

June 2015 - [www.avitrader.com](http://www.avitrader.com)

## PARIS LOOKS TO THE SKY

Paris Air Show Special

Interview - Pratt & Whitney

Company Profile

Aerostar

MRO News

from around the world

People on the Move

latest appointments

ICF Analysis



# Plane mad

For those of us die hard aircraft enthusiasts returning to Paris every two years is like a pilgrimage. Nothing beats being in the company of like-minded people sharing a passion for aviation... and business.

As always Airbus and Boeing went head to head in the battle for supremacy. The European manufacturer claimed victory over Boeing and took home \$57 billion worth of business for 421 aircraft, mostly for the A320. Boeing sold 331 commercial aircraft but most of these were high value wide bodies. Airbus had no A380 order announcements and only one firm A350 XWB order.

Interestingly, just as the dust settled, low cost carrier Wizz Air sneaked in a massive order for 110 A321neo. The new aircraft will both replace current aircraft when they are returned to lessors as well as provide additional capacity for Wizz Air's further growth. At current list prices, deal is worth in excess of US\$12.5billion although discounts will be granted according to the airline.

Of particular interest at this year's show was the presence of Bombardier's Cseries. A CS300 finally took to the sky in a flying display, it was a much needed push for the programme which has been dogged with problems. The CS300 was

certainly one of the highlights of the show, it was also joined by an A380, a Vietnam Airlines 787 and an A350 in house livery performing exceptional flight displays.

As an aircraft fanatic, Paris was certainly a memorable and enjoyable event and despite being a week-long event it seemed over all so quickly.

Keith Mwanalushi  
Editor



Paris once again provided for a show stopping performance.

Photo: Keith Mwanalushi

<b>Contents</b>	
Paris Air Show News .....	4
MRO and Production News .....	11
Finance News .....	17
Other News .....	17
Cover story: Paris has the wow factor.....	19
Paris Air Show: The American dream .....	22
Company profile: Aerostar .....	25
Industry Interview: Matthew Bromberg, President, Aftermarket, and Pratt & Whitney	27
ICF Opinion: Aircraft Spares – Demand, supply and value trends .....	29
Information Technology .....	32
People on the Move .....	32

AVI TRADER
MRO

**Published monthly by**

AviTrader Publications Corp.  
Suite 305, South Tower  
5811 Cooney Road  
Richmond, British Columbia V6X 3M1  
Canada

Email: [p.jorssen@avitrader.com](mailto:p.jorssen@avitrader.com)  
Tel: +1 (424) 644-6996  
[www.avitrader.com](http://www.avitrader.com)

**Editorial**

Keith Mwanalushi, Editor  
Email: [keith@aeropublications.co.uk](mailto:keith@aeropublications.co.uk)  
Mobile: +44 (0) 7871 769 151

**Design**

Volker Dannenmann, Layout & Design  
Email: [volker@dannenmann.com](mailto:volker@dannenmann.com)  
Mobile: +34 657 218706

**Advertising inquiries**

Jenny Falk  
Head of Sales & Marketing  
Email: [jenny.falk@avitrader.com](mailto:jenny.falk@avitrader.com)  
Tel: +49 (0) 8761 346007

**Registration**

*AviTrader MRO* is a subscription-free monthly publication. To receive a personal copy in your inbox every month, ***please click here*** to subscribe.

**Opinion**

Please send your comments and queries to [editor@avitrader.com](mailto:editor@avitrader.com)

**EngineLife**<sup>®</sup>  
by Snecma



**MAXIMUM CYCLES  
AND MINIMAL  
DOWNTIME**

Photos credits: ©Thinkstock - areassy.com

**More than MRO: EngineLife<sup>®</sup> by Snecma**

Snecma (Safran), as an OEM for the CFM56\* engines, knows your engine better than anyone. When it comes to a shop visit, this OEM expertise benefits you with the best MRO performance and a significant life extension within an optimized timeframe. What's more, we can go further based on our intimate knowledge of your engine and over 600 million flight hours of experience. This leaves you free to focus on what matters most: keeping your aircraft flying.

**EngineLife<sup>®</sup>, we care for your engines the same way we build them. [www.snecma.com](http://www.snecma.com)**

\* CFM 56 engines are a product of CFM International, a 50/50 joint company between Snecma (Safran) and GE.

### GE news from the Paris Air Show

Lockheed Martin Commercial Engine Solutions (LMCES) and GE Aviation signed two OnPoint solution agreements for the material to overhaul CF6 and CF34 engines. The one-year agreements are valued at US\$10m over the life of the agreement.

GE Aviation signed SkyWest Airlines to a 18-year OnPoint solution agreement for material to support its 86 CF34-8E engine fleet that powers its EMBRAER 175 aircraft. The agreement is valued at more than US\$550m over the life of the agreement.

Following a Memorandum of Understanding (MoU) established in 2014 between GE Aviation's Hamble facility and India's Mahindra Aerospace, the two companies have further developed their relationship by signing an agreement that will initiate manufacture, following Airbus transfer of work approval, of an Airbus Single Aisle package of work. The initial MOU enabled both companies to work together on potential opportunities in manufacture of aerostructures. This new agreement will see them collaborate to produce small, metallic complex structural sheet details and assemblies within Mahindra's new Aerospace facility in Bangalore, India.

GE Aviation recently delivered the 10,000th flight management computer (model 2907C1) to The Boeing Company marking an era of continuous partnership in support of the versatile 737 airplane. "GE's flight management system has been standard fit on the Boeing 737 since 1984. The current system, now in its 4th evolution, will meet 737 needs into the future," said Alan Cavslavka, president of Avionics and Digital Systems for GE Aviation. More than 4,500 Next Generation 737s have been delivered with GE's current flight management computer (FMC) and various 737 Classic airplanes have been retrofitted.

### AFI KLM E&M inks new contracts with Royal Jordanian and Air China Cargo

Royal Jordanian, the Jordanian flag carrier has decided to renew the contract signed in 2011 with AFI KLM E&M covering component support for its Airbus A330s. The agreement includes repairs and access to the spares pool on a flight hour basis. The special feature of this contract is that it is set to run until the scheduled retirement of the aircraft from the Royal Jordanian fleet. In the meantime, Royal Jordanian will not only benefit from AFI KLM E&M expertise on the A330 product, but also from

its experience of phase outs and major compliance issues in connection with components of aircraft retired from a commercial fleet.

Air China Cargo, the freight specialist arm of Chinese flag carrier Air China, just inked an exclusive long-term engine support contract with AFI KLM E&M covering its fleet of Boeing 777 freighters. Six of the projected eight-strong fleet are already in revenue service and two more are due to join the fleet in September. The contract extends the 2014 partnership deal between Air China and AFI KLM E&M, which was entrusted with exclusive full support of the Chinese carrier's 777 aircraft engines.

### Bombardier signs Smart Parts agreements covering 31 Q400 aircraft

SpiceJet of India, Poland's LOT Polish Airlines and Abu Dhabi-based Falcon Aviation Services have signed agreements to enroll in Bombardier's Smart Parts after-market support program, to provide value-added dispatch availability and cost predictability for their growing fleets of Q400 aircraft. The agreements are each for 5-year terms. Enrolling in Bombardier's Smart Parts program allows customers to focus on their business of flying and optimize on their business plans while minimizing the lifecycle cost of the aircraft and ensuring superior dispatch reliability.

### Air Canada, CFM sign 20-year RPFH agreement

Air Canada has signed a long-term Rate per Flight Hour (RPFH) agreement with CFM to support 122 LEAP-1B engines powering the airline's 61 Boeing 737 MAX airplanes it ordered in 2014. Under the terms of the 20-year agreement, CFM will guarantee maintenance costs for the entire Air Canada LEAP-1B fleet on a rate per engine flight hour basis.

### Fokker Services choose Aviointeriors for B737-800 VIP completion

Fokker Services has decided to select Aviointeriors for the provisioning of the Business Class "Andromeda" and the Economy Class "Centaurus" seat models for its B737-800 VIP program. Fokker Services is part of Fokker Technologies, which develops and produces advanced components and systems for the aerospace

industry. Fokker Services supplies integrated maintenance support and VIP completion and modification services to manufacturers, owners and operators. Fokker Services is an authorised Boeing Business Jet Completion Center.

### Unison Industries signs 10-Year services agreement with Qatar Airways

Unison Industries signed a 10-year Material Services Agreement with Qatar Airways in support of Qatar Airways' unprecedented fleet growth rate. The agreement extends through 2024 and covers external Unison new parts and component repairs for all engine lines in the Qatar Airways fleet which includes the CF6, CFM, V2500, GEnx, GE90 and GP7200.

### Liebherr-Aerospace signs agreement on E-Jet 170 and 190 landing gear overhaul with HOP!

Liebherr-Aerospace Lindenberg GmbH and HOP! Air France entered into an agreement covering the overhaul of the landing gear systems on board the airlines' Embraer E170 and E190 aircraft. The contract was signed at the Paris Air Show on June 17th, 2015. French carrier HOP!-REGIONAL, which is based in Nantes and part of HOP!, an Air France subsidiary, decided to renew its confidence in Liebherr-Aerospace for the overhaul of Embraer landing gear systems. Following a program signed in 2007 for 37 EMB135/145 aircraft, the companies now concluded an overhaul agreement for the airline's fleet of 26 Embraer E170 and E190. Liebherr-Aerospace will carry out all overhaul activities at its facility in Lindenberg (Germany).

### Moroccan flag carrier signs component pooling contract with Spairliners for four Embraer 190 aircraft

Royal Air Maroc entrusts Spairliners with its component pooling and maintenance expertise regarding a support of the new Royal Air Maroc E-Jet fleet. The Casablanca based airline is Spairliners' 11th E-Jet customer for long-term component pooling and repair solutions. With the addition of Royal Air Maroc, Spairliners, the specialist in Component Care, now supports a total number of 150 E-Jet aircraft, in addition to 52 contracted Airbus A380.



First converted A320 / A321 aircraft available to customers in 2018

Photo: Airbus

### EFW, ST Aerospace and Airbus to launch A320/A321P2F freighter conversion programme

Airbus has signed an agreement with Singapore-based ST Aerospace to offer passenger-to-freighter (P2F) conversion solutions for its A320/A321 aircraft. Airbus foresees a significant market demand of more than 600 aircraft over the next 20 years for P2F aircraft conversions in the small freighter segment. The A320P2F, with eleven main-deck container positions, will be capable of carrying 21 metric tonnes of payload over 2,100nm, while the A321P2F with 14 main-deck positions will be able to carry up to 27 tonnes over 1,900nm. The first converted A321P2F will be delivered in 2018. The A320/A321 P2F converted aircraft will be marketed and managed by Elbe Flugzeugwerke (EFW). Airbus currently holds a majority stake in the Dresden-based freighter conversion specialist, together with its partner and co-owner, ST Aerospace. In order to implement the new business line for A320/A321 P2F aircraft, ST Aerospace will provide its specially developed conversion technology and will obtain another 20% of EFW's shares, thus increasing its stake in EFW to 55%. Subsequently, Airbus Group will become a minority partner in EFW, reducing its shareholding to 45%. The management team in Dresden will continue to be headed by President and CEO Andreas Sperl and will ensure sustainable growth of the Airbus P2F freighter family while strengthening EFW's position as a global Airbus conversions supplier. In addition, the

operation will secure value-adding jobs in the Dresden region.

### Finnair and Rolls-Royce sign contract on A350 XWB engine services

Finnair, the first European airline to operate the Airbus A350 XWB aircraft, has awarded Rolls-Royce a long-term engine servicing agreement for the new aircraft type's engines. Rolls-Royce's Trent XWB engines are used exclusively for the Airbus A350 XWB. The agreement brings Finnair's entire A350 XWB fleet under Rolls Royce's TotalCare package. Finnair has firm orders for 19 A350 XWB aircraft, the first four of which are expected to arrive in the fleet in the second half of this year, with another seven in 2016 and 2017. The complete order will be fulfilled by 2023.

### Air New Zealand extends V2500 engine maintenance agreement

Air New Zealand has signed a Maintenance Services Agreement extension with the Pratt & Whitney Christchurch Engine Centre to maintain its fleet of 58 V2500 engines for an additional five years supporting the airline's Airbus A320 operations. The V2500 engine is offered through IAE International Aero Engines AG, a multinational aero engine consortium whose

shareholders comprise Pratt & Whitney, Pratt & Whitney Aero Engines International GmbH, Japanese Aero Engines Corporation and MTU Aero Engines. This announcement follows Air New Zealand's recent selection of Pratt & Whitney's PW1100G-JM engines for 13 firm A320neo family aircraft and provision of fleet management support services for up to 16 years.

