter GAAP earnings per share of US\$3.60 and core earnings per share (non-GAAP) of US\$3.51 re-

flecting overall solid execution on production programs and services, favorable tax items (US\$0.98 per share), and timing of aircraft deliveries. Revenue guidance has been increased US\$500m to between US\$93.5 and US\$95.5bn on higher commercial deliveries. GAAP earnings per share guidance for 2016 has been increased to between US\$7.10 and US\$7.30 from US\$6.40 and US\$6.60 and core earnings per share (non-GAAP) guidance has been increased to between US\$6.80 and US\$7.00 from US\$6.10 and US\$6.30 to reflect a favorable US\$0.70 per share tax basis adjustment.

Boeing Commercial Airplanes third-quarter revenue decreased to US\$17.0bn on lower planned delivery volume. Third-quarter operating margin was 9.4%, reflecting delivery volume and mix, partially offset by lower period costs. During the quarter, Boeing began production of the 500th 787 Dreamliner, completed service ready validation of the 737 MAX 8, and began production of the 737 MAX 9. The 737 program has captured more than 3,300 orders for the 737 MAX since launch and the company remains on track to raise the production rate to 47 per month in the third quarter of 2017. During the quarter, Boeing continued to grow its services business through an agreement with Japan Airlines to provide spare parts solutions. Commercial Airplanes booked 107 net orders during the quarter. Backlog remains strong with more than 5,600 airplanes valued at US\$409bn.

### MTU Aero Engines raises earnings forecast marginally following nine-month results

In the first nine months of 2016, MTU Aero Engines AG saw its revenues increase by 4% to €3,401.3m (1-9/2015: €3,257.0m). The group's operating profit increased by 18% to €393.8m (1-9/2015: €333.1m), improving the EBIT margin from 10.2% to 11.6%. Earnings after tax increased by 18% to €273.4m (1-9/2015: €231.4m). The increase in MTU's revenues is primarily due to strong growth in the commercial maintenance business, where revenues grew by 19% to €1,368.3m (1-9/2015: €1,148.4m). The main source of these revenues was the V2500 engine for the A320. Revenues in the commercial engine business have decreased slightly, by 3%, to €1,738.3m (1-9/2015: €1,792.8m). The engine programs V2500, GP7000 for the A380 and GEnx for the Boeing 787 and 747-8 generated the greatest share of revenues in the commercial engine business. MTU expects deliveries of the PW1100G-JM for the A320neo to rise steeply in the fourth quarter, pushing revenues up

accordingly. As of September 30, 2016, MTU had an order backlog of €11,153.0m (Dec 31, 2015: €12,493.7m). The majority of these orders relate to the V2500 and the geared turbofan engines of the PW1000G family, in particular the PW1100G-JM for the A320neo. Both of MTU's operating segments reported higher earnings in the first nine months of 2016. In the OEM segment, adjusted EBIT climbed 20% to €264.5m (1-9/2015: €220.4 million), while the EBIT margin gained 2.3 points to reach 12.6%. In the commercial maintenance segment, adjusted EBIT improved by 14.8% from €112.4m to €129.0m, resulting in an EBIT margin of 9.4%, compared with 9.8% for the same period in 2015. MTU's free cash flow at the end of September 2016 amounted to €75.0m (1-9/2015: €119.4m). "We expect to see a similar volume at the end of the year and have maintained our forecast of around €70m," said Reiner Winkler, CEO of MTU Aero Engines. (€1.00 = US\$1.09 at time of publication.)

### Rockwell Collins to acquire B/E Aerospace for US\$8.3bn

Rockwell Collins, a global leader in high-integrity solutions for aerospace and defense, and B/E Aerospace, a leading manufacturer of aircraft cabin interior products, have entered into a definitive agreement under which Rockwell Collins will acquire B/E Aerospace for approximately US\$6.4bn in cash and stock, plus the assumption of US\$1.9bn in net debt. Under the terms of the agreement, each B/E Aerospace shareowner will receive total consideration of US\$62.00 per share, comprised of US\$34.10 per share in cash and US\$27.90 in shares of Rockwell Collins common stock, subject to a 7.5% collar. This represents a premium of 22.5% to the closing price of B/E Aerospace common stock on Friday, October 21, 2016. The transaction combines Rockwell Collins' capabilities in flight deck avionics, cabin electronics, mission communications, simulation and training, and information management systems with B/E Aerospace's range of cabin interior products, which include seating, food and beverage preparation and storage equipment, lighting and oxygen systems, and modular galley and lavatory systems for commercial airliners and business jets. The acquisition significantly increases Rockwell Collins' scale and diversifies its product portfolio, customer mix and geographic presence. On a pro forma basis, Rockwell Collins would have nearly 30,000 employees, US\$8.1bn in revenues, and US\$1.9bn in EBITDA for the twelve months ending September 30, 2016.

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Magnetic MRO and Kühne + Nagel team up on engine stand management solutions  
Photo: Magnetic MRO

**Magnetic MRO** will cooperate with **Kuehne + Nagel** in offering global engine stand management solutions. The combination of Magnetic MRO brand EngineStands24.com and Kuehne + Nagel engine logistics solutions' KN EngineChain will result in a global digitalized one-stop solution for transportation and storage of aerospace engine stands. This co-operation will set a new industry standard in engine stand management and logistics support. It will feature immediate availability and visibility of engine stands across Kuehne + Nagel global logistics aerospace hubs. The Kuehne + Nagel KN EngineChain hubs in Amsterdam, Singapore and Dubai will be operational from the start. Customers will benefit from specialized engine warehousing facilities and the global 24/7 customer support of the KN EngineChain-certified logistics staff. Live tracking of engine locations along with other operational data will also be provided regardless of engine type or delivery destination.

