

MRO

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767 MODIFICATION

Boeing's twinjet is still in the game

Company Profile
Pratt & Whitney

MRO News
from around the world

People on the Move
latest appointments

IBA Analysis **IBA**



The benefits of foresight

During the last month I spent a considerable amount of time looking at the current state of the engine aftermarket and how much it has changed particularly with the increased take up of OEM provided long term service agreements.

While doing this research it was interesting to observe how the independent MRO's and component firms are engaging and responding to engine spares forecasting and the dynamics involved in this process. Different parts suppliers have different ways of forecasting demand, but are all intertwined into a mesh of similar systems and procedures.

Specialists such as TES say it's more critical than ever to have robust forecasts and understanding of the parts market, not only in terms of parts availability and demand, but also the impact on parts valuation. "If you don't get it right, you can end up with a very expensive issue on your hands; stock on the shelf that you cannot shift."

The advantage of being able to forecast spare demand accurately is more of an operational advantage, being able to have the correct parts in the correct quantities in the correct location. This is no easy undertaking. There will usually be proprietary algorithms in place

to facilitate the process.

Sticking with engines, in this issue, Matthew Bromberg the aftermarket specialist at Pratt & Whitney highlights the key trends impacting the global engine MRO market today and gives an update on Pratt & Whitney's PurePower geared turbofan. Interesting stuff.

Happy reading!

Keith Mwanalushi

Editor



Boeing and Bedek compete directly in the freighter conversion market

Photo: IAI Bedek

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WHEN RESULTS MATTER



British Airways' A380

Photo: AirTeamImages

Yorkshire company wins order from British Airways

British Airways has called on the expertise of a North Yorkshire manufacturing company to provide an engineering solution for its new fleet of Airbus A380 and Boeing 787 aircraft. The airline has placed an order with Unison, based in Scarborough, for its tube bending machinery to produce replacement rigid hydraulic tubes for its new aircraft. Both the A380 and the 787 Dreamliner have advanced hydraulic systems that operate under much higher pressure than other commercial aircraft. To accommodate the greater pressure, the new Unison equipment will manufacture the hydraulic pipework from specialist aerospace materials, such as titanium alloy, using thick tube walls. British Airways has invested in 12 new A380s and 24 Boeing 787s, as part of a £5bn investment. The tube bending machinery will be installed at the airline's Engineering maintenance base at Heathrow Airport where the aircraft will be maintained. The bespoke machinery is capable of producing precision tubework to exactly replicate worn or damaged parts quickly, efficiently and cost effectively. In addition to supplying the complete tube fabrication solution Unison will also be working with British Airways to integrate the new process into the airline's engineering operation.

Saab signs E-Jet agreement with Liebherr-Aerospace

Defence and security company Saab has signed an agreement with Germany's Liebherr-Aerospace Lindenberg GmbH to provide maintenance,

repair and overhaul (MRO) services for landing gear equipment across the complete Embraer E-Jet family of regional aircraft. Saab's business area Support and Services has a well-known and long-established expertise within the field of aircraft component maintenance. Saab is now adding a new strand to its capabilities by providing landing gear service and support for Embraer's E-jet regional jet family (the E170 and E190 series). Based in Lindenberg, Germany, Liebherr-Aerospace Lindenberg GmbH is the original equipment manufacturer (OEM) for the Embraer E-Jet's landing gear. Saab sees its agreement with Liebherr-Aerospace as an important, strategic move for future business. The agreement with Liebherr-Aerospace allows Saab to acquire and maintain updated technical documentation for E-Jet family landing gear equipment in order to perform maintenance services for the equipment.

Lufthansa Technik opens third US location for Aircraft Production Inspection

Lufthansa Technik AG enlarges its product portfolio and announced the opening of the third US location after Everett and Renton for Aircraft Production Inspection of Boeing aircraft at North Charleston/South Carolina. The first Boeing 787s have already been successfully supported and the Lufthansa Technik inspectors are permanently on-site. Marketed under the name of Aircraft Production Inspection Program (APIP), Lufthansa Technik is offering this independent production inspection to both airlines and leasing companies. Lufthansa Technik experience and know-how

from looking after customer fleets worldwide on a day-to-day basis mean it receives continuous feedback in the areas of technical quality and operational flexibility. This operational expertise is reflected in all product areas of the Aircraft Production Inspection Program. APIP inspectors are stationed permanently at all major Boeing final assembly sites and also at other manufacturers.