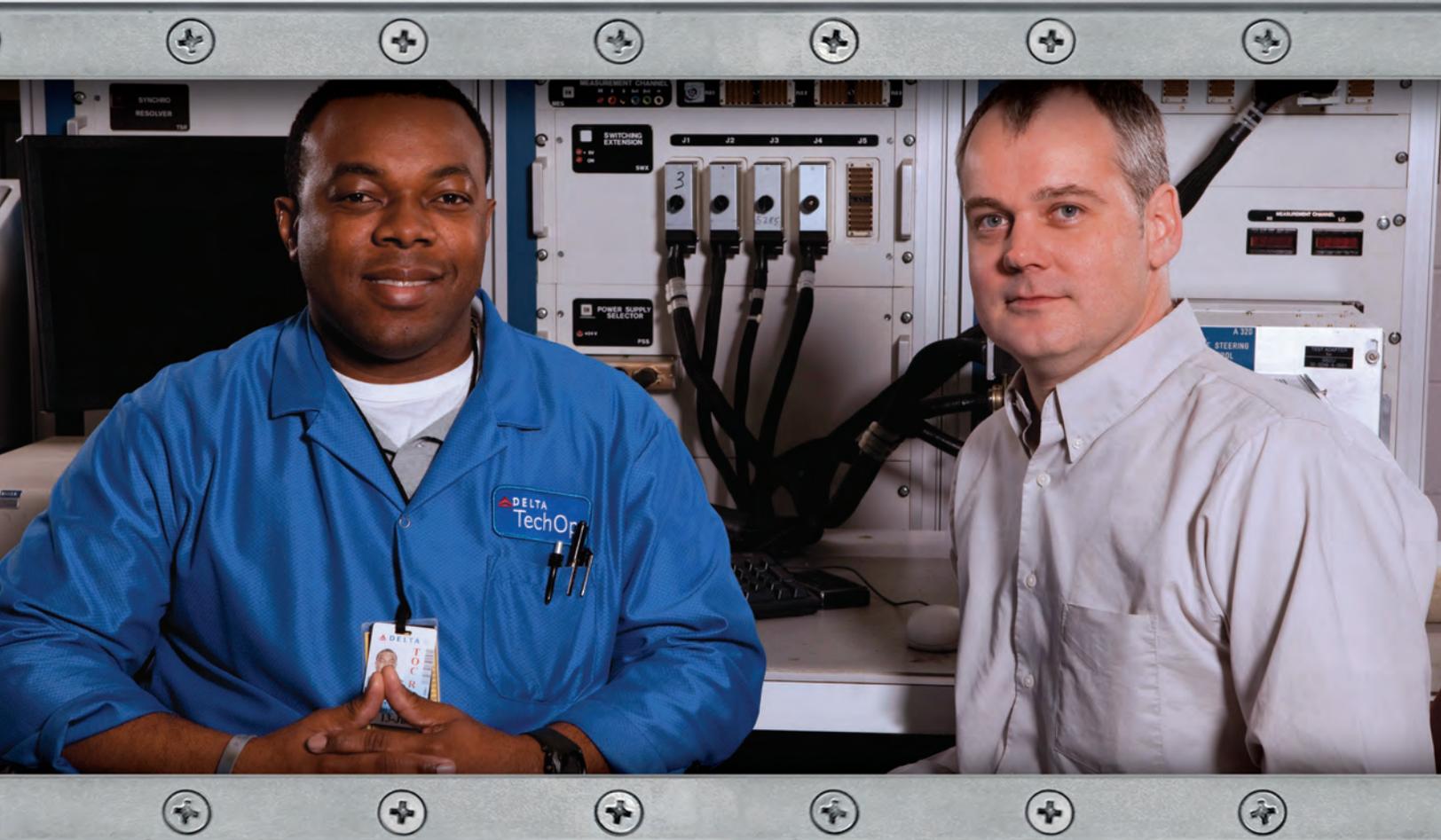
### easyJet agrees with Airbus Upgrade Services for the retrofit of up to 105 of its A320 cabins

easyJet has reached agreement with Airbus' Upgrade Services division for the retrofit of up to 105 of its A320 cabins. The new cabin will feature six additional seats whilst maintaining current passenger comfort levels and in addition it has the capability of allowing full access to one of the lavatories for Persons with Reduced Mobility (PRMs). In April 2015, Airbus and easyJet celebrated the 250th delivery of Airbus aircraft including some of the latest technology and innovations available. This significant cabin upgrade programme reinforces the airline's commitment to its fleet. The new cabin layout is achieved through a combination of the recently certified 'Max-Pax' seating capability for the A320 family and the innovative Space-Flex v2 which optimises the cabin space at the rear of the aircraft allowing high service levels to be maintained. The first line-fit aircraft with Space-Flex V2 will arrive straight from the Airbus production line in May 2016 with the deliveries of upgrade kits for the retrofit aircraft planned between autumn 2016 and spring 2018.

### Bombardier appoints Netherland's SAMCO Aircraft Maintenance as C Series aircraft Authorized Service Facility

Bombardier Commercial Aircraft has appointed SAMCO Aircraft Maintenance B.V. of the Netherlands as its first Authorized Service Facility (ASF) for the all-new C Series family of airliners. Under the ASF agreement, which takes effect immediately, SAMCO will offer C Series aircraft operators with maintenance services that include: start-up support, line maintenance, base maintenance and continued airworthiness management, from its facilities located at the Maastricht Airport in Beek, Netherlands. To accommodate the C Series aircraft, SAMCO will begin an expansion project this year that will see its current 5,300 m<sup>2</sup> hangar capacity almost double to a total of approximately 10,000 m<sup>2</sup>.

# MAINTAINING YOUR PEACE OF MIND BACKED BY OVER 200,000 COMPONENT REPAIRS EACH YEAR.



**With industry-leading operating reliability and more than 30 years of Component MRO service-expertise,** our dedicated, experienced and certified team is fully equipped to handle all your component maintenance needs. Delta TechOps tests, repairs, overhauls and modifies more than 200,000 components every year, representing more than 8000 different part numbers of 35+ ATA chapters and including:

Avionics  
Hydraulics

Engine QEC LRU  
Pneumatics

Composites and Sheet Metal  
Fuel and Oil

Delta TechOps' ISO 9001 Certified services range from single Repair-and-Return to comprehensive Inventory Exchange programs.

Covering Boeing, Airbus and McDonnell Douglas fleets, our team of experts shares one uncompromising goal: to provide you with the highest quality, most cost-effective service. All with the fastest possible turnaround.

Search our catalog for a complete list of our repair capabilities and submit your RFQ right from there. And to see what sets Delta TechOps apart, visit [deltatechops.com/components](http://deltatechops.com/components) or call **+1-404-773-5192** to contact us.

**DELTA**  
**TechOps**  
WHAT IT TAKES TO FLY.



Airbus Helicopters, Vector Aerospace and Rockwell Collins sign Pro Line Fusion cockpit upgrade agreement  
Photo: Airbus Helicopters

### Airbus Helicopters, Vector Aerospace and Rockwell Collins sign Pro Line Fusion cockpit upgrade agreement

Airbus Helicopters, Vector Aerospace and Rockwell Collins have entered into an agreement to jointly develop and market the scalable and flexible Pro Line Fusion integrated avionics solution to upgrade Airbus Helicopters platforms. "Pro Line Fusion provides Airbus Helicopters with one of the most advanced avionics and the highest level of efficiency for the rotary wing cockpit," said Troy Brunk, vice president and general manager of Airborne Solutions for Rockwell Collins. "The enhanced situational awareness features provided by Pro Line Fusion will result in reduced pilot workload and greatly increase flight safety for operators of Airbus Helicopters platforms." The first platforms targeted for the upgrades will be AS332 / 532 MK1 helicopters, with the first implementation expected in the summer of 2016.

### AAR and South African Airways Technical announce MOU for joint venture

AAR, a world leader in airframe maintenance and supply chain solutions, and South African Airways Technical (SAAT), the maintenance division for South African Airways, have signed a Memorandum of Understanding to establish a joint venture partnership to reduce costs and increase operational efficiencies of the airline's fleet. The joint venture will also focus on growing SAAT's MRO services to third-party customers/airlines across the continent. Under the agreement, AAR will provide operational analysis and technical assistance for MRO and warehouse facilities and integrate IT solutions

including AAR's 1MRO Software Suite. AAR has a global reputation in the aviation sector for improving operational efficiencies and turn times, as well as lowering costs through its customer-centric solutions.

### Pratt & Whitney GTF engine MRO network formalized

Pratt & Whitney and its OEM collaborators, Japanese Aero Engines Corporation (JAEC) and MTU Aero Engines AG (MTU), signed a definitive agreement formalizing a maintenance, repair and overhaul (MRO) network through International Aero Engines and naming initial locations where PW1100G-JM engine maintenance visits will be performed. PW1100G-JM engine maintenance locations include Pratt & Whitney's facility in Christchurch, New Zealand; MTU's maintenance center in Hanover, Germany; and JAEC's IHI Corporation overhaul center in Mizuho, Japan. Pratt & Whitney is working to expand its service network beyond its program partners. As the volume of shop visits grows, the overhaul capability will expand outside of the Pratt & Whitney partner network to include airline shops and independent maintenance, repair and overhaul shops as appropriate.

### Transavia selects AFI KLM E&M to provide Boeing B737-800 component support in France

AFI KLM E&M and Transavia consolidated their relationship and have signed a long-term contract organizing component support for the low cost airline's fleet of Boeing 737-800s operating

from France. The support covers Transavia's existing fifteen 737-800s and six 737-800s scheduled for delivery to the airline in 2015. The service offer developed by AFI KLM E&M includes repair, overhaul and maintenance services as well as access to a dedicated spares pool. This means that the low cost airline is guaranteed to benefit from optimized availability rates for its fleet and hence ensure operational continuity – an imperative for low cost airlines.

### SAS selects V-Services for 50 V2500 engines

Scandinavian Airlines (SAS) has signed a 5-year V-Services Fixed Price Repair Agreement to manage 50 V2500 engines. The agreement will cover installed engines on SAS's fleet of 25 Airbus aircraft. The V2500 engine is offered through IAE International Aero Engines AG, a multinational aero engine consortium whose shareholders comprise Pratt & Whitney, Pratt & Whitney Aero Engines International GmbH, Japanese Aero Engines Corporation and MTU Aero Engines. In 2003, the average time on-wing for a V2500 engine was around 12,000 hours. As airlines have entered into an increasing number of long-term maintenance agreements, such as this one with SAS, average time on-wing has grown to 18,000 hours – or approximately six years.

### Privilege Style chooses Monarch Aircraft Engineering for line maintenance support

Monarch Aircraft Engineering Limited (MAEL), the engineering division of The Monarch Group, announces a line maintenance technical handling agreement with Privilege Style. The contract covers a full suite of line maintenance support for the Spanish airline's Boeing 757 flight operation this summer at Manchester Airport.

### Air Transat selects GE Aviation for CFM56 engine services

Air Transat has signed an eight-year OnPoint solution agreement for the overhaul of its fleet of CFM56-7B engines that power its Boeing 737-800 Next Gen aircraft. The OnPoint solution agreement is valued at more than US\$25m over the life of the agreement.



Lufthansa Technik and GE Aviation sign MOU for new engine overhaul JV

Photo: Lufthansa Technik

### GE Aviation and Lufthansa Technik sign MOU for new engine overhaul joint venture

Lufthansa Technik AG and GE Aviation will create a new, state-of-the-art engine overhaul facility in Europe to service GENx-2B and GE9X engines. Under terms of a memorandum of understanding (MOU), the new joint venture is expected to be operational in 2018. Closing of the joint venture is subject to receipt of required regulatory approvals. The new joint venture will be equipped to perform the full range of engine maintenance services for the GENx-2B and the GE9X, powering the Boeing 747-8 and Boeing 777X, respectively. The partners will continue to collaborate on repair development and mobile support services. "We are committed to building a world-class facility that will help meet future demand for GENx-2B and GE9X overhauls," said Kevin McAllister, President and CEO of GE Aviation, Services. "Lufthansa Technik has an excellent reputation for engineering expertise and customer service, and we are pleased to extend our long-standing collaboration with the formation of this new facility."

### New Airbus fleet contract confirms long-term relationship between Gulf Air and AFI KLM E&M

AFI KLM E&M and Gulf Air, the Kingdom of Bahrain's national carrier, have announced the signing of a support contract for the airline's all-Airbus fleet. The contract covers component support for sixteen A320s, six A321s and six A330s and includes the provision of a Main Base Kit in Bahrain and access to the spares pools located in Dubai, CDG and other Pool locations of AFI KLM E&M. Under the terms of the component contract, AFI KLM E&M is embarking on an

engineering cooperation initiative by supporting the airline as it develops and enhances its own in-house component maintenance capabilities.

### Four industry leaders team to provide integrated component solution for F-16

Derco Aerospace has teamed with Eaton, Honeywell International and UTC Aerospace Systems to provide an innovative and streamlined component repair solution for F-16 operators and MRO facilities worldwide. The teaming agreement among the four entities provides a repair and return solution through a simplified web-based supply chain. The streamlined process provides F-16 operators with many benefits, including OEM-approved repairs, total asset visibility, obsolescence management, inventory optimization, availability metrics, and more. The end result provides operators with improved fleet availability through a streamlined process.

### Liebherr-Aerospace wins another contract for Boeing 777X

Boeing has awarded Liebherr-Aerospace another contract for the Boeing 777X: the system supplier will deliver two components – the power drive unit and the hydraulic motor – for the leading edge actuation system of the new wide-body aircraft. Relying on its experience in high-lift systems, and especially in gearboxes and hydraulic motors for long-range commercial aircraft, Liebherr-Aerospace will design a power drive unit and a hydraulic motor that are compact, extremely reliable and light in weight. These two components will provide the mechanical power to drive the aircraft's leading edge actuation system.

### Jetstar Group signs GE's OnPoint Solution agreement with GE for GENx-1B engine fleet

The Qantas Group has entered into a multi-year OnPoint solution agreement with GE Aviation covering the GENx-1B engines that power Jetstar's fleet of Boeing 787 Dreamliner aircraft. The agreement is valued at more than US\$550m over its life and ensures GE will provide the maintenance, repair and overhaul for Jetstar's GENx-1B engines. The Jetstar Group is one of the Asia Pacific's largest low fares network by revenue. Jetstar currently has a fleet of eight 787s powered by GENx engines.

### With Vietnam Airlines AFI KLM E&M scores 10th 787 component support contract

Vietnam Airlines has signed a long-term component support contract for its new fleet of Boeing 787-9s and Boeing 787-10s, which will upgrade its long-haul fleet. A total of nineteen aircraft are on order, the first of which will go into revenue service in summer 2015. The present contract includes a guaranteed access to AFI KLM E&M worldwide pool of 787 spare parts, repair and overhaul of components, and logistics to support Vietnam Airlines 787 fleet operations.