**AerData**, a **Boeing** Company, reported that **Arctic Aviation Assets (AAA)**, **Norwegian Air Shuttle's** wholly-owned leasing subsidiary, has chosen AerData's Corporate Management System (CMS) to support their fleet of over 100 aircraft. CMS is a single platform that facilitates the consolidation and management of data from multiple sources. CMS mitigates risk and enables lessors to smoothly run their business by providing them with full control and oversight of their asset values, contract information and technical details. AerData's Corporate Management System is an industry leading platform that supports all business processes in aircraft leasing and asset management. CMS is web enabled and accessible via a secure and encrypted Internet connection 24/7.

**Component Control** has reported that **Rotable Repairs**, an aviation wheel and brake services provider, is leveraging Quantum Control MRO and Logistics software to further enhance its responsive customer service. Based in southeast England, the independently owned EASA Parts 145, FAA Part 145 and Transport Canada-approved repair station serves airlines, hangar facilities and distributor industries which require cost-effective, quick turn service. The software is part of the company's ongoing efforts to

be more responsive than its competitors. With Quantum Control, Rotable Repairs can easily track and manage thousands of work orders. With the ability to generate comprehensive reports and tailor data, the repair station can make decisions rapidly to better meet specific customer requirements. Quantum Control MRO and Logistics solution installed at Rotable Repairs operates on a highly scalable and secure Oracle™ database and offers various logistics and business modules. Rotable Repairs utilizes Quantum for a variety of functions, including accounting, tracking orders, organizing contacts and managing shipping.



from left to right: Paul Margis, Chief Executive Officer of Panasonic Avionics Corporation and Serge Van Herck, Newtec Board of Directors  
Photo: Panasonic

**Panasonic Global Communications (Panasonic)**, and **Newtec** – a specialist in designing, developing and manufacturing equipment and technologies for satellite communications – have unveiled a new, high-bandwidth satellite modem, which offers Panasonic customers twenty times the bandwidth of Panasonic's current solution. Versions of this new modem will be available across Panasonic's mobility markets including air transport, business aviation, maritime, cruise ships, mega yachts, and river cruises. Developed in partnership, the new modem is capable of exceeding 400 Mbps, and it can scale to meet the evolving needs of airlines and their passengers by facilitating the increasing bandwidth coming on stream over the next two years as High-Throughput Satellite (HTS) and Extreme-Throughput Satellite (XT-STM) services continue to be layered over Panasonic's existing global network. This will expand network capacity from 2,300 MHz today to 15,000+ MHz by 2017. Paul Margis, Chief Executive Officer of Panasonic Avionics Corporation, says: "As we continue to optimize our second-generation Global Communications network, we are constantly looking for new pieces of critical technology that will enable our customers to take full advantage of HTS and XTS technology. Newtec's broadband modem, which is based on the innovative DVB-S2X standard and customized to our requirements, allows us to access much larger blocks of frequency and better support high bandwidth platforms across all of our vertical markets."



GAMECO AMI contract signing at the Zuhai Air Show, 2016 Photo: GAMECO

**GAMECO** (Guangzhou Aircraft Maintenance Engineering) has signed a long-term agreement with **SATAIR Group** concerning the Airbus Managed Inventory (AMI) service. The Airbus subsidiary SatairGroup's AMI solution optimizes inventory management,

ensuring high-usage and non-repairable parts being automatically replenished by GAMECO, while granting parts availability and decreasing inventory stock and surplus levels, in addition to improving competitiveness.

## Other News



EDM wins order to supply eight Door Trainers Photo: EDM

**EDM**, a leading global provider of training simulators to the civil aviation and defense sectors, has won orders to supply a leading US airline with eight Door Trainers. The contract awards are for four A350 Door Trainers and four Bombardier CS100 Door Trainers and over-wing exit trainers. EDM will design and build the Door Trainers at its Manchester facility in the UK before shipping and installing them at two of the client's cabin crew training centers in the US. The Door Trainers will be used specifically to instruct cabin crew how to operate the A350 and CS100 aircraft door types un-

der a variety of normal, abnormal and emergency conditions. The airline's training instructors will be able to operate the doors via an easy-to-use touchscreen Instructor Operator Station (IOS) that simulates all the faults and malfunctions that may be encountered by the cabin crew under actual operational conditions.

**Magnetic MRO**, the Estonian-headquartered global MRO service provider, has received both ISO 9001:2015 and ISO 14001:2015 certificates by meeting the high standards set by the International Standards Organization (ISO) in the last week of October. Magnetic MRO has successfully proven its ability to deliver effective quality management systems, and on October 24, it became an ISO 9001:2008-certified organization. On October 28, Magnetic MRO also passed the independent audit of Bureau Veritas and acquired the ISO 14001:2015 certificate.

**Panasonic Avionics** has been selected by **Airbus** as lead supplier for High Bandwidth Connectivity (HBC) technology on its A320, A330, and A380 platforms. Panasonic's Global Communications Service uses a Ku-band satellite network to deliver high-speed communications services on 99.6% of all air traffic routes. The service lets passengers connect to the people, digital entertainment, and web content of their choice. It also enables Panasonic's eXTV solution, which is the industry's only global inflight television service. Over 70 customers have selected Panasonic's Global Communications Service for more than 3,500 aircraft. The company estimates that an additional 12,000 aircraft will be committed to its high-speed network by 2025.

**Panasonic Avionics** and **AeroMobile** have announced global availability of the new 3G eXPhone system. The new technology builds on the success of Panasonic's eXPhone service, which is already installed on over 450 aircraft across 19 airlines worldwide. Airlines such as Etihad, Cathay Pacific, Aer Lingus, EuroWings, SAS and Air Serbia have already started to install the 3G technology. The announcement follows increasing airline adoption of the eXPhone platform and increased customer demand for on-board mobile connectivity. The newly launched 3G technology delivers a richer and faster passenger experience and enables access to a greater number of applications.