Coopesa RL performs Split Scimitar Winglet modification

Coopesa RL in San Jose, Costa Rica successfully performed the Split Scimitar Winglet modification on three B737-800, for two undisclosed customers. Coopesa is scheduled to perform this modification on two additional B737-800's over the next few weeks for two other undisclosed customers.

Triumph Group to provide Sharklet wing reinforcement kit for Airbus A319, A320 in-service aircraft

Triumph Group reported that its subsidiary, Triumph Aerostructures-Vought Aircraft Division, has been selected by Airbus to furnish the wing reinforcement kit that allows for the installation of Sharklets on the Airbus A319 and A320 in-service aircraft. The kit consists of multiple subassemblies and components that reinforce the wing for the Sharklet loads. The multi-year contract is worth over \$160.0m. Production will be done at the company's Nashville, Tennessee facility, with first delivery expected early 2015. Triumph Aerostructures-Vought Aircraft Division designs, tests and manufactures aerostructures for commercial, military and business jet aircraft. Products include fuselage sections, wings, empennages, nacelle structures and helicopter cabins.

Boeing selects MAEL to provide GoldCare to Middle Eastern customer

Monarch Aircraft Engineering (MAEL) has been selected by Boeing to provide GoldCare airframe maintenance support to a Middle Eastern customer's Boeing 787-800 Dreamliner operation at Abu Dhabi. This is the fourth Boeing 787 Dreamliner contract for MAEL, whose highly experienced engineering team will shortly introduce support services for the new customer, having successfully added the Boeing 787 Dreamliner aircraft to its existing UAE General Civil Aviation Authority maintenance approval.

MRJ's static strength test aircraft transferred to strength test station

The static strength test aircraft of Mitsubishi Regional Jet (MRJ) was transferred from the final assembly factory (Komaki South Plant of MHI's Nagoya Aerospace Systems Works located in Aichi Prefecture) to the strength test station to start preparations for the static strength test. The test will start this summer 2014, after preparations have been completed. The static strength test is one of the airframe tests to inspect that the aircraft meets safety standards in strength. Two test aircraft are required for airframe tests, one is for the static strength test and the other one for the fatigue test. The airframe tests are necessary for Type Certificate and Airworthiness Certificate acquisitions, and will be conducted in the presence of the Civil Aviation Bureau.



The static strength test aircraft of Mitsubishi Regional Jet
Photo: Mitsubishi

Sunshine Avionics receives Brazil repair station certification

Sunshine Avionics, a HEICO Aerospace Corporation subsidiary, announced their recent ANAC repair station certification. ANAC (Agencia Nacional de Aviacao Civil), is the agency responsible for the regulation and the safety oversight of civil aviation in Brazil. This achievement will allow Sunshine Avionics to offer their advanced avionics repair services to the numerous airline and MRO customers in Brazil.

Dassault joins central fuselage of new Falcon 5X

Dassault Aviation has joined the main center fuselage subassemblies of the Falcon 5X, a key milestone in the production program for this innovative new large cabin twinjet. The center fuselage subassemblies – the front and rear

lower subassemblies and the upper subassembly – are part of the main center section, which includes the cabin and baggage hold. They arrived in March at Dassault's Biarritz plant in southwestern France and were joined there to the wing center section in mid-April. In June, the main center section will be joined to the forward section, comprising the cockpit, entryway and galley, and the rear section, which carries the empennage and power plant, forming the complete fuselage. Once fully assembled and pressure tested, the fuselage will be ready for shipment to the Mérignac plant, near Bordeaux, for aircraft final assembly. Fuselage delivery is expected in the summer. Meanwhile, automated wing assembly is well advanced at the Martignas plant, near Mérignac, and work on equipping the first wing has begun. The wings are due to arrive at Mérignac at the same time as the fuselage. First aircraft equipment and systems have been delivered, including the Héroux-Devtek landing gear. The Snecma (Safran) Silver-

crest engines will soon start podding operations and are due to arrive later this summer. Landing gear tests have been completed and tests on other systems have begun, including avionics, fuel and air conditioning systems.

AerFin opens new aircraft engine disassembly facility in the UK

AerFin Limited has opened a new 45,000 ft² aircraft