### Europe Airpost confirms AJW Aviation to deliver power-by-the-hour for B737CL fleet and augment dispatch reliability

Europe Airpost has chosen AJW Aviation to provide full power-by-the-hour services for twelve Boeing 737 Classic aircraft. AJW will also locate extensive main base kit at their facility in Paris CDG. Location of spares inventory in Paris CDG is an enormous advantage for Europe Airpost and it is evidence of AJW's policy to ring the globe with strategic hubs of commercial Airbus and Boeing spares in support of specific power-by-the-hour contracts, and to sustain the Company's 24/7/365 AOG service. AJW currently supports 69% of global fleet operators with appropriate Airbus and Boeing aircraft types and this is fully underpinned by AJW Technique, the organisation's component repair and overhaul facility in Montreal that is focused on streamlining processes to minimise turn-times and further guarantee dispatch reliability.

### Zhejiang Loong Air signs new contracts with CFM International at the Paris Air Show

China's Zhejiang Loong Airlines has signed a Rate per Flight Hour (RPFH) agreement with CFM International to support its fleet of CFM56-5B engines. Under the terms of the 12-year agreement, which is valued at US\$138m, CFM will guarantee maintenance costs for a total of 17 CFM56-5B engines on a dollar per engine flight hour basis. Zhejiang Loong Airlines, based in Hangzhou in Eastern China, began commercial operations in December 2013 with two CFM56-5B-powered Airbus A320 aircraft. Furthermore, the airline signed a long-term Rate per Flight Hour (RPFH) agreement to support its fleet of 20 LEAP-1A engines. Under the terms of the 15-year agreement, which is valued

at US\$333m, CFM will guarantee maintenance costs on a dollar per engine flight hour basis.

### Relats appoints Avio-Diepen as worldwide distributor of braided sleeve product lines

Relats S.A. has appointed Avio-Diepen as worldwide distributor for its high quality braided sleeves. Relats offers a range of braided sleeves that offer specific kinds of protection such as EMI shielding, fire protection, heat reflection, mechanical and thermal protection. Avio-Diepen's core business is the timely delivery of aircraft parts, when and where its customers need them worldwide. As one of the leading global aircraft

parts distributors, Avio-Diepen specializes in optimizing Supply Chain processes with a variety of time and cost saving solutions.

### Myanmar National Airlines signs GE's OnPoint solution agreement for CFM56 engines

Myanmar National Airlines signed an exclusive OnPoint solution agreement with GE Aviation that covers the maintenance, repair and overhaul of 12 CFM56-7B engines that will power the airline's new fleet of Boeing 737 Next-Generation aircraft. The agreement is valued at more than US\$60m over the life of the agreement.

## Paris Air Show - Other News

At the International Paris Airshow, representatives from the **Sichuan Provincial Government** and **Deyang Municipal People's Government of China** revealed plans to host a new biennial international airshow in the province. Launching in September 2017 (subject to final date confirmation), The **Sichuan International Airshow** will run over five days to showcase international com-

merce in the fast growing Sichuan region. The three-day trade event and two-day public event will provide a unique opportunity for aviation companies across the globe to gain access to the Chinese aviation supply chain. With a specific focus on civil and commercial aerospace, manufacturing, MRO and support services, the Sichuan International Airshow will showcase the COMAC,

AVIC and other state representatives' supply chains to demonstrate how companies can become involved in the growing Chinese market. **Farnborough International Ltd**, the organisers of the **Farnborough International Airshow**, and the **European Union Project Innovation Centre (EUPIC)**, will work together with the Sichuan and Deyang government to bring the event together.

## Paris Air Show - Information Technology

**Honeywell Aerospace** reported that **Virgin Atlantic Airways** will be the first airline to install its new flight management service to help airlines increase efficiency and improve fuel conservation. The new Honeywell Flight Management System (FMS) Datalink Service will provide pilots with access to updated and customized wind and temperature information to better optimize the vertical profile of a flight and improve fuel predictions. Virgin Atlantic will implement the system on its unique, long-haul Airbus A330 and A340 fleet, where time and fuel savings can be maximized. The new Honeywell FMS Datalink Service taps into the company's connectivity and flight management expertise to provide continuously updated wind and temperature data directly to the aircraft in-flight from Honeywell's Global Data Center, an innovative flight support service.

**EVA Airways** and **GE Aviation** have launched Flight Efficiency Services and are seeing reduced fuel use in EVA's fleet of about 70 aircraft. GE is applying flight data analytics to provide business intelligence and actionable insight to significantly improve an airline's overall efficiency. Through its contract with EVA Airways, GE is providing consultation and evaluation services with the aim of reducing the airline's fuel consumption and carbon emissions. GE is also designing and implementing custom solutions for EVA and performing on-going efficiency measurement. EVA and GE aim to implement five flight efficiency initiatives this year with an aim to help the airline reduce its annual fuel bill, which is the largest cost component for airlines. GE Aviation's Flight Efficiency Services is harnessing the power of the Industrial Internet and using software and analytics to make

its machines smarter and more efficient. GE is using data analytics to identify ways to reduce operating costs, increase aircraft utilization and improve the business of flight.

**Swiss International Air Lines** selected **GE Aviation's** Flight Efficiency Services (FES) for fuel management. In addition to providing Flight Data Management (FDM) and Flight Operational Quality Assurance (FOQA) services through GE's Flight Risk Management, GE Aviation's Flight Analytics System will deliver their Fuel Management Solution, which will include the evaluation and analysis of flight and operational data to identify and prioritize fuel savings opportunities and enable a platform for fuel management analytics.

# We keep you flying. Anytime. Anywhere.



## World-Leading Full Service Provider of End-to-End MRO Services

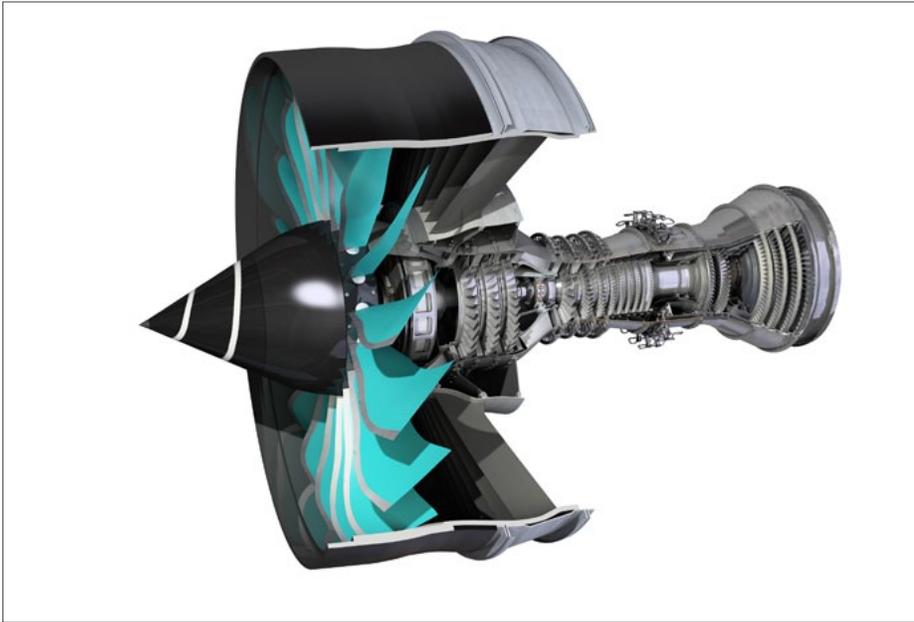
**From airframes, engines, components and  
logistic support - we cover them all!  
Around the clock, around the world.**

- Total maintenance solutions under one roof
- Highly experienced technical teams
- Wide-body hangars & extensive supporting facilities
- Over six decades of reliable operations



[www.iai.co.il](http://www.iai.co.il)  
[bedek@iai.co.il](mailto:bedek@iai.co.il)





The next generation UltraFan design-engine cutaway

Photo: Liebherr Aerospace

### Rolls-Royce and Liebherr-Aerospace create power gearbox joint venture

Rolls-Royce and Liebherr-Aerospace have agreed to establish a 50:50 joint venture to develop manufacturing capability and capacity for the power gearbox for Rolls-Royce's new UltraFan engine. UltraFan, a geared design, is based on technology that could be ready for service from 2025, and will offer at least 25% improvement in fuel burn compared with the first generation of Rolls-Royce Trent engines. The power gearbox will enable the UltraFan to deliver efficient power over a range of take-off thrusts for high-bypass ratio engines of the future. For the highest thrust engines, each single gearbox will be capable of handling the equivalent horsepower produced by more than 500 family cars. The joint venture, located in Friedrichshafen, will provide production engineering for the power gear drive train components. The manufacturing of the components will initially be done in existing Liebherr facilities. As production volumes increase, the joint venture will look at options for creating a standalone manufacturing infrastructure. Rolls-Royce will continue to lead the design definition and design integration of the power gearbox, as well as the testing activities.

### West Star Aviation announces completion and grand opening of new Grand Junction paint facility

West Star Aviation announced the completion of their new paint facility at their Grand Junction, CO (GJT) location. The new facility is

41,000 ft<sup>2</sup> and features two bays: one for strip, sand and priming, the other is a state of the art downdraft bay. Each bay is 120 feet wide and will be able to accommodate aircraft as large as a Global 7000 or a Gulfstream 650. The first aircraft is scheduled for the new facility June 15th, 2015. The new facility is self contained with clean rooms, flight control balance room, paint storage and mixing area; all of the support functions needed under one roof. In addition, the facility is environmentally friendly and will recycle any products possible. State of the art vari-drive compressors, which are extremely efficient, supply compressed air to the facility, and the new building has substantial insulation, saving energy during winter months and paint bake cycles.

### Chromalloy announces expansion of Guaymas, Mexico, gas turbine component machining capabilities

Chromalloy is expanding capabilities in Guaymas, Mexico, with a new facility that will double its current capacity in Guaymas to machine new original equipment manufacturer (OEM) gas turbine engine components. The new 36,000 ft<sup>2</sup> plant is being developed as a state-of-the-art manufacturing center using Lean and other principles to ensure optimum work flow and efficiency. The facility is scheduled to be completed in the third quarter 2015. Once online in early 2016, it will machine up to 68,000 gas turbine engine components annually. The new facility will replace the company's adjacent 17,000 ft<sup>2</sup> facility at the Roca Fuerte Industrial

Park in Guaymas. It is designed to grow the workforce from the current 85 people to approximately 250. Chromalloy's current precision machining center in Guaymas has served major aircraft engine manufacturers and industrial power system manufacturers since 2009. Customers include aircraft engine manufacturers as well as manufacturers of heavy industrial gas turbines. The facility provides machining of newly manufactured high and low pressure gas turbine engine blades and segments. Services include multi axis machining, and includes grinding, milling, Electro Discharge Machining (EDM), and inspections. Chromalloy also operates a gas turbine engine component repair center in Mexicali, Mexico.

### Aircraft End-of-Life Solutions purchases two A320 airframes for disassembly and dismantling

Aircraft End-of-Life Solutions (AELS) has purchased two A320-211 airframes from Spanish operator Iberia. The disassembly of the airframes started this month in Madrid. AELS performs complete sustainable end-of-life processes for these two airframes; including disassembly and dismantling, aerospace materials recycling and component management. Both aircraft served Iberia and Iberia Express throughout Europe. After 24 years in service the airframes will receive AELS' Total End-of-Life Solution. AELS will remove all components from the aircraft and will re-introduce them in the market by offering them to operators, brokers, PBH-providers and MROs.

### Magnetic MRO added B767 evacuation slides capability

Magnetic MRO, a Total Technical Care MRO organization based in Tallinn, Estonia, gained capability to overhaul and repair B767 evacuation slides. This was added to the existent capabilities for B717, B737 CL/NG and Airbus A320 family. Whilst the first wide-body slides have already arrived to the facilities and the overhaul will be provided in-house, Magnetic MRO is looking forward to gaining capabilities for overhauling life rafts used on ETOPS flights and further expansion of capabilities for wide-body aircraft escape slides like Airbus A330/A340. In addition to repair services, Magnetic MRO has the ability to provide slide exchange to customers and acts not only as a repair shop, but a full slide solution provider.



Boeing starts assembly of first 737 MAX *Photo: Boeing*

### Boeing starts assembly of first 737 MAX

Boeing employees in Renton, Wash., have started building the first 737 MAX on schedule. Last week, employees started to assemble the wings for the first 737 MAX flight test airplane. Wings are the first 737 components to be assembled in the Renton production process. The wings will be attached to the first 737 MAX fuselage on the new Central line in Renton Final Assembly later this year. The new production line will allow the team to isolate the first 737 MAX build from the rest of production in order to learn and perfect the build process while the Renton factory continues to build at a rate of 42 airplanes a month.



Liebherr-Falcon-5X-air-conditioning-pack  
*Photo: Liebherr-Aerospace*

### Liebherr-Aerospace on Board the Falcon 5X

Liebherr-Aerospace supplies critical systems for Dassault Aviation's new-generation business jet Falcon 5X, which was unveiled to the public at the aircraft manufacturer's facility in Bordeaux-Mérignac (France) on June 2nd, 2015. The company's share in this two-engine aircraft comprises the integrated air management system and the cabin air humidification system. Liebherr-Aerospace Toulouse SAS, Liebherr's center of excellence for air management systems based in Toulouse (France), has leveraged its many

years of experience to develop and manufacture light-weight and reliable components for both devices; for over 50 years, the system supplier has been manufacturing critical flight systems for all of Dassault Aviation's aircraft, including other members of the Falcon family such as the Falcon 7X, Falcon 8X, Falcon 900, Falcon 2000 and Falcon 50 models. Liebherr-Aerospace will offer support solutions for its components and systems on board the Falcon 5X during the business jet's entire life cycle. Thanks to its international network of maintenance, repair and overhaul stations and spares distribution facilities, the company's customer service organization ensures customer proximity and high-level performance for aircraft operators across the world.