**Satcom Direct (SD)** obtains Parts Manufacturer Approval (PMA) by the FAA for its SD WiFi Hub, and receives EASA 145 Repair Station designation. This official approval by the FAA marks SD as an authorized manufacturer for avionics, as well as an authorized maintenance repair and overhaul center for all SD avionics. The certification was awarded for its development of the SD Wi-Fi Hub, the standalone router and Wi-Fi solution that enables onboard voice and data communications. Over the last five months, the associated processes, manufacturing quality manuals, and the physical setup at their World Headquarters location in Melbourne, FL, have been audited by the Orlando Manufacturing & Inspection District Office (MIDO), in order to gain the approval. The PMA certification will allow SD to use Supplemental Type Certificates (STCs) to quickly obtain approvals on future hardware developments.

**Airbus** becomes first OEM to install suite of **Satcom Direct** Router (SDR), SD Wi-Fi Hubs and GlobalVT. The installation marks the first time that the SDR, two SD Wi-Fi Hubs and SD's GlobalVT will be integrated together, providing a complete cabin connectivity solution. The work was performed by Airbus Corporate Jet Centre (ACJC) in Toulouse, France, on an Airbus ACJ320.

The newly released SD Wi-Fi Hub is a wireless access point that, when installed together with the SDR in large cabin aircraft, expands capability and enhances connectivity performance – such as allowing the Internet to be used to make telephone calls. The Hubs adds additional interfaces where needed, simplifying the installation and improving Wi-Fi coverage in the cabin. The Hubs also support high-definition media products and applications for all passengers, eliminating buffering and gaps in cabin coverage by providing up to an additional 900 Mbps data rates to the cabin with both 2.4 and 5 Ghz 802.11n radios. At 1-inch high, the SD Wi-Fi Hub has the smallest and lightest form factor in aviation, which also contributes to the ease of installation. The SDR provides the gateway to the full spectrum of SD's value-added services for the cabin, including GlobalVT, which allows passengers to use their smartphones in-flight with their own number and caller ID. The SD products allow for optimum performance of smartphones, laptops and tablets during flights. Passengers can make and receive calls, texts, and emails, connect to the Internet and stream data – items that are often imperative in corporate jets.

## People On The Move



Bart Reijnen

Succeeding former CEO of Satair Group, **Mikkel Bardram**, **Bart Reijnen** took over as CEO on November 1, and is already relishing the challenge to lead the business to its next destinations. Mikkel Bardram has chosen to pursue new adventures and opportunities outside Satair Group and also

outside the aerospace industry. An aerospace engineer by training, Bart Reijnen has been working for the Airbus Group in various roles since 1995. His most recent position was Senior Vice President at Airbus Defence and Space at Bremen in Germany, where he had been for the past three years. Prior to this, Bart was CEO of Dutch Space B.V. in Leiden, the Netherlands, a wholly owned subsidiary of Airbus Defence and Space.

AJW Group is expanding its capabilities in Asia, bringing additional technical expertise to its Singapore office. In support of the recent appointment of **David Lewis**, Chief Technical Officer, the first of the technical services engineers, **Jason Tan**, has been appointed in Singapore. His role will focus on liaising with customers in Asia, providing the region with greater access to data and technical expertise. He will be responsible for monitoring the reliability of component supply and repairs to ensure work is carried out in line with customer expectations.

Avolon, the international aircraft leasing company, announced the appointment of **Denis Nayden** to its board as Vice Chairman and Chair of the Risk Committee. Mr Nayden is a veteran of the aircraft leasing industry and previously served as Avolon's Chairman from its founding in 2010, through its successful listing on the New York Stock Exchange in 2014, and up to the point of completion of Avolon's acquisition by Bohai Capital in January, 2016.

Air France Industries KLM Engineering & Maintenance (AFI KLM E&M) has appointed **Vincent Metz** as Director Strategy, **Robert Pruijm** as Vice President Procurement, and **Rodolphe Parisot** as Vice President Digital & Innovation. All three will sit on the AIR FRANCE KLM Engineering & Maintenance Executive Committee.



# Luxury all the way

MRO in the business market is expected to be \$121.8 billion.  
Photo: Jet Aviation

Business aviation MRO is growing at a significant rate. **Keith Mwanalushi** investigates the key trends in VIP and executive jet modifications and maintenance.

**T**he world's western produced in-service business fleets will increase from 31,000 aircraft in 2016 to nearly 38,000 aircraft at the end of 2025, a growth rate of 2.3% annually. Additionally, the 10-year demand for maintenance, repair and overhaul (MRO) in the business market is expected to be \$121.8 billion according to a Penton report.

Due to their nature, business jets often need complex modifications especially interior work and avionics upgrades. Michael Gringmuth, Sales Director VIP at SR Technics observes that customers are constantly looking to integrate the state-of-the-art equipment into their aircraft, but the available solutions don't always meet the customers' requirements. "The communication and IFE development generally lags behind what we see in households and yachting, mainly due to the required technical development and certification process, which can be costly and take time."

On the cabin side, Gringmuth says the customer is looking for soft material modifications, carpet replacement, seat refurbishment, metal replating, surface refinishing, sidewall, ceiling recovery, etc. "The complexity for requests like these is not related to the actual production work, but rather acquiring the certification and flammability data from the original outfitting."

Data of this sort is generally the intellectual property of the original outfitter, and therefore not always available. "If the data cannot be acquired, the MRO has to come up with alternative solution, which can

involve measures such as cutting existing panel parts to obtain testing samples and then repairing them." Gringmuth adds. In the case of very old cabins, he says sometimes the only solution is to fully replace the item to be refurbished (e.g. the panel, the full row of seats, etc.), which means significantly higher costs.

When outfitting an aircraft for the first time, the refurbishment experts at SR Technics suggest including as much certification and flammability data as possible on the list of deliverables from the completion centre. This can save time and money when it's time to refurbish the aircraft.

Owners are increasingly complying with avionics mandates (e.g. ADS-B out, PM-CPDLC and FANS/CPDLC), which is in turn leading to more flight deck modifications such as replacement of existing GPS receivers, FMS replacements and upgrades, and Satcom modifications. For instance, Honeywell's JetWave satellite communication terminals that utilise Inmarsat's Global Xpress Ka-Band Service, Jet ConneX, to offer high-speed broadband services are also generating high interest as a retrofit option, "and we are currently developing a Ka-Band STC for the 747-400 and 767-300 aircraft," comments Eckhard Schwanzer, Key Account Manager, MRO Sales at Jet Aviation.

As customers move towards HD compliant IFE systems, they require partial upgrades for monitors and source equipment, but often need to replace the whole IFE system if the Audio/Video switchers and the backbone are not compatible with the new HD signals says Schwanzer.

Modifications of avionics are usually prescribed by the regulatory guidance of respective CAA/FAA or air traffic control authorities. "Traditionally, owners tend to wait until the last minute and the last call to comply with mandates," tells Darius Saluga, CEO of Jet Maintenance Solutions.



Darius Saluga, CEO of Jet Maintenance Solutions

However, lately, Saluga sees a trend for customers looking for possibilities to have these mandated upgrades at their nearest checks. "Another common need for interior modifications nowadays is erasing in aftermarket prior or after aircraft sell-buy execution. Mainly these needs are coming from operators willing to streamline existing aircraft interior or perform complete conversion from commercial to business jet. Such projects are demanding and challenging, however, very interesting and inspiring for the MROs that have competence and expertise in complex interior modifications projects that connect design, production and maintenance organisations," Saluga continues.

"It's been pretty widely known in this market segment that the narrow and especially the wide-body completion business has been under duress for the last three years or so," Rick Townsend, VP, Business Development at Avianor tells AviTrader MRO.

Hit by what he calls the "perfect storm" of economics, geo-political issues and commodity pressures - operators are choosing to upgrade what they have or look at used aircraft. "VIP operators also seem to be holding onto their aircraft longer now rather than upgrading to new models as was seen in the past.

"Aircraft connectivity is one of the most sought after upgrades either Wi-Fi or satellite system installations. Existing interior refurbishment or refreshment would be the next in-line," observes Townsend.

Mark Styles, Director of Maintenance at MJets highlights that the ever-increasing navigation and communication capabilities are an easily identifiable trend as various national aviation authorities continuously adopt and mandate these requirements at their own pace; "furthermore the maintenance capability for performing these avionics modifications are more commonly either being restricted by the OEM or so complex that they require a highly specialised expertise to accomplish, both of which impede and delay embodiment by the broader business jet community."

Regarding interior maintenance and/or refurbishment, Styles spots that business jet owners have very high expectations of perfection and the industry has a limited supply of people with the talent to deliver on those expectations. "Consequently the trend we see is a shrinking number of trusted and reliable MRO's capable of undertaking significant interior rework or complete interior refurbishment while the ma-

jority of MRO's handle only the minor rework, refreshment and deep cleaning services," he remarks.

In a statement, the Jetaire Group said perhaps the most important modification they have seen involves the FAA CFR Title 14, §25.981 mandating an "Inerting System" or "Ignition Mitigation System" for the centre wing tank on most passenger aircraft. Although the OEMs have developed solutions, those solutions are expensive with long-lead times. In 2014, Jetaire developed and brought to market INVICTA Ignition Mitigation Technology (I2MT) – a FAA certified solutions meeting the requirements of §25.981 (STC ST03450NY). INVICTA is maintenance free, has no moving parts, requires no spare parts and can be installed during an "A" check.

Jetaire say the most common and urgent maintenance requests from business operators pertain to acquisition of replacement parts for an AOG aircraft. "In most cases, VIP operators only have a few aircraft and often times not even the same model so keeping a warehouse full of spares is not viable. Though aircraft reliability has improved, on the rare occasion when a part does fail and since most VIP operators do not maintain an adequate pool of spares, the responsibility falls on their supply base to fill that void which is often difficult," the company stated.

Gringmuth from SR Technics sees the most common maintenance requests are quick cabin refreshments (e.g. soft material modifications) along with the latest IFE (in-flight entertainment) and communication equipment. "Most of the time, the customer arrives at the MRO facility with some last minute additional requests, to replace a carpet because a wine stain, or an ugly scratch from a suitcase on a glossy surface. These requests are often last minute and require a smart and flexible organisation to quickly source the data and materials needed to do the job."

**"The VIPs that typically fly on these aircraft absolutely must have Satcom voice and data connectivity and Infotainment options available at all times."**

*Prabhat Gummadi, Director of Maintenance, Jet Aviation Dubai*



Gummadi - Business Jets are generally quite reliable due to low utilisation rates and high standards of maintenance.



NDT testing capability is crucial.  
Photo: Jet Aviation

In terms of airframe maintenance, business aviation operators follow the standard maintenance procedures, mostly under the low maintenance utility programme. Gringmuth continues: "You normally see requests that are common across the industry, a failed LRU (line replaceable unit), a tire replacement, and so on. The most urgent requests appear mainly in the area reserved for the principal." (E.g. seats, IFE, communications).

"Business Jets are generally quite reliable due to low utilisation rates and high standards of maintenance," Prabhat Gummadi, Director of Maintenance, Jet Aviation Dubai contributes. "However, systems relating to passenger convenience and cabin communications are high on the list of urgent maintenance requests. The VIPs that typically fly on these aircraft absolutely must have Satcom voice and data connectivity and Infotainment options available at all times."

Most executive jet MRO organisations seem to require Non-Destructive Testing (NDT) as part of their maintenance portfolio. Based on the aircraft / OEM MPD requirements; Townsend agrees that a good NDT capability and competent staff is a must have for the good VIP MRO, refurbishment or completions provider as these VIP aircraft operators are very time sensitive organisations and look for "one stop" organisations that can provide the services they need. He says they do not have the luxury of or time to be moving their aircraft to a second facility to have specialised NDT services provided.