### Frontier Airlines selects SkyPaxxx interior repairs X3 lease return solution

Frontier Airlines, Denver's hometown airline, has selected SkyPaxxx Interior Repairs, a fast growing aircraft seating and interior repair station, to manage all aircraft seating for leased A319 and A320 currently in their fleet under an exclusive agreement. The comprehensive X3 Solution provided by SkyPaxxx covers Logistics, Refurbishment, and Modification of up to 49 sets of seats currently in the Frontier Airlines fleet. The contract has immediate effect and runs through 2022.

### AJW Technique achieves CAAS Certification

AJW Technique, the ascendant component repair and overhaul specialists, have achieved CAAS Certification. This endorsement by the Civil Aviation Authority of Singapore has been a priority for the AJW Group over recent months. "We have an expanding requirement for a broad range of repair services for an increasingly diverse number of operators like Singapore Airlines, Tigerair Singapore and Jet Star" commented Gavin Simmonds, General Manager at AJW Technique. "Many airlines across the region are operating under the 'low-cost carrier' business model, so our focus on reducing direct maintenance costs is gaining traction." AJW Technique is bringing a significant repair and overhaul capability into this rapidly expanding marketplace and building upon the AJW Group's long established reputation for the supply of aircraft components and power-by-the-hour solutions. Specialising in avionic, hydraulic, pneumatic, fuel and electromechanical systems, AJW Technique is well placed to enhance service levels in Singapore and deliver tangible efficiency and cost-savings across the component repair and overhaul process.

### Lufthansa Technik Group to grow engine business with Aerolineas Argentinas

Aerolineas Argentinas and Lufthansa Technik (LHT) have signed an exclusive five years agreement for maintenance, repair and overhaul services for the fleet of CFM56-5C engines powering Aerolineas' seven Airbus A340-300 aircraft. For the CFM56-7 engine type Lufthansa Technik and Aerolineas Argentinas agreed to set-up a Joint Shopvisit Program under which, depending on worksopes, the airline will tear the engines down into modules in Buenos Aires, while the repairs will be then carried out at LHT's facilities in Hamburg. Lufthansa Technik will also oversee the setting up of a new engine shop, with the assistance of layout, equipment and the creation of the basic infrastructure and establishment of processes down to the necessary logistics. Furthermore, LHT will support Aerolineas Argentinas with fundamental staff training for the new engine types. Besides the newly signed agreement, LHT already cooperates with Aerolineas Argentinas on CFM56-7 MRO for their strong fleet of 38 Boeing 737NG, as well as CF34-10 engines for Austral's fleet of 22 Embraer 190 aircrafts. Austral is Aerolineas Argentinas major regional airline in South America.

### BAE Systems Regional Aircraft signs long-term spares support agreements with six key vendors on BAe 146/Avro RJ regional jetliner

BAE Systems Regional Aircraft has signed long-term spares support agreements with six key vendors on the BAe 146/Avro RJ regional jetliner. The agreements cover fixed price repair and overhauls for a total of nearly 340 different parts covering hydraulic and mechanical components, cabin oxygen cylinders/valves, flap electronic control unit and printed circuit boards and a range of avionics components. The vendors are AEM Limited, Eaton Aerospace, Oakenhurst Aircraft Services, Ontic Engineering & Manufacturing, Ultra Electronics Controls, and Honeywell. Building on these agreements BAE Systems will start a drive to increase the range of parts on the aircraft to be covered under similar fixed price repair and overhaul agreements. Currently some 230 BAe 146/Avro RJs are in active service worldwide (and a further 50 aircraft in storage programmes) with 61 operators in a variety of roles including, traditionally, as airliners, freighters, corporate shuttle and VIP aircraft, but also as military transports, airtankers (aerial water-bombers) and research and test/development aircraft. Some operators state they will keep the aircraft in service for at least the next 20 years.



MTU Maintenance Berlin-Brandenburg and Pratt & Whitney Canada CSC Europe celebrate 4,000 P&WC engine shop visits  
Photo: MTU Maintenance

### MTU Maintenance Berlin-Brandenburg and Pratt & Whitney Canada Customer Service Centre Europe celebrate 4,000 P&WC engine shop visits

MTU Maintenance Berlin-Brandenburg and the Pratt & Whitney Canada Customer Service Centre Europe (CSC) are celebrating 4,000 repaired Pratt & Whitney Canada engines. The jubilee engine, a PW305A was delivered to Aero-Dienst, Germany's second-oldest commercial operator and provider of business aviation services such as maintenance, operations, aircraft sales and aircraft management. MTU Maintenance Berlin-Brandenburg focuses on the repair and overhaul of small-size aircraft engines and industrial gas turbines. The shop provides service support for Pratt & Whitney Canada (P&WC) engines – the PT6A, PW200, PW300 and PW500 series – and is an Authorized CF34 Service Provider. The CSC is a 50-50 joint venture of MTU Maintenance Berlin-Brandenburg and Pratt & Whitney Canada. The company engages in marketing and sales activities for Pratt & Whitney Canada engines, providing comprehensive service support for customers in Europe, Africa and the Middle East.

### Chromalloy Material Solutions unveils new Fort Lauderdale, FL, sales and warehouse operation

Chromalloy announced a new Fort Lauderdale, Florida, sales and warehouse facility to house its growing Chromalloy Material Solutions (CMS) business unit. "Chromalloy Material Solutions, our global parts and materials trading business,

has moved into a new 70,000 square foot facility to better serve customers," said Carlo Luzzatto, President. "As a material and asset provider to the global gas turbine engine industry, CMS staff and warehouse are now poised for additional growth in the expanding materials arena." Previously Chromalloy Materials Solutions staff and equipment were in San Antonio, Texas; Newnan, Georgia; and Miramar, Florida. Locating the company's trading business at a single larger site will drive customer efficiency while offering space for future growth. Formed in 2010, Chromalloy Material Solutions is a materials distribution business that buys, sells and exchanges repair parts materials to the airlines, MROs, depots and other customers.

### Avion Express expands power-by-the-hour contract with AJW Aviation

AJW Aviation has signed an agreement for an additional two A320 aircraft under the auspices of its ten year PBH contract with Lithuanian airline, Avion Express. "The power-by-the-hour support that AJW provides for this part of our European operation now covers all fourteen A320 aircraft; offering full ATA coverage and on-site stock" said Aleksei Lupitski, President and CEO – Avion Express. Headquartered in Vilnius, Avion Express is a major fleet operator within the Baltic States and specialises in providing capacity to other airlines worldwide under the ACMI concept using its fleet of A320 family aircraft. One of the newly acquired A320s is already flying for Dominican Wings, the other is being brought into service in anticipation of the summer tourist season.

### GE Aviation and Woodward combine fuel systems expertise for new joint venture

GE Aviation and Woodward announced a strategic 50/50 joint venture for fuel systems for GE's large commercial aircraft engine lines. The new joint venture will design, develop, source, supply and service the fuel system, including components from the fuel inlet up to the fuel nozzle, for the GE90, GENx, GE9X and all future large commercial engines developed by GE Aviation. Woodward will be the preferred supplier to the joint venture. Production rates for jet engines and components from GE Aviation have increased significantly during the last five years, with large commercial engine production more than doubling to close to 500 engines in 2015. With a backlog of more than 1,600 high-thrust engines like the GE90, GENx and GE9X, the high production rates will continue well into the future. Under terms of the joint venture agreement, Woodward will receive US\$250m in cash and the parties will participate jointly in the operating results of the respective programs. Completion of the transaction is subject only to customary regulatory approvals, and it is expected to close near the end of calendar 2015. This joint venture with Woodward and the related program award is in line with GE's strategy to ensure a stable supply chain to manage production volume growth. Among the other notable joint ventures are partnerships with Aircelle, BAE, NCK, Parker Hannafin, Safran, SKF and Turbo-coating SPA.

### Honda Aircraft to take off with Marshall Aviation Services

Marshall Aviation Services is to team with Honda Aircraft Company in Greensboro, N.C., USA, to be the company's Northern European provider of sales and service for the HondaJet. Marshall Aviation Services' wide sales territory will encompass the UK regions north of the M4; the Isle of Man, Channel Islands, Ireland, Scandinavia and the Benelux countries. Marshall Aviation Services' new Fixed Based Operation (FBO) at Birmingham International Airport, UK, will host a brand new sales and support centre for the aircraft, which is making its European debut on the static park at EBACE, hard on the heels of a successful tour of Japan. Head of Aircraft Sales Howard Povey and Sales Manager Charlotte Daniels will lead HondaJet sales activity for the UK for Marshall's. Other members of the newly formed HondaJet Northern Europe sales team covering the rest of the designated territory will be announced imminently.



Geared up.  
**Starting now.**

**Our global service network is ready.** Because you have a choice of service providers, we strive to be that choice. We're ready now to ensure maximum time on wing for your PurePower® Geared Turbofan™ engine with the service difference only the original manufacturer can bring. We're geared up. Starting now. [PurePowerEngines.com](http://PurePowerEngines.com).



**Dependable Services**



**Pratt & Whitney**  
A United Technologies Company

Paris Air Show: C2



API Split Scimitar Winglets BBJ 01

Photo: Aviation Partners

### Split Scimitar Winglets certified for Boeing Business Jet

Aviation Partners released that the U.S. Federal Aviation Administration (FAA) granted Supplemental Type Certificate (STC) approval for the Split Scimitar Winglet (SSW) retrofit on BBJ aircraft. European Aviation Safety Agency (EASA) approval is expected to follow shortly. The approval was granted to Aviation Partners Boeing (APB), a joint venture between API and The Boeing Company, on April 21st after extensive certification flight testing. The flight test was carried out on a green BBJ which was modified at PATS Aircraft Systems in Georgetown, Delaware. The first in-service BBJ with SSWs installed is on display at the EBACE static display. Using a newly patented API design, the SSW program completely redefines the aerodynamics of the existing Blended Winglet. The retrofit to the existing Blended Winglet consists of adding a new Scimitar-tipped large Ventral Strake, beef up of internal winglet structure, and replacement of the aluminum winglet tip caps with new

aerodynamically shaped Scimitar tip caps. The unique feature of the SSW is that it builds on the existing Blended Winglet design to provide a dramatic performance improvement without increasing the existing wing span. Split Scimitar Winglets are now approved for the Boeing 737-700, -800 and -900 series. Orders and options for around 1,700 airliners have already been received, and approximately 500 upgraded aircraft in-service around the world are already enjoying the performance benefits provided by this latest technology. For long-range BBJ operations, the SSW will provide a drag reduction, and corresponding range increase, of two plus percent over the current Blended Winglet configuration.

### TAG Aviation opens line maintenance centre in Portugal

TAG Aviation will open a new line maintenance station at Lisbon/Cascais (LPCS) Aerodrome on

June 1st, 2015. This will enhance TAG Aviation's line maintenance business, adding to seven locations around Europe. The new centre will be in collaboration with Vinair Aerosserviços S.A., a Portuguese aviation company specialised in commercial air transportation, airworthiness management and aircraft maintenance, and will provide a dedicated team of technicians for Dassault and other aircraft on site. This will further enhance TAG Aviation's maintenance service offering as a Mobile Repair Team will be available to support clients at short notice at the main Portuguese airports of Lisbon (LPPT), Oporto (LPPR) and Faro (LPFR) as well as across Southern Europe. TAG Aviation has heavy maintenance centres in Geneva and Farnborough and also offers comprehensive maintenance services in Sion, Paris, Clermont-Ferrand, Madrid, Hong Kong and Lomé in Togo. TAG Aviation Maintenance Services is approved by all main aircraft manufacturers and has certification to work on over fifty types of aircraft. The company offers airframes, avionics, troubleshooting and ramp services as well as ten specialist workshops, such as paint shop, interior refurbishment and non-destructive testing, making it the leading one-stop-shop for aircraft maintenance.

### Nasmyth Group makes £multi-million investment in global surface treatment facilities

Nasmyth Group, a leading supplier of precision engineering, products and services worldwide, is making a £multi-million investment in its surface treatment businesses. Between them, GEB Surface Treatments Ltd, MPS Ltd, West Middlesex Surface Treatments Ltd and Towerfield Plating Ltd, all based in the UK, and Nasmyth TMF Inc, based in California, provide an extensive range of advanced, aerospace industry and Nadcap-approved services. An expansion project at GEB

# VECTOR

## AEROSPACE

# 24/7

READY TO SERVE  
AROUND THE WORLD

Maintenance. Repair. Overhaul.

Engines. Airframes. Avionics. Dynamic Components

[Learn More](#)



Marshall FBO Birmingham Photo: Marshall Aviation Services

Surface Treatments that will double the size of its buildings and facilities is nearly complete and at West Middlesex work is about to start on a development project which is scheduled for completion in December. A significant investment has also been made in the Towerfield Plating site to enhance its process offering. In California, the recently integrated Nasmyth TMF has already expanded into newly acquired premises providing 3 times the previous space and has introduced a number of new processes and production lines. A further investment has been made in automated hard anodising controllers and rectifiers that enable a level of accuracy over anodising thicknesses that puts Nasmyth TMF further ahead of their competition.

### LBAS wins contract to perform 7800-landings inspections on Rega's fleet of three Challenger 604

Lufthansa Bombardier Aviation Services (LBAS) has won the contract to perform 7800-landings inspections on Swiss Air Ambulance's (Rega) fleet of three Challenger 604 aircraft. Industry wide, this is the first time an inspection of this type was ever performed. Two aircraft have been completed up to today and the third aircraft is currently in progress. As one of the largest scheduled maintenance events on the Challenger 604 aircraft, the 7800-landings inspection is comparable to the D-check of a large commercial airliner. Together with Bombardier, the manufacturer of the Challenger 604, LBAS set up a dedicated team for this special inspection. LBAS is now in completion of the last of three Rega ambulance jets.