Mr Styles concurs: "The maintenance programmes for today's business jets incorporate numerous NDT requirements and having that capability either in-house or contractible on-field is essential to an

organisation's ability to provide both scheduled and unscheduled maintenance support services in a cost effective and efficient manner. Due in large part to the significant training and equipment investment requirements, we see NDT services for business jet MRO's most commonly provided to as contracted services through a larger airline MRO or smaller independent organisations that specialise specifically in NDT services."

Gringmuth adds that having the NDT capabilities in-house reduces turnaround time significantly. Local testing capabilities mean that parts don't have to be sent out to vendors, thus saving the time that would be lost to shipping. In addition, defects found after NDT testing can be discussed onsite with the customer, engineering and maintenance experts, he points out.

Large executive jets such as the ACJ and BBJ are popular in some markets such as the U.S. and Middle East, seemingly, that offers



Townsend says the existing BBJ ACJ fleets will still need to be maintained to the OEM MPD requirements.



The most common maintenance requests are quick cabin refreshments.  
Photo: Jet Aviation

opportunities for large cabin maintenance and modification work.

“The resale of aircraft like these is often challenging, Gringmuth stresses. “Most of the time, during the initial outfitting, the customer has designed the aircraft to fit his or her tastes and requirements. Unfortunately, this doesn’t always fit with the requirements of the next potential buyer. It is smart to consider the resale factor right from the get-go and design the cabin so that an eventual cabin modification (e.g. new rooms, other seating arrangements, etc.) can be easily done, thus making the aircraft more attractive for resale.”



Gringmuth - Selecting a savvy completion centre or MRO organisation to help design and refurbish the aircraft can save the money in the long run.

Mr Saluga from Jet Maintenance sees an opportunity for MROs

specialising in Boeing and Airbus commercial type maintenance to include these business jet models into their capability list. “In terms of executive jet maintenance experts specialising in Hawker Beechcraft and Bombardier business jets like Jet MS, we see a great opportunity to share our long-standing knowledge as well as contribute our know-how to large business jet maintenance and modification projects.”

The existing BBJ / ACJ fleets will still need to be maintained to the OEM MPD requirements whether they be on a low utilisation programme or even commercial standards if the aircraft are being “flown hard” so there will be opportunities for the good maintenance organisation to do work, according to Townsend. He adds that in the narrow-body modification segment the Boeing BBJ’s show continued opportunities. In the wide-body modification market the B777 and 787’s seem to be most popular with the Airbus A330 and B747-8 providing less of an opportunity Townsend reckons.

In the near-term, the Jetaire Group sees the requirement for §25.981 expanding overseas to regulatory authorities who normally follow FAA rules and regulations. Currently, the OEM supply base is virtually depleted after providing kits to US operators so lead times are an issue. Jetaire’s INVICTA system’s lead time is weeks (not months) while offering a purely mechanical system which not only meets the timeline mandated by the FAA but outperforms OEM solutions across all key metrics.

**P**emco World Air Services was originally founded in 1951 in Birmingham, Alabama as Hayes Aircraft Corporation, a military aircraft refurbishment company. After 65 years in business, multiple name changes and business offerings, and the typically ups and downs, PEMCO has emerged as a leader in aviation maintenance, cargo conversion, and engineering.

Part of the company's recent success can be attributed to Mr. Pastor Lopez, CEO of PEMCO, hired in the fourth quarter of 2014. Lopez brings over 30 years of experience to PEMCO, having previously served multiple executive roles at AAR Corp.

We recently caught up with Lopez to discuss how the company has changed since his arrival and what the future holds for PEMCO.

**AviTrader MRO: How would you compare the business as it is today versus when you arrived in 2014?**

**Lopez:** The company was predominately a cargo conversion powerhouse with MRO business. Cargo business was our center of gravity. We then placed emphasis on growing our MRO business. We hired Chris Johnson from the airline side to solely focus on MRO sales content. MRO sales has seen a CAGR 21% since November 2014. Today, the business is evenly split. In addition to this, our MRO business strictly consisted of LCC airlines in 2014 and 2015. Today, we have two legacy carriers among our customers.

**AviTrader MRO: What changes have been implemented to get the company to where it is today?**

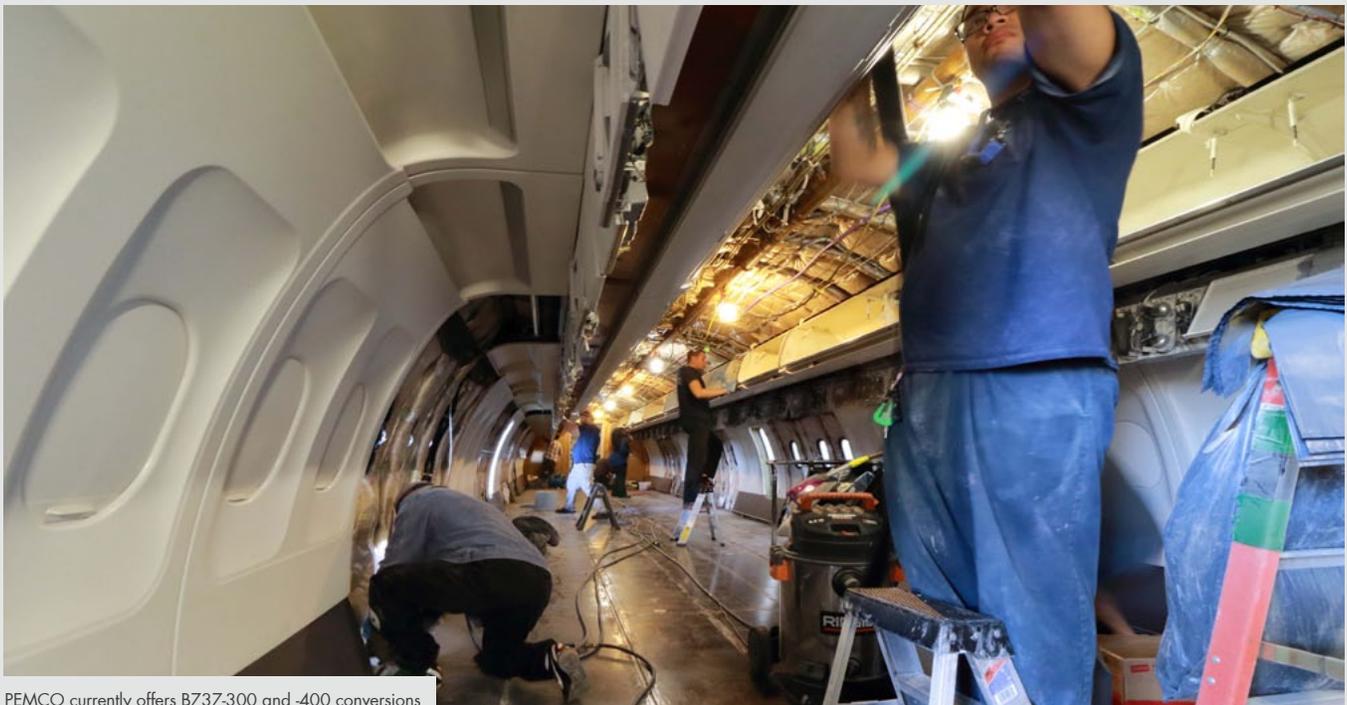
**Lopez:** From my arrival, I articulated a vision and explained the four fundamental strategy cornerstones I operate under: teammates, customer service, Lean, and metrics. Everything we do revolves around these premises. I strongly believe in having an engaged workforce that truly understand the role they play in making the company successful. I was fortunate to attend the Disney Insti-



Pastor Lopez, CEO of PEMCO

tute course years ago. One of the lines that stuck with me is, "it may not be our fault, but it is our problem." Our entire management team now preaches this line in support of our customers.

Shy of two months after my arrival, we established the Lean programme. We selected one individual to be solely responsible for Lean, who reports to me, so that everyone would understand that I take this seriously. Ben Macre has done an outstanding job. He is an industry veteran that has experience on the airline and MRO side. Our teammates are involved in changing our business. Teams



PEMCO currently offers B737-300 and -400 conversions



There is a strong emphasis on growing the MRO business

are put together every month to work on a week-long transformation of an area. This has proved very beneficial as all the changes are owned by our teammates. As a result, we have seen a tremendous morale increase.

We measure everything we do. As I always say, it is really hard to argue against numbers. To this effect, every hangar bay has a screen that depicts the aircraft performance while being serviced, we have weekly metrics reviews at the staff meeting, and every functional area has a set of metrics that are reviewed on a monthly basis. This monthly metric serves as the basis for annual performance reviews of my direct reports. Hence, there are no surprises

**AviTrader MRO: What MRO capabilities do you offer your customers?**

**Lopez:** We offer airframe maintenance, such as letter checks and structural repairs, line maintenance at Tampa International Airport, AOG field support to anywhere in the world, modification work for cabin and avionics, and support shop services that include a wide range of capabilities.

**AviTrader MRO: PEMCO currently offers B737-300 and -400 conversions. How do you think these models will compare to the NG's over the next few years? Does PEMCO still have plans to offer B737-700 and -800 conversions?**

**Lopez:** PEMCO is a world leader in the B737 Classic conversion with over 150 aircraft converted. Recently, we celebrated in China the 100th B737-300 redelivery. These aircraft have logged millions of hours of operations around the world. Our current products do not have any AD or SB issued against, nor is there an inspection requirement. We will be taking this knowledge and transferring it to the NG product. There will be more news on the

NG product coming soon.

**AviTrader MRO: PEMCO recently expanded its engineering capabilities. Was this at customer's requests? What benefits will customers see with the added services?**

**Lopez:** As part of our conversion business, PEMCO has a rich and deep engineering know-how that was not being tapped. As a result of our strategic plan for 2017, we decided to develop an additional revenue stream. This does not require any substantial additional cost on our side and provides great benefits for our customer base as they are able to leverage our knowledge and reduce their own engineering costs.

**AviTrader MRO: PEMCO is a big believer in Lean. How does this tie into your operations, mechanics and staff, and benefit your customers?**

**Lopez:** The company leadership must be aligned in order for any programme to be successful. The Lean programme is no different. Our first value stream mapping provided us with a roadmap to launch and target specific areas of improvements. A different team is selected every month to work on transformational projects. Every project is about reducing time and travel for our technicians. If you walk into our hangars today, you will find that all floors have markings depicting where the trash cans are supposed to be. It is a cultural shift that requires hands-on management of the process. Therefore, every area is audited every week and receives a Lean score.

This effort has yielded great results. Our on-time performance has gone up from 64% in 2014 to over 93% in 2016. We have nearly tripled the number of aircraft we have serviced in Tampa this year through September when compared to the entire 2014.

# In the hot seat.....

Richard Brown, Vice President and Product Design Manager, Blackbird Designs

**AviTrader MRO: What are your current capabilities in terms of aviation speciality tooling?**

**Brown:** Blackbird Designs capabilities are masking kits for wheels and brakes and Orbs. The masking kits are used for masking wheels and brakes during the paint process to increase masking and unmasking production times and help improve quality. The masking kits have increased masking time as much as 85% in most applications. Orbs are discs that are engraved with the customer's logo and are used to help secure and protect the bearing during shipping and storage. Orbs are made in different sizes and colours.