### Marshall Aviation Services adds Birmingham UK, FBO to its extensive capabilities

Marshall Aviation Services, the business aviation-focused arm of Marshall Aerospace and Defence Group, is preparing to expand activities at its newly secured Fixed Based Operation (FBO) facility at Birmingham International Airport, UK. The Birmingham FBO will also be home to a new aircraft sales office for Marshall Aircraft Sales, specific to a new business jet type it will support as Northern Europe sales distributor. Marshall formally re-opened the Birmingham FBO in March, after undergoing a refresh, in keeping with its corporate colours. Since that time business has been steadily picking up with an increasing number of arriving business jets. Marshall also recently welcomed new tenant companies, Jets4UDirect.com and expanding aircraft valeting company Fly Bright, while business aviation operator Cello Aviation is expanding its base at the FBO with a B737-400 arriving in June to complement its VIP BAE 146 and Avro RJ85 business aircraft models. Marshall agreed a long term lease of the 2011-built FBO at the start of this year, having first visited and reviewed the business immediately after EBACE 2014. The facility offers comprehensive amenities for both flight crew and passengers, including crew rest facilities, flight planning rooms, and visitor or residential crew offices. The glass fronted 4,000m<sup>2</sup> (44,000ft<sup>2</sup>) facility also includes 2,500m<sup>2</sup> (27,000ft<sup>2</sup>) of hangarage space which will be available both to resident and ad-hoc visiting aircraft.



HAECO CRO test bench

Photo: HAECO Group

### HAECO Component Overhaul appointed as Authorised Repair Station for Umbra Cuscineti S.p.A.

HAECO Component Overhaul (Xiamen) ("HAECO CRO") has been appointed by Umbra Cuscineti S.p.A. ("Umbra") as its exclusive provider of Authorised Repair Station services in Mainland China. Umbra is an OEM (Original Equipment Manufacturer) and the sole supplier of Boeing commercial aircraft trailing edge and stabiliser flap ballscrews, essential components for flight

control actuation systems. HAECO CRO's repair facility is fully equipped with a dedicated test bench designed and fabricated by Umbra itself, rotatable ship-sets, and Umbra-trained technical personnel. It provides a full range of ballscrew repair, overhaul, and exchange services to its airline customers. As an Authorised Repair Station, HAECO CRO also provides its customers with technical support, logistics services and OEM warranty administration.

### Flying Colours Corp. awarded Special Mission Challenger 650 contract for European operator

Flying Colours Corp., the North America-based MRO, completion and refurbishment specialist, announced an order for the completion of three, brand-new Bombardier Challenger 650 aircraft. The order, which is a sub-contract from Specialized and Amphibious Aircraft of Bombardier's Commercial Aircraft division, will see the green aircraft configured in dedicated medevac interiors and delivered to an undisclosed European customer. The design engineering is already under way at the Flying Colours facility in St Louis where the specialist in-house team is liaising with all involved parties to match the exact specifications of the complex interior. "This is a collaborative project as we are working through the Bombardier team to liaise with their customer on the design, whilst at the same time we are coordinating with a specialist medical equipment provider who will supply the medical monuments," said Sean Gillespie, VP Flying Colours Corp. The installation of the interiors, and the external paintwork will take place at the company's Peterborough, Canada facility. It is anticipated the first aircraft will be inducted into service in Q4 of 2016 as the customer replaces older aircraft models with the newly equipped models.



Marshall FBO Birmingham Photo: Marshall Aviation Services

### Alcoa invests in aerospace technology in Michigan to capture demand for bestselling jet engine parts



Alcoa HIP investment

Photo: Alcoa

Lightweight, high-performance metals leader Alcoa (AA) is investing US\$22m in Hot Isostatic Pressing (HIP) technology at its facility in Whitehall, Michigan. The investment will enable Alcoa to capture growing demand for advanced titanium, nickel and 3D-printed parts for the world's bestselling jet engines. Steep ramp-up rates for narrow- and wide-body aircraft engines—the top-selling jet engines in the world—are increasing Alcoa's need for such capabilities. "As aerospace growth soars, Alcoa continues to invest in the latest technologies, creating added capacity to capture fast-growing demand," said

Olivier Jarrault, Executive Vice President and Alcoa Group President, Engineered Products and Solutions. "Combined with our expansions in LaPorte, Indiana and Hampton, Virginia and our growing 3D printing capabilities, this investment will give Alcoa the broadest capabilities to deliver high-quality titanium, nickel and 3D-printed parts for the world's bestselling jet engines."

### PPG to acquire specialty coatings and materials manufacturer Cuming Microwave

PPG Industries has reached a definitive agreement to acquire Cuming Microwave Corporation based in Avon, Massachusetts, and its wholly-owned subsidiary Cuming-Lehman Chambers, based in Chambersburg, Pennsylvania. The transaction is expected to close in the third quarter, subject to customary closing conditions. Financial terms were not disclosed. Cuming Microwave is a global supplier of specialty coatings and materials that absorb microwaves and radio waves, such as radar. The company's products are used in military aircraft and have applications in end-uses such as electronics, telecommunications, medical and automotive. The company employs about 160 people, operates three manufacturing facilities in Avon and maintains an office in Chambersburg.

### DAE announces sale of StandardAero to Veritas Capital

Dubai Aerospace Enterprise (DAE) signed a definitive agreement to sell 100% of StandardAero to an affiliate of Veritas Capital. Terms of the transaction were not disclosed. DAE Managing Director Khalifa H. AlDaboos said: "StandardAero is one of the world's largest independent MRO platforms with clients in over 70 countries. DAE acquired StandardAero in 2007 and since then has nurtured and built its market leading position. This transaction will allow StandardAero to accelerate its growth by leveraging Veritas' global relationships and in-market presence." "DAE will now redeploy capital and refocus its efforts on building a world-class aerospace footprint anchored in Dubai. We will focus on both organic and inorganic opportunities. DAE Capital will also aggressively acquire aircraft assets to expand its aircraft leasing portfolio with a current net book value of US\$3.7bn."

## Other News

**Commsoft** reported that **VIM Airlines**, one of the largest airlines in Russia, has chosen OASES to support both its scheduled and charter passenger operations. OASES, designed to combine ease of use with an industry-leading technical sophistication, is structured in a modular format and for its current fleet of ten Boeing 757-200s and four Airbus-319, VIM Airlines has opted for all of the following modules: Core; Airworthiness; Planning; Production; Materials; Line Maintenance Control; Warranty. The airline's use of OASES is scheduled to go live progressively in 2015.

**Global Eagle Entertainment** a media and connectivity provider to the travel industry, has been selected by **Avianca Holdings** to provide the in-flight entertainment service onboard its subsidiaries' airlines. Through this long-term agreement, GEE will provide a variety of international and regional inflight entertainment (IFE), including movies, TV programming and audio, to Avianca's fleet of 168+ aircraft. The agreement will also be extended to provide content services on the 33+ A320neo aircraft that the airlines recently committed on order from Airbus. In addition, GEE will also provide

content technical services to the airlines.

**Gogo**, a leading global aero communications service provider, has received first of two STCs from the **FAA** that will be required for Gogo's 2Ku next generation satellite connectivity service. The initial certification will allow Gogo to conduct flight tests on its own 737-500 flying lab. Gogo will begin testing with one antenna and expects to add a second antenna in June. Gogo expects to obtain the second required STC, and launch commercial service of its 2Ku technology, later this year.



# CONNECT YOUR A350 TO OUR MRO-AIRLINE ADAPTIVENESS®



AFI KLM E&M is the only MRO to form part of an airline group that has ordered A380s, 787s and A350s. On the strength of this unique expertise, AFI KLM E&M has been shaping its industrial development program ever since the A350's maiden flight. As a result, your own A350 can now reap the benefits of AFI KLM E&M ADAPTIVENESS®. ADAPTIVENESS® is our response to the changing MRO business environment. It means partnering with you and providing vital support through change and daily challenges, in a spirit of continuous improvement. If you seek efficient MRO solutions for your A350 leading to optimized MTBRs and overall performance, talk to us about ADAPTIVENESS®.

## Paris has the wow factor

All roads led to France for the 51st Paris air show in June and now **Keith Mwanalushi** looks back at the commercial significance of the show to its exhibitors.



On again, Paris put on quite a show.

Photo: Keith Mwanalushi

By all indications, the recently ended Paris air show has been another commercial success. While some confirmed their long standing dominance in the aerospace industry others used the opportunity to strengthen markets for their products and even repair tarnished reputations.

As expected the big aircraft manufacturers recorded huge orders for their ultra-efficient new product lines (see this week's *AviTrader Weekly Headlines*) and when manufacturers do well, usually, MROs are not that far behind.

Lufthansa Technik used the event to present its competency in technical services for current and new aircraft families over the whole life-cycle. The company was showcasing the range of customised solutions designed to help operators cope with current market conditions.

The A350 made an impressive flight display during the length of the show, and with the recent signing of the first major Airbus A350 XWB component support contract by Finnair, Lufthansa Technik stressed that it continues a track record of successfully turning the visions of new aircraft into working, profitable and enduring realities. In terms of products and solutions, the focus at the show was on the overall product portfolio of Lufthansa Technik with special emphasis on services for the A350XWB and Airbus A380.

Clearly, these types of events are a perfect place to start some talks with potential clients, explore opportunities in the market and just catch-up with the trade. In terms of expectations from this year's show Zilvinas Lapinskas CEO at FL Technics says the focus was to turn a bit more on the new, emerging market players as he sees a vast potential in regions like Latin America, Asia Pacific and the Middle East for services.

Leo Koppers, senior VP marketing and sales at MTU Maintenance agrees that a trade show like the Paris air show is always a fantastic platform to meet with existing and potential new customers, receive feedback and intensify ongoing discussions. "Of course, we are also keen on seeing what other companies from the aviation sector have to offer," admits Koppers. MTU experts from various departments were on hand to explain the company's core activities and technologies.



Lapinskas - Paris is the place to discuss the changing image of MRO

"Our current relationships with partners in these areas are showing an immense promise and we hope to expand our presence in all of the aforementioned regions," Lapinskas mentions. "Moreover, as part of a global aviation community we seek to address the main challenges in the sector by sharing as well as gathering knowledge and experienced from all fields in the industry. As concerns this, such events provide attendants with a perfect opportunity to face the topical industry challenges and finding at least some unified solutions by working together," he says.

Leo Koppers, senior VP

marketing and sales at MTU Maintenance agrees that a trade show like the Paris air show is always a fantastic platform to meet with existing and potential new customers, receive feedback and intensify ongoing discussions. "Of course, we are also keen on seeing what other companies from the aviation sector have to offer," admits Koppers. MTU experts from various departments were on hand to explain the company's core activities and technologies.

Paul Dolan, VP commercial aero and military at aircraft engine specialists Chromalloy expected a strong show in terms of the companies registered to participate. "The Paris air show is an exceptional venue for Chromalloy generally, a gathering of our customers and friends alike. We expected to formalise new agreements during the show following customer discussions and meetings," Dolan says.

Chromalloy provides both OEM repairs, manufacturing and supply chain support, and Designated Engineering Representative (DER) hi-tech repairs on blades, vanes, shrouds, cases and other components in the gas path or hot section of current engine types, and it's this capability Dolan was keen to showcase at the show.

"Beyond the support we provide to the OEMs, we develop about 250 new DER repairs each year across multiple engine platforms." Dolan continues: "We will be listening to and focusing on our customers' needs and sharing

with them our state-of-art and expanding suite of services for gas turbine engines including engineering, investment casting, machining, advanced coatings, joining technologies, thermal processing and material solutions."

Sticking to engines, among the commercial products showcased by MTU are the Turbine Centre Frame (TCF) for the GENx, one of the Dreamliner's engine options, as well as low-

pressure turbine air foils for the GP7000, one of the engine choices for the Airbus A380. Also on display was a cut-up model of the EJ200, the engine that powers the Eurofighter Typhoon, and a GE38, which powers Sikorsky's CH-53K Super Stallion helicopter.

Koppers from MTU is particularly proud of the technical expertise involved in the Geared Turbofan (GTF). "This technology is prominently featured in the trade show display in the form of the GTF holography box, an interactive communication tool." He explains that 3D holographic effects highlight the advantages of geared turbofan technology, plus areas of MTU's core competencies the German company contributes: parts of the high-pressure compressor, and the

high-speed low-pressure turbine. An original copy of the latter was also exhibited at the trade show booth.

As the worldwide fleet keeps expanding (the forecasts show aircraft numbers are to reach 32 792 al-

ready by 2023) adapting to the new generation technology introduced in both manufacturing and maintenance seemed to be on everybody's mind at the show.

However, Lapinskas highlights the importance of remembering that older aircraft will still remain considerably popular in the following years, especially if the oil prices remain lower than usual. "This means that today custom-

**"The Paris air show is an exceptional venue for Chromalloy generally, a gathering of our customers and friends alike. We expected to formalise new agreements during the show following customer discussions and meetings."**

**Paul Dolan, VP commercial aero and military at aircraft engine specialists Chromalloy**



Bombardier's CS300 made some stunning aerial displays. Photo: Keith Mwanalushi

ers usually seek comprehensive solutions and know-how for traditional as well as next generation technology.

"We, in turn, have always seen our advantage as being versatile and responsive to our clients' developments, which is why during the exhibition we concentrated on showing exactly that. Firstly, keeping in mind that engine and component MRO will account for almost 65% of the total MRO sector in 2018, we aimed to present our solutions in repair, material supply, technical asset management as well as sales, lease and exchange for this MRO sector to both, current and potential clients. Furthermore, we put emphasis on our line and base maintenance capabilities as well as our extensive experience in the field of engineering, consulting and technical training," Lapinskas elaborates.

Congregating at events such as air shows allows the industry to discuss trends and address industry concerns in a more social environment usually over a glass of champagne. Lapinskas says the main topics of our industry correspond closely with the global MRO challenges. "For instance, advanced technology, brought by the arrival of new aircraft such as Boeing's new 787 or Airbus' A350, will definitely change the picture of MROs around the globe," he anticipates.



Leo Koppers, Senior Vice President Marketing and Sales, MTU Maintenance



Service solutions for the A350 were highlighted during the show.  
Photo: Keith Mwanalushi

Keeping in mind the new techniques and specific knowledge necessary to maintain these aircraft, Lapinskas is concerned that the shrinking numbers of qualified engineers as well as training of the new ones are definitely some sensitive issues to exchange views on.

“In addition to that, we believe that Paris would definitely be the place for major players to discuss the changing image of the MRO industry. As we observe airframe and component OEMs increasing their presence in the market, every independent MRO provider is considering various response strategies. Flexibility in general, either in a form of productivity through process optimisation or by becoming a niche player is what awaits all of us and now is a great opportunity to talk over the possible scenarios,” Lapinskas analyses.

Koppers adds that over the past years, the industry has witnessed an increased demand for integrated MRO solutions in the market. “This means that airlines and operators are looking for innovative solutions to keep their maintenance costs low. At the same time, they need ideas to increase the on-wing time of their fleets.”

Koppers from MTU also agrees with Lapinskas that another trend that played a crucial role at the Paris air show is the changing MRO market in general. “With a new generation of engines entering into service, the business model for engine MRO is undergoing significant changes. As a risk and revenue sharing partner MTU is now increasingly negotiating aftermarket participations with the OEM already at the time of entering into new engine programmes. This trend has led us to merge our manufactur-

ing and maintenance businesses,” Koppers states.

Paul Dolan says Chromalloy used the occasion to discuss the full range of gas turbine engine component repairs for all major manufacturers’ systems powering commercial and military aircraft. “Our expertise is the hot section or gas path of the engine. We provide advanced repairs on blades, vanes, shrouds and other components through our network of repair centres around the world. For new engines, we produce make-complete turbine components for the hot section, for several system manufacturers.”

Another interesting piece of technology seen at the show is by BeAM, a European specialist in the construction of additive manufacturing machines based on the CLAD technology (Construction Laser Additive Direct), BeAM offers manufacture or repair of metal parts using metal powder deposition. This very promising company was created only in 2012 but has a list of high profile clients.

For instance Chromalloy, provider of manufacturing and repair services for gas turbine engine manufacturers and operator has been using BeAM Additive Manufacturing technology to repair 700 critical turbine titanium, Inconel alloys or Wasp alloy parts in the last two years.

So as the world’s aerospace wrapped up their activities in Paris, it’s now business as usual until the industry turns the navigator towards the UK and Farnborough in 2016.



Friis-Petersen from MTU says he sees a great demand for short-term lease engines.

## The American dream

With billions of dollars in deals announced, and millions more in the making, exhibitors in the U.S. International Pavilion at the Paris air show have made the most of this biennial opportunity to meet buyers and influencers at the world's biggest aerospace and defence event.



Representatives of AAR, the US government and SAAT sign on a new JV.

Photo: Keith Mwanalushi

"This is a very important stage for AAR," declared AAR's chairman and CEO David P. Storch during a press conference at Le Bourget. "We are commemorating our 60th anniversary as a company at this show and we have a lot of our team members here and we are most proud to be announcing this venture and memoranda with South African Airways Technical."

Storch says South Africa represents a growing market and a great opportunity for AAR to expand its MRO capability and supply chain activity to a growing market. "We are very appreciative to the U.S. government who were very instrumental in helping AAR secure this business," he added.

Musa Zwane, CEO of SAAT said he was hopeful that the partnership will help the South African MRO expand in Africa and further afield. "We believe we have found the right partner," Zwane stated.

As the centrepiece of the nation's presence at the 51st biennial "Salon du Bourget," the Pavilion showcased a concentrated cross-section of American companies, organisations and industry advocates looking for new export opportunities and global business relationships. This year's Pavilion covered more than 6,000 sq. of space in Hall 3, and featured more than 230 exhibitors.

The announcement of Connecticut-based EDAC Technologies' \$1-billion-plus deal to provide components for Pratt & Whitney engines on some Airbus, Bombardier, Mitsubishi and Embraer aircraft punctuated a week of business activity and announcements that reinforced the Pavilion's critical role in helping U.S. companies grow their share of global markets.

"Despite America's well-established leadership in the global aerospace and defence industry, the nation can never afford to take its place at the Paris Air Show for granted," said Tom Kallman, president and CEO of Kallman Worldwide, which celebrated its 20th year as organiser of the of-

ficial U.S. Pavilion at Le Bourget. "Our team is proud to have helped position our exhibitors to meet more prospects, strengthen market relationships and close more sales to boost the U.S. export economy," Kallman said.

Pavilion exhibitors benefitted from a significant jumpstart on the first day of the show with the presence of some 40 U.S. government, military and diplomatic dignitaries, including the U.S. Secretaries of the Air Force and Transportation, who gathered under the banner of "Ask America First," the Pavilion theme of the week, to officially open the venue. In particular, the participation of seven state governors and four U.S. Senators gave a strong boost to exhibiting states and the companies co-exhibiting under their flags.

U.S. based MRO provider AAR Corp used the show to announce an MOU with South African Airways Technical (SAAT) for a Joint Venture (JV). The JV is aimed at establishing AAR as a strategic MRO and technology partner to support the airline's maintenance capabilities and to expand service across Africa.

AAR will also support expansion of SAAT's component repair capabilities, including landing gear, and potentially support a new MRO facility in West and Central Africa to meet growing regional travel in sub-Saharan Africa and increasing international travel to the continent.

Asked by AviTrader MRO where the location of a new MRO facility might be, Storch assured that that information would be made available once an agreement was reached. "The South Africans like to expand their capability throughout the African continent, our goal is to create a world class, high energy, low cost MRO operation in South Africa," Storch continued.

The shortage of MRO technical expertise globally and Africa in particular is an issue both Storch and Zwane are dealing with. Storch commented; "Yes, we are very big on training and connections with schooling. You might have seen recently that we have a venture with the State of Illinois adjacent to our new hangars in Rockford will be a collage to train mechanics."

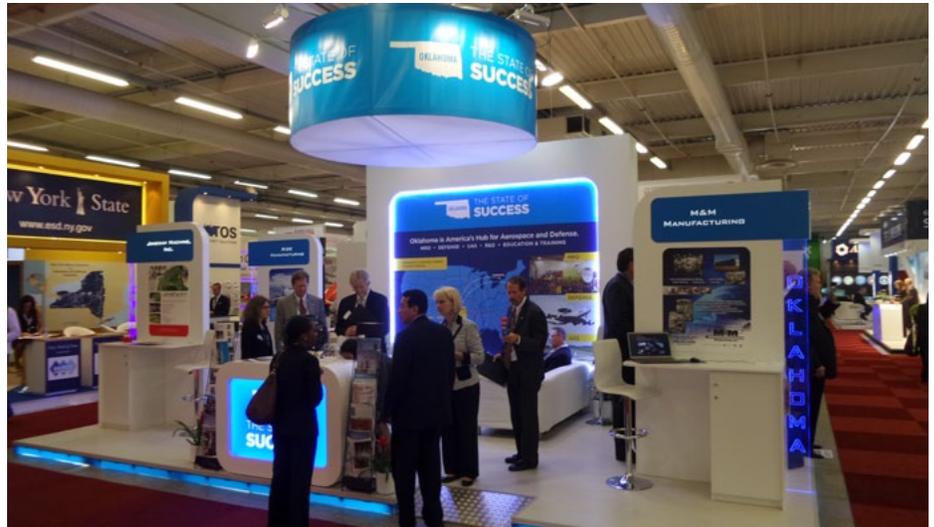
From the South African perspective Zwane added that there was already a technical training school and one of the goals is to establish that as a centre of excellence on the African continent. “We believe that this partnership will aid us in that dream so that we are able to get people from across the continent trained so that they can participate in this area,” Zwane commented.

Of particular interest also were the various U.S. States that were on hand to showcase the various capabilities and programmes that were running within their jurisdiction. In an interview with AviTrader MRO, Vince Howie, aerospace and defence director of the Oklahoma department of commerce explained the importance of the aerospace business to Oklahoma (OK).

“Oklahoma has 500 companies in the aerospace business and we have 120,000 employees that work in the industry,” Howie proudly stated. “We have the largest MRO facilities in the world – the Tinker Air Force base at Tulsa employs about 26,000 people. And then we have the American Airlines MRO facility and they employ about 6,000 people.”

The numbers are quite staggering... the state’s aerospace industrial output alone increased from \$12 billion (in 2012) to \$27 billion (in 2014) and OK aerospace companies today are exporting goods to over 120 countries.

Plans are under way by US Airways/American Air-



Oklahoma is the biggest MRO State in the U.S.

Photo: Keith Mwanalushi

lines to further invest and expand its Tulsa MRO site to accommodate 737-800 and A320 aircraft. Also, Oklahoma City, Oklahoma County and the Air Force jointly purchased 156 acres outside of Tinker Air Force Base in Oklahoma City, for \$44 million, to build 14 hangars to house the MRO operations for the KC-46A Pegasus refuelling tanker (as of 2018), Bomber-X (Long Range Strike Bomber) and the next generation re-fueler KC-Y.

Boeing announced an additional 900 jobs moving to Oklahoma City from Seattle and Kansas City to staff a laboratory to test military and commercial aircraft parts. This represents Boeing’s first com-

mercial aircraft activity in OK. Boeing has gone on record that one of the key factors for it to continue moving jobs to OK was the state’s business climate, cost of utilities and its Quality Jobs and 21st Century Jobs Incentive Programmes.

Howie is keen to see the technical skills level in OK continue to increase, “yes, one of the things that we really focus on is education, science, technology and Math. Apart from the kids we also educate the teachers. We also have 12 universities in OK that all have aviation degrees,” Howie mentioned.

Another highlight was Huntsville Alabama-based RMCI that plans to expand in Europe. RMCI specialises in helicopter health monitoring technology and analysis, announced plans at the Paris air show to open an office in the UK to meet growing demand for its products and services.

RMCI CEO Ken Speaks said the office in Derbyshire, England, will make it easier for the Alabama firm to reach customers in the UK and throughout Europe. The office will be staffed by Dr. Lesley Brealey, an acoustics specialist who has vast experience in the aviation industry, at both the technical and board levels.

“We are on the leading edge of developing this technology, and demand for it is dramatically expanding around the globe,” Speaks said. “We are able to detect emerging faults in helicopter drivetrain systems well in advance of an incident that could cause collateral damage or catastrophic damage. Demand for this type of technology in safety critical systems—where it can save lives and reduce costs—is rapidly growing.” To further meet the global demand, Speaks said RMCI will open an office in Asia in 2016.



A press conference on the potential for the Dream Chaser to land in Huntsville.

Photo: Keith Mwanalushi



INTELLIGENTLY DEFINING AVIATION™

## CONFIDENCE WHEN YOU NEED IT MOST

[WWW.GATELEESIS.COM](http://WWW.GATELEESIS.COM)

GA Telesis is **not just** a provider of component, maintenance and engine overhaul services; we own and manage a significant fleet of commercial airplanes and jet engines. More important, we understand the nuances related to maintaining your assets cost effectively.

Contact our asset management professionals to learn more about our strategies for maximizing the value of your assets.

## Growing pains

Aerostar is a growing MRO business with ambitious plans, and as we find, there is much more to the company than aircraft maintenance. **Keith Mwanalushi** reports from Bacau, Romania.

It seems these are good times to be at Bacau-based Aerostar. Last year the company saw its civil aerostructures and products work and civil MRO activities continue to increase. Plus, the company just recently announced two new customers for their MRO offering – namely TUIfly Germany and UTair Aviation of Russia.

Around 350 'C' and 'D' checks have been completed in the last 11 years for over 20 airlines. Boeing 737 and Airbus A320 heavy maintenance represents the key MRO activity at Aerostar's two MRO hangars

Last year Aerostar celebrated a decade of Boeing 737 maintenance. In addition to BAe 146/Avro RJs the company has also added A320 capability. Grigore Filip, president and director general of Aerostar is keen to see A320 numbers rise. "I know we have to invest," Filip declares. "We have already invested in tooling and we have a very good inventory in tooling and testing equipment for the A320."

Filip acknowledges that the MRO business is tough and stresses that to stay afloat, the pre-occupations at Aerostar have been to secure



There is significant work from Middle East and African airlines.

Photo: Keith Mwanalushi

robust maintenance systems. "What we did to convince the market that this is a reliable and secure centre for excellence is the fact that we provide quality and secure delivery dates that are agreed. And for sure without this effort no customer can be brought here [Aerostar]. It's not the price that determines if a customer will come here but the safety which the customer gets and to deliver quality and compliance of the terms."

Clear price is a key factor for airlines and Filip has this in mind but he says it is not the success factor by which he convinces aircraft operators to place their aircraft in Aerostar's capability – "it's more about the quality and delivery dates," Filip adds.

During 2014, turnover on civil aircraft aerostructures and aviation production rose to over 49% of turnover, and turnover on civil aircraft MRO activities also rose to just under 18%. Nearly 29% of turnover was accounted for by work on defence activities.

"We have made continued progress following our strategic path of steadily building up our commercial aircraft activities to about 70% of our turnover," Filip reports. "Our mission for the immediate future is to increase this sector further to reach around 75% of annual turnover, with defence activities remaining stable at about 20%

Filip adds: "We continue to invest wisely in new machinery, facilities, processes and comprehensive training of our employees to improve our capabilities and service to customers. Aerostar is a strong growth business in the Romanian economy with high added value. Despite the very competitive global market in which we operate, Aerostar has become a significant player in the aeronautical and defence industry."

Aircraft maintenance is just one arm of a much wider business at Aerostar. Aerostructures (part of the production and manufacturing activity) is a big part of the business as Filip explains. "By manufacturing we mean aerostructures on the one hand but also machining, assembly, components of landing gears and hydraulic systems which is different from aerostructures," Filip clarifies.

Aerostar has seen its civil aerostructures and aviation products business continues to grow



Filip would like to see two more locations in addition to the Bacau facility.



737 and A320 is the key MRO activity.

Photo: Keith Mwanalushi

steadily with Aerostar now counted as a Tier 2 supplier in the international aviation supply chain. The company is a major subcontractor of parts and assemblies to companies such as GKN Aerospace and Fokker for a variety of commercial aviation programmes, including those from Airbus, Gulfstream and Dassault. Further qualifications and approvals for Boeing and Bombardier programmes are underway according to the company.

Aerostar is also a significant subcontractor for the production of systems and components for landing gears and hydraulic systems. Working primarily with Messier-Bugatti-Dowty, Aerostar produces significant components for aircraft such as the A320 family, A330, A350XWB and Boeing 787. The company is also the sole supplier of undercarriages for the Daher-Socata TBM 700 executive turbo-prop aircraft.

Like most MRO providers Filip is keen to see the business attract new customers especially in emerging markets. The company has a keen interest in the Middle East and Africa and already has regular work from Royal Air Maroc, Starbow (Ghana) and fastjet.

Filip strongly believes that the Middle East and Africa have significant potential to grow the business in the future. "We believe that in this market we can bring more added value whereas in other markets there is a certain degree of saturation," he observes.

"Having said that, these markets are like other markets – competitive! Sometimes they

can be more difficult because the resources are limited but we don't treat them in a different way because our perception of them is not different from the market in general," says Filip.

Aerostar is also advancing with the qualification of new processes. For instance the company is investing in the qualification of a new process which is Tartaric anodising (Sulphuric Acid TSA) which will replace chromic anodising.

This change is the result of the European constraints which are part of the REACH programme. (REACH is the Regulation, Evolution, Authorisation, and Restriction of Chemicals.)

"We have many other special processes under qualification. The qualification of special processes together with the investments in technological equipment makes us confident that we will be successful to achieve these goals and continue to grow," he continues.

Over the past twelve months Aerostar has become one of the first independent MROs in Europe to carry out installations of the new Split Scimitar Winglets on Boeing 737NG aircraft. Since completing the first installation about 11 months ago, Aerostar has now carried out a total of 14 installations and can offer this

work either separately or as part of a heavy maintenance check, according to customer requirements.

In the short term they are currently no plans for Aerostar to include widebodies on the 'to do' list and in the long term [10 year period] Filip wants to position the company to grow by a significant margin "We are not yet in a position to have sales of say €100 million per year. [Currently €65 million]. But I think in 10 years' time our target for sales should be much more than that, around €300-400 million per year."

In order to achieve this Aerostar will need to increase the complexity of the work that is done in the manufacturing process. Similarly, to grow in the MRO sector, Filip says there will be need to multiply Aerostar's success in Bacau to another location. In about 10 years he can envisage Aerostar having two more locations further to the one in Bacau and a turnover of €300-400 million per year.



Aerostar is a subcontractor for the production of systems and components for landing gears and hydraulic systems. Photo: Keith Mwanalushi

# In the hot seat.....

**Keith Mwanalushi** speaks to **Matthew Bromberg**, President, Aftermarket, Pratt & Whitney

**AviTrader MRO:** What attracted you to this business?

**Bromberg:** I was attracted to aerospace and the MRO sector because, while some would consider it a mature sector, it is actually an ever changing industry. The demand for air travel, which will continue to outpace GDP for the next several decades, is driving industry changes on every level. As the industry grows, we see the emergence of new carriers, new business requirements, and new maintenance providers across the globe. Companies are competing on national and international levels, which challenges us to provide the most competitive services.

I am also attracted to the industry's new and emerging business models that join together innovative engine technologies, such as our industry leading Geared Turbofan (GTF) engine, with cutting edge "Big Data" solutions. These business models will shape the way we contract and provide services. Through predictive analytics, we are able to provide customers with longer engine time on wing, fewer service disruptions and tailored intelligent work scopes for fleet and maintenance planning. Technology makes it possible to provide our customers with services that meet their exact needs. It is exciting to be a part of that change.

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

**Bromberg:** While there are no typical days, my primary role at Pratt & Whitney is to lead one of the industry's most comprehensive aftermarket service companies, offering MRO solutions to large commercial engine operators worldwide. Pratt & Whitney is a global business with more

than 11,000 engines in service. Our large commercial engines power more than 25% of the world's mainline passenger fleet. The aftermarket business has more than 6,000 employees and 20 facilities worldwide serving our customers.

This year, we are excited to launch our new, Geared Turbofan engine into service. The GTF engine has driven unprecedented market success, offering double digit improvements in fuel, emissions and noise. It has earned more than 60 customers and sold more than 6,300 engines to date. My days are typically balanced between meeting with customers to understand their needs and ensuring that we are preparing for a smooth and successful GTF engine entry into service.

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

**Bromberg:** The most challenging part of my job is ensuring that everyone in Pratt & Whitney's aftermarket business is aligned with the customers' needs and demands. Every person – from me to our facility managers to our interns and shop workers– needs to be focused on how to deliver the best quality and highest value service to meet our customers' expectations.

**AviTrader MRO:** What is your comment over concerns by some MRO organisations about OEMs growing their engine aftermarket services?

**Bromberg:** Our approach is to provide customers with choices that offer the best value. We welcome competition and want our customers to have a choice in their important maintenance decisions. At Pratt & Whitney we will work with our customers to provide any level of support needed, from a single transaction, to spare parts support, to comprehensive, long-term fleet maintenance agreements. Over the next decade there will be a flood of new engines entering into service. OEMs alone cannot handle the maintenance requirements for all of these engines. As an industry, we will need to work together to support our customers to ensure the longest time

on wing for these engines.

**AviTrader MRO:** What is the best and most efficient way for engine operators to collect and manage engine performance data and what is the significance of this information?

**Bromberg:** Technology makes it possible for us to capture more data from engines than ever before. At Pratt & Whitney, we are employing data analytics to accurately and proactively monitor the health of our customers' engines. Through a collaboration with IBM, we are improving our capabilities in real-time monitoring, predictive analytics, business intelligence and data integration. This allows us to customise work scopes and provide early warning detection and improved visibility into the overall health of an operator's engine fleet.

No two operators are the same. Each has a different mix of aircraft/engines, run different geographic routes with different climates/environmental conditions. Data helps us manage engine fleets so we maximise the customer's specific engine performance and time on-wing, while maintaining predictable MRO spend.

**AviTrader MRO:** What's next in the pipeline at P&W?

**Bromberg:** The GTF engine is on track across every dimension and we are focused on readying all aspects of customer support for entry into service. We will be ready on day 1 of the GTF engine's entry into service with a global, open network to provide operators with maximum quality, choice and value.

Pratt & Whitney and its OEM programme partners will be tooled, trained and ready to support the rapid introduction of the GTF engine fleet. Our experienced, high volume shops will streamline operations, continuously improve customised work scopes, and incorporate best practices to offer the highest quality work at competitive rates. As the volume and demand for GTF engine maintenance increases, the network will expand to include airline shops, independent MRO and repair shops and line maintenance organisations.



P&W's Matthew Bromberg



P&W has more than 11,000 engines in service.

Photo: P&W



*Over 50 years of*  
**Aviation Expertise**

SUPPORT. SERVICE. SOLUTIONS.

- Aerospace Strategy and Market Analysis
- MRO Strategy and Operations
- Aircraft and Asset Management
- Airline Network and Fleet Planning
- Operations and Supply Chain
- Airport Business Advisory
- Due Diligence and Transaction Support

visit [icfi.com/aviation](http://icfi.com/aviation) to learn more

# Aircraft Spares – Demand, supply and value trends

Analysis by John Mowry, *Global Managing Director - Aviation Consulting & Services – ICF International.*

ICF estimates that airlines, distributors, MROs, OEMs, and traders in the commercial aviation industry hold approximately \$50 billion in spare parts inventory, which compares to a commercial jet fleet valued at around \$600 billion. The majority of the inventory holdings, as measured by value, are held in the rotatable/repairable part classes.



John Mowry, Global Managing Director - Aviation Consulting & Services, ICF International.

In this article, ICF explores the factors affecting supply and demand, and resultant value trends, for various classes of spare parts.

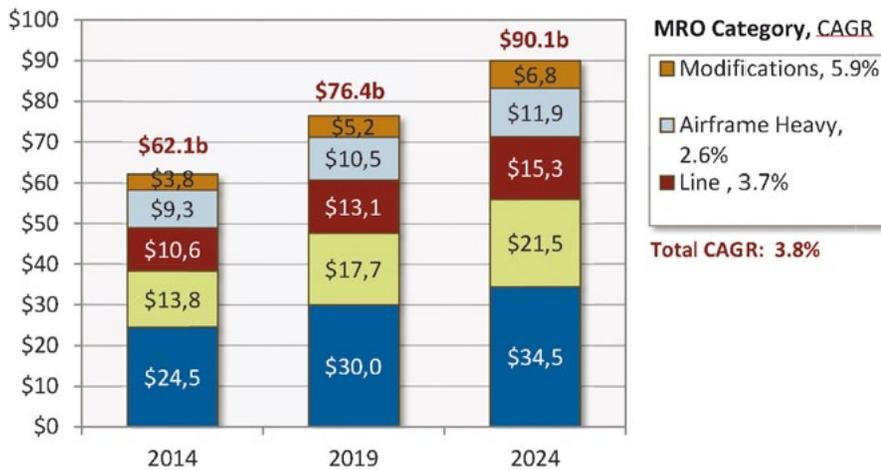
## Aircraft Spare Parts Demand & Supply

### Spare Parts Demand

Demand for aftermarket aircraft parts is tied directly to the utilisation of the aircraft that the spare parts support: the greater the utilisation, the greater the wear on the components, resulting in more frequent part replacements, repairs, and overhauls.

ICF projects the global fleet of commercial aircraft is set to grow from nearly 27,500 at the end of 2014 to nearly 38,000 by 2024 at an annual growth rate of 3.2%. As this fleet grows and aircraft continue to age, global maintenance, repair and overhaul (“MRO”) spending is forecast to increase at a slightly faster rate of 3.8% per year: from USD \$62.1 billion at present to \$90.1 billion by 2024 (in 2014 USD).

**Global MRO Expenditures by MRO Segment (2014 USD Billions)**

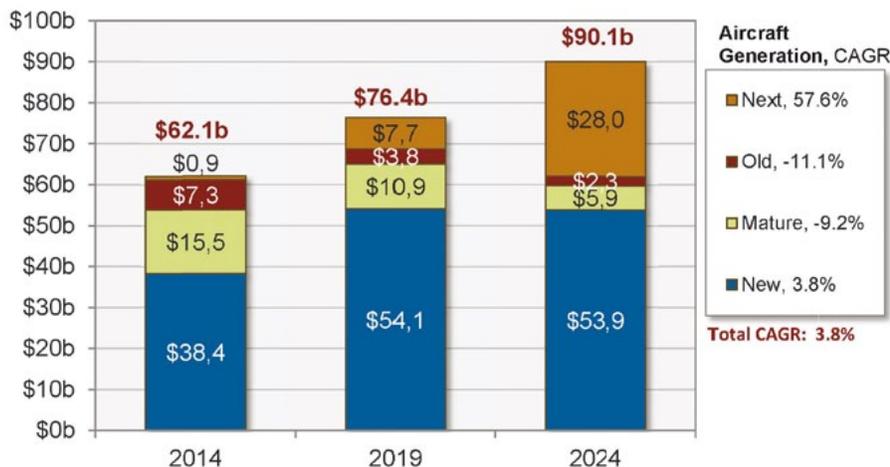


### MRO Segment Assessment

Engine maintenance accounts for the largest share of MRO expenditures, at approximately 40% of the total, followed by components at 23%. Line and airframe maintenance account for 18% and 14% of MRO expenditures respectively.

Engine overhaul is a material-intensive activity (principally repairable and expendable parts), whereas line maintenance and airframe heavy maintenance are mainly labour-driven, supported by expendable parts. The cost structure for component MRO varies by technology and ATA chapter, but is on average 50% material, 35% labour and 15% outside services. Projected growth rates over the next decade are anticipated to be robust across the largest volume and material-intensive engine and component segments.

**Global MRO Expenditures by Aircraft Generation (2014 USD Billions)**



### Aircraft Generation Assessment

Current MRO demand is largely generated by new (e.g. Airbus A320 Family / Boeing 737NG) and mature generation aircraft (e.g. Boeing 747-400, 757, 767). However, as next generation, models are delivered (e.g. Airbus A380, A350X-WB, A320neo, and Boeing 787,737 MAX) and older models retire, the MRO demand will shift.

### Spare Parts Supply

Trends in the supply of spare parts differs materially depending upon the part class.

Source: ICF

**Expendables**

With respect to supply of expendable spare parts, the principal sources are from the parts manufacturers or distributors, and from airlines that have identified excess or surplus inventory and/or aftermarket parts trading companies that have acquired such excess or surplus inventory.

**Rotables**

With respect to the supply of rotatable spare parts, there are two principal sources other than the parts manufacturers or aftermarket parts companies. Material can be obtained either from (1) airlines and manufacturers selling surplus inventory or (2) from companies selling dismantled aircraft and engines.

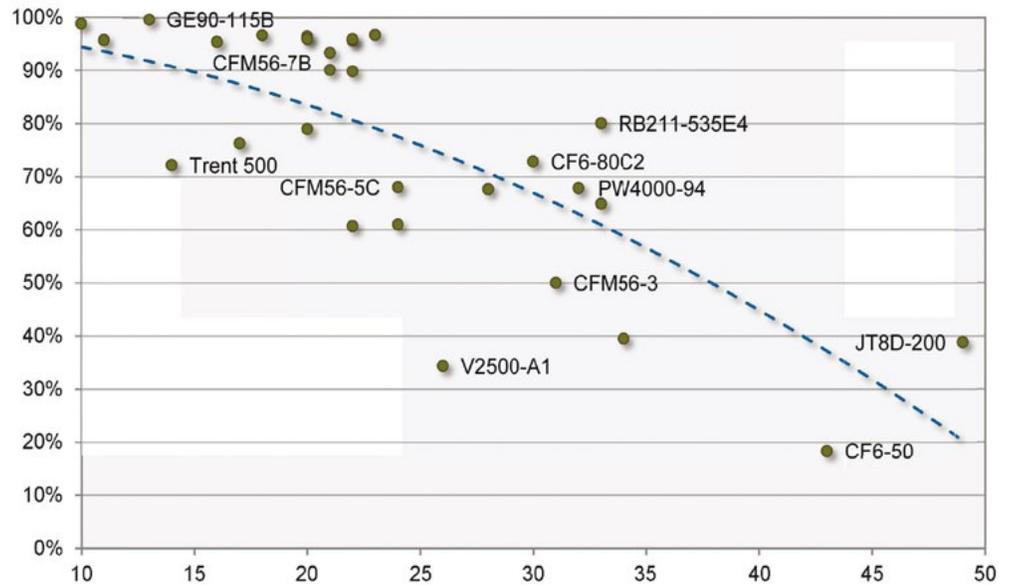
Dismantled aircraft or engines, otherwise known as “part-outs,” are invariably of two categories: either they have been in service for so long that the earliest production aircraft/engines have depreciated to a point that it is economically viable to part them out; or they have been assessed as a total constructive loss after a major accident.

While the average aircraft retirement age of commercial jets has historically been 25 years, most aircraft/engines become potential part-out candidates after they have been in service for approximately 15-20 years. The actual decision to part-out assets well below 25 years is typically driven by a unique set of circumstances associated with the specific asset and the market at the time. For aircraft and engine types that have been in service for less than 20 years, there is generally a very limited supply of spare parts other than from the OEMs.

**Repairables**

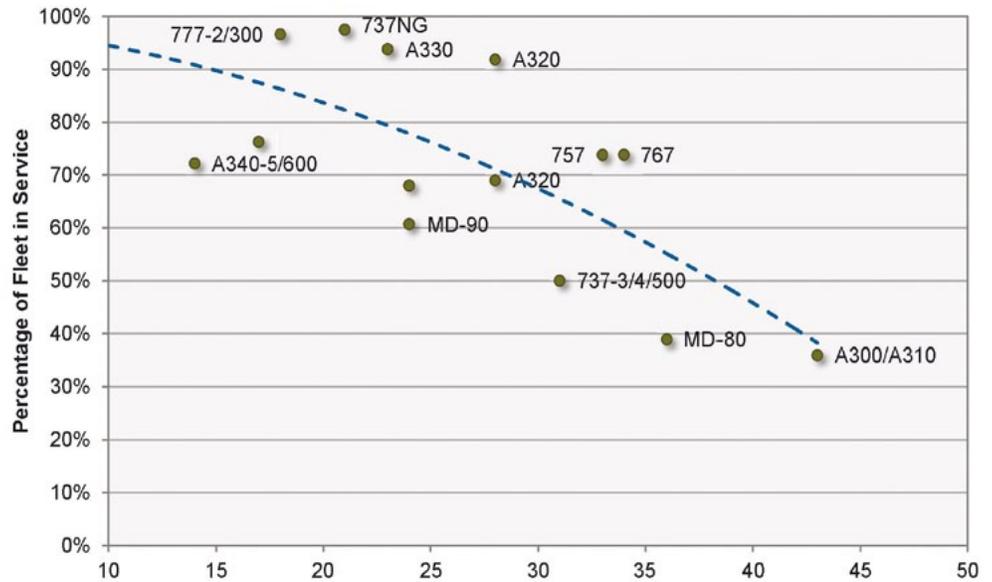
The characteristics of repairable spare part supply are a fusion of expendable and repairable spare parts supply. First, since repairable parts have a finite life, there are requirements for the acquisition of new replacement parts from manufacturers similar to expendables. Second, because repairables can be repaired often, the

**Percentage of Fleet in Service vs. Years since First Delivery – Engine Fleets**



Source: ICF analysis of Flightglobal ACAS data, March 2015

**Percentage of Fleet in Service vs. Years since First Delivery – Airframe Fleets**



Source: ICF analysis of Flightglobal ACAS data, March 2015

part-out of aircraft and engines decreases demand for these parts and increases the supply of these repairables.

The adjacent charts outline the proportion of the aircraft and engine fleets in active service expressed as a percentage of total deliveries, as compared to the number of years since first delivery.

**Spare Parts Value Trends**

The value trends of aircraft/engine spare parts differ significantly from the value characteristics of aircraft themselves. Aircraft have a finite economic useful life that typically ranges around 25 years, and aircraft values typically start declining immediately upon delivery and continue falling as the aircraft ages. The economic useful lives of

spare parts are not related to the specific age of the parts, but rather are related to that of the fleet in service that they support.

**Expendables**

While aircraft/engine part-outs reduce demand for expendable parts due to reductions in the overall associated fleets, the impact on expendable values is more muted than on rotatable values, since additional supply of expendables does not generally result from part-outs.

Even for those that support middle and older generation aircraft/engines, high-utilisation / high-demand expendables tend to trade close to manufacturers' list prices (which generally increase annually), providing pricing support. Where there is demand, even low-utilisation / low-demand expendables will trade at prices close to manufacturers' list prices in single or small lot transactions.

Expendable spare parts that support older generation aircraft/engines and are in low-demand, when sold on the surplus market to aftermarket spare parts traders in large packages or lots, are susceptible to significant discounting.

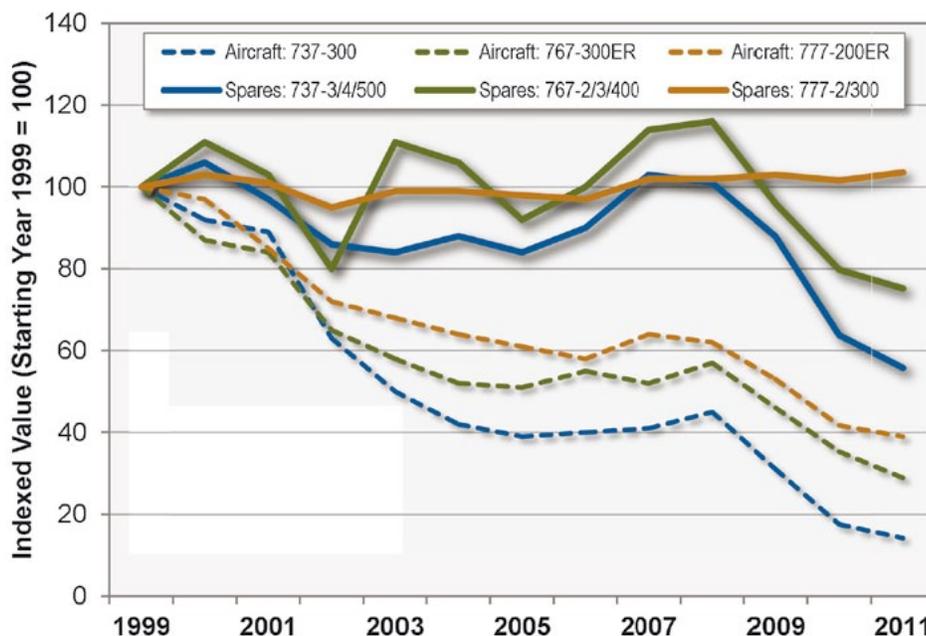
Nonetheless, there can be some upside in the market for expendable parts as large fleets of aircraft/engines are moved from major first-tier operators with sophisticated supply chains to secondary operators who are more likely to tap into the secondary market for spare parts support. Indeed, fleet fragmentation coupled with the increased maintenance demands of ageing aircraft, can positively influence demand for expendable spare parts in the aftermarket and partially counteract the effects of reduced fleet sizes and flight hours.

**Rotables**

Pools of rotatable spare parts (which are undergoing continual repairs and overhauls) for new and middle generation aircraft/engine types tend to maintain their values better than aircraft themselves.

Substantial declines in the value of rotatable spare parts start to occur when aircraft (and engines) are dismantled. This results in not only a decrease in demand for spare parts (fewer aircraft/

**Indicative Comparison of Rotable Spare Parts to Whole Aircraft Values**



Note: Representative pool of rotatable spare parts vs. constant-vintage aircraft.

Source: ICF

engines in operation require fewer spare parts to support them), but also an increase in supply of the parts (the rotatable components in the dismantled aircraft/engines increase the supply).

The following chart compares the historical value trends of representative rotatable spare parts pools to whole aircraft. Strong value retention is exhibited for the spare parts on the new generation Boeing 777 aircraft throughout the historic period analysed. Some volatility in value for the parts supporting the mature Boeing 737 Classic and 767 platforms can be seen, but values were largely retained until a rapid decline occurred after the 2008-2009 recession.

**Repairables**

Like rotatables, repairable spare parts for new and middle generation aircraft/engine types tend to maintain their values better than aircraft. Because repairable spare parts are scrapped when they are no longer economic to repair, some repairable parts available in the aftermarket from part-outs can be utilised by operators and MROs without any impact on values. Those parts with higher scrap rates (such as hot section turbine hardware) tend to maintain values more strongly than those which scrap infrequently (such as static engine structures and frames).

**Conclusion**

With spare part holdings across the industry valued at nearly 10% of the value of the commercial jet fleet itself, understanding supply and demand, and resultant value trends, for such parts is of significant importance to industry stakeholders.

The nature of supply and demand for each class of spare parts drives the value trends for each such class. Rotables and repairables retain their values exceptionally well until such point as a significant portion of the fleet they support exit the active fleet, and are disassembled for parts. After reaching a threshold, value decreases can be rapid and significant.

*ICF International provides objective, independent regulatory, technical, financial, and commercial guidance to aviation clients, including airlines, airports, financial institutions, manufacturers, U.S. federal agencies, international governments, VIPs, and heads of state.*



[www.icfi.com/aviation](http://www.icfi.com/aviation)

**TP Aerospace**, which specializes in trading and maintenance of commercial aircraft wheels and brakes, utilized **Quantum Control** MRO and Logistics software to increase productivity and expand into new regional markets. Founded in Denmark in 2008, TP Aerospace has rapidly expanded across three continents in just a few years. It now operates in North America, Europe and Asia, covering the world airline market from the company's strategically located facilities. With Quantum Control, TP Aerospace's staff can easily access information about stock lines, pricing, customer and vendor contact details, invoices, purchase orders, sales orders and more. The software also provides tools to track and manage the company's large wheel and brake inventory.

**ADSoftware** reported the successful implementation of their AirPack maintenance and logistics system for two more airlines in Thailand; **City Airways** and **Thai Express Air**. ADSoftware's presence in the Asian aviation industry began in 2006 when the French MRO software specialist partnered with **Aviation Engineering & Planning Services (AEPS)**, for the exclusive distributorship of AirPack in the Middle East and Asia. Together they have signed 11 operators on the

Asian continent in countries like Thailand, Laos and Myanmar. AEPS has provided on-site B2B training and support for City Airways and Thai Express Air, to facilitate the software installation phase. The cargo airline, Thai Express Air currently operates a single B737-300(F), while low cost carrier (LCC), City Airways is operating a B737-400 and 1 B737-800. The Don Mueang based LCC offers domestic flights as well as regional flights to popular destinations like Hong Kong and China.

**GA Telesis** officially launched its i-TEAMS program during **ISTAT Americas 2015**. i-TEAMS ("Intelligent Total Engine Asset Management Solutions") leverages the expertise and core competencies of **GA Telesis Engine Services Oy ("GATES")** together with **GA Telesis' Asset Transaction Group ("ATG")** to design intelligent options and provide whole engine or module assets for GATES' growing base of engine-lessor customers. One of GATES' first i-TEAMS customers is **WNG Capital ("WING")**. Besides receiving world class MRO service from GATES, WING can now take full advantage of the i-TEAMS solution to make informed maintenance and financial decisions about their engine repair requirements.

## People On The Move



Kenneth Onderko



Lionel Drévilion

Nexcelle has appointed **Kenneth Onderko** and **Lionel Drévilion** as its two new Executive Vice Presidents, joining the management team for this joint venture of GE's Middle River Aircraft Systems and Aircelle (Safran) that produces jet engine nacelle solutions for integrated propulsion systems. The Executive Vice Presidents have responsibilities in overseeing program execution and operations – working closely with the parent companies' respective teams as Nexcelle pursues the development, certification and production ramp-up for its nacelle products.

Effective June 15th, **Olivier Andriès** is named CEO of Snecma (member of the Executive Committee). Snecma will have operational responsibility for the companies Hispano-Suiza and Techspace Aero. **Bruno Even** is named CEO of Turbomeca (member of the Executive Committee). **Jean-Paul Alary** is named CEO of Aircelle (member of the Executive Committee). **Martin Sion** is named CEO of Sagem (member of the

Executive Committee). **Eric Dalbiès** is named Executive Vice President, Strategy and M&A (Mergers & Acquisitions) (member of the Executive Committee).

Boeing Capital Corporation (BCC) has named **Daniel C. da Silva** vice president of Strategic Regulatory Policy. He will oversee policy and regulatory issues related to the aircraft financing mission of BCC, a wholly-owned Boeing subsidiary primarily responsible for arranging, structuring and providing financing for Boeing's commercial airplane, space and defense products.

PAS Technologies appointed **Enrique Hernandez** as Vice President of Integration & Transitions. In this position at PAS Technologies, Mr. Hernandez will be responsible for leading the company's acquisition integration and new program introductions. Mr. Hernandez joins PAS Technologies after having served as General Manager – European Operations for Chromalloy in Holland, France and the U.K. Prior to that, he served Pratt & Whitney as General Manager for the company's Turkish Engine Center in Istanbul and as General Manager of the Parts Repair Operations in Loyang, Singapore.



Enrique Hernandez