**AviTrader MRO: What exactly does wheel and brake masking entail?**

**Brown:** Our patented masking consists of all part required to mask a wheel or brake as called out for in the manufactures repair manual. A masking kit is made out of a smooth surface plastic. This type of plastic allows for easy cleaning of the masking pieces and gives the product a long life if cared for properly. Each masking is machined to have a snug fit to not allow seepage or overspray in between the mask and the unit that that is being painted. The masking kit is also de-

signed stands or risers to allow the painter to turn the wheel or brake over and paint the other side without having to wait for the opposite side to dry.

**AviTrader MRO: What function do 'Orbs' play?**

**Brown:** Orbs are discs that are made of colored plastic that are engraved with a customer's logo that protects key areas such as bearings on a wheel during the shipping and storage. Most customers have their web site, logo and telephone number engraved so that the operator can contact the repair facility for future business.

**AviTrader MRO: Do you work directly with the airlines or MROs?**

**Brown:** Blackbird Design works with all customers including airlines, major manufacturers and MRO's both domestically and internationally.

**AviTrader MRO: What kind of masking innovations can you talk about and how does this add value to customer services?**

**Brown:** Our patented masking systems



Blackbird Design works with all customers including airlines and MROs says Brown

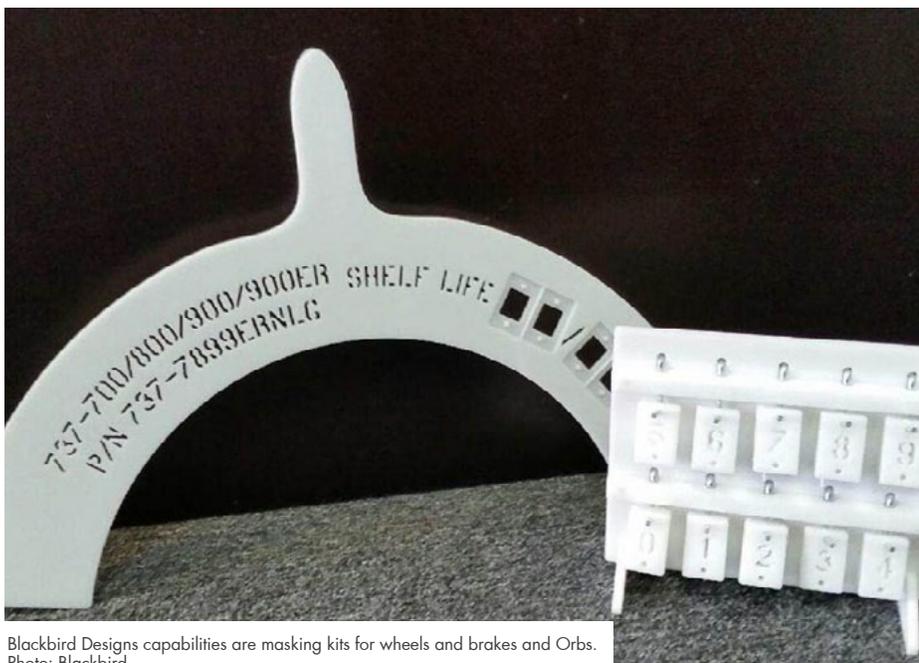
are manufactured and designed locally. All masking pieces that are included in our masking kits can be modified and redesigned to meet our customer's special requirements. Any custom made masking will have a unique part number created for that design only to assure that when the part is reordered that the proper designed part will be supplied.

**AviTrader MRO: How are you making your processes and aviation products more sustainable?**

**Brown:** Blackbird Design is always researching and implementing new materials, methods and manufacturing processes as applicable to provide an end product that will provide a product that is safe and beneficial in all ways to our customers.

**AviTrader MRO: What's next in the pipeline at Blackbird?**

**Brown:** Blackbird Design is currently working with various repair and manufacture facilities to develop maskings for other applications on the repair and manufacturing side of the aircraft. We are willing to accept any challenge to design a masking or protector for any component or process of the aircraft, repair or manufacturing.



Blackbird Designs capabilities are masking kits for wheels and brakes and Orbs. Photo: Blackbird



# Improving inventory management

Responsibility for managing parts requires efficient IT systems.  
Photo: Pattonair

**Brian Long**, Chief Information Officer at Pattonair explains how IT capability is making life easier for customers and giving them the flexibility to respond to change.

When the aerospace and defence industry's leading global supply chain provider, Pattonair, engages with a new customer to take responsibility for managing their class C parts, Pattonair's systems have been tailored to work harmoniously with the customers' operations and systems, both for OEMs and MROs.

The biggest advantage Pattonair's IT capability offers its customers is speed and flexibility to adapt to, and link in, with the customers systems and business processes, but also the agility to respond to change, which is integral to survival in the aerospace industry, whether ramping up or scaling back.

To achieve this Pattonair has invested in business process managers who provide the customer interface within Brian's 50 strong team who are responsible for integrating the service. The business process managers understand their customers businesses and processes and always visit a new customer's site to see exactly how they operate and what they need. The technically expert developers in the team create the bespoke technical solutions to ensure the customer receives a seamlessly integrated service. The key is flexible solutions so the customer receives exactly what it needs and there are no gaps and no duplication.

In the same way Pattonair collaborates with its customers, the business process managers and developers are co-located at Pattonair's Derby headquarters to enable them to work together alongside the team responsible for setting up the network infrastructure via the servers and hardware. Hence, Pattonair's global customers are all on the same system managed from Derby.

Most customers, both OEMs and MROs, use one of the established Enterprise Resource Planning (ERP) systems, such as SAP or Oracle, to support their operations and manage their inventory. Pattonair has developed its own bespoke ERP system to align it with the specific needs of its aerospace customers. This has entailed Pattonair customising its

own ERP by replacing some standard solutions offered by the ERP with selected best in class solutions for key business processes. A flagship example is the forecasting tool for Inventory management, which Pattonair has adapted and enhanced for aerospace's need so they have the right part in the right place in the right time. The tool has become Pattonair's own Akrivis forecasting and inventory management tool and has proved a key differentiator for Pattonair in winning and retaining customers by improving customers' effectiveness through better planning and driving inventory and working capital.

Brian is proud of pioneering Pattonair's tailored approach to providing customers with tailored solutions which are underpinned by Pattonair's approach to IT, which enables it to provide flexible solutions. It distinguishes Pattonair from the competition in being adaptable and thus giving its customers the agility and flexibility to respond to change.



There is a technical solutions team to ensure the customer receives a seamlessly integrated service. Photo: Pattonair



# The leasing paradigm

Lessors are seeking maximum return on their assets.  
Photo: Boeing

Looking ahead to 2017, the **International Bureau of Aviation** (IBA) undertook a recent survey of lessors to identify the key issues they will face in the coming year.

Through a combination of pulse research with their contact base and anonymised conversations with key individuals, IBA has been able to build a picture of the lessor market's key concerns for 2017. The aviation consultancy received a wide range of answers, which fall into four areas: increased competition and declining returns; expertise; risk and volatility; and widebodies.

## Increased competition and declining returns

The surveyed lessors were most concerned about a more challenging market in 2017, resulting from several key factors: increased competition; cheap funds and new lessors keeping acquisition prices high and lease rates low; pressure on business models; oversupply; deteriorating lease returns; economic life assumptions; and age restrictions.

Lease rates for new aircraft are under continuing pressure from new entrants and a low interest rate environment. Lease rates for used aircraft are under even more pressure due to the relative attractiveness of new aircraft lease rates and this situation is unlikely to change in the first half of 2017.

Any RFP issued by an airline looking to perform a sale and leaseback or operating lease structure has almost record numbers of responses which is pushing rates down and keeping pricing up for the time be-

ing, but for older types, IBA expects that both will be leaner. At these levels, many of the larger lessors reported that they have no intention to get too involved, focusing on exclusive deals, or simply on selling off what they have.

In 2016 IBA has seen LRFs of 0.6 and 0.7 for new aircraft. Savvy investors are now looking at less popular types, for example A319, and also the regional market for double digit returns. Interest has also turned towards the freighter market where in the prevailing low fuel cost environment and falling four engine aircraft values, 747 freighters are proving attractive. IBA's survey identified a continued interest in the end of life and tear down sector and in alternative or intangible assets such as airport slots.

Overall, IBA has seen an increase in lease extensions in the last year. This is generally good news for both lessors and lessees – it is usually a win/win situation with the lessor not having to be concerned over a gap (and therefore costs) between the redelivery condition from one airline to the next, and the lessee will usually see a reduction in the lease rate that it was previously paying.

As a result and according to IBA research, there was a reduction in redeliveries of around 20% in the last year but that still equates to circa 650 redeliveries split into 150 twin aisles and 500 single aisle aircraft.

While much of the feedback relating to competition and returns is negative for lessors, it is important to highlight that, for airlines, there has probably been no better time to consider leasing aircraft.



Air Astana has begun taking delivery of its leased A320 NEOs.  
Photo: Airbus

**Expertise**

The lessors surveyed highlighted various concerns for 2017 relating to expertise, including the skill sets of the airlines, underestimation of budgeting, lack of lessee engagement, and accommodation of requests.

It is evident that whether in-house or outsourced, airlines are ramping up efforts to better manage redeliveries. However, in the non-distressed world of a normal redelivery process, IBA continues to see poor management and increased costs of the delivery of aircraft on the part of the airlines, which is a concern.

It seems that whilst some airlines have created in-house teams or used contracted-in specialists to manage the process, key decisions were often made too late and the combination of short-term additional costs of lease extensions to cover the delayed process and increased costs of ad-hoc, versus planned, maintenance created additional costs of close to \$2m per single aisle redelivery.

**Risk and volatility**

Lessors' concerns about risk and volatility in the coming year arise from regional instability, airline consolidations, increases in subleasing and wet leasing, early lease terminations, and decreases in airline financial performance.

There is a mixed picture relating to geopolitical risk. China is still a hot, albeit slowing and challenging market, and India is bouncing



GOL is the most publicised victim of the downturn in the Latin American region.  
Photo: Boeing

back. On the flip side, an increasing number of IBA's clients are now monitoring operator activities across Latin America, Eastern Europe and West Africa.

There have been several unscheduled redeliveries in the last year as some airlines suffered from issues related to regional economic problems, cash flow reductions and exchange rate pressure. Whilst oil has remained at a relatively low level in the past year, the US dollar has strengthened against many currencies so for those airlines who earn mostly local currencies but bear costs in USD, the benefit of lower USD oil price has been cancelled out and in some cases worsened as their conversion rates worked against them.

Almost all aircraft operating leases are USD costs and along with fuel and maintenance reserves (also USD denominated) the cash flow pressures have resulted in some early redeliveries and renegotiations. Brazil's GOL is the most publicised victim of the downturn in the Latin American region. IBA has been heartened by the airline's approach to the leasing and finance community in dealing with its drop in demand and increase in costs. IBA has also seen pressure in the US – Republic entered bankruptcy protection and grounded many aircraft – mostly regional jets.

**Widebodies**

It has been approaching a year since the very public questioning of B777 and A330 residuals surfaced. In IBA's survey, four interlinked concerns emerged: redeliveries, remarketing, placement and reconfiguration. The first three allude to the softening of used widebody values as a result of aircraft being returned off lease as early as 10-12 years old, with few options for a new home.

Large backlogs, cheaper fuel and weakened long-haul markets such as Russia and Brazil have also conspired to knock demand for larger aircraft.

Privately, some airlines have admitted that they have ordered sufficient large jets for the foreseeable future. Add in the improved range of the latest single aisles, which can cover 7,000km+, and the widebodies, are further squeezed.

These issues are only likely to intensify, given the numbers of widebodies redelivering over the next five years.

# Enhancing decision making.



**Across the deal cycle.**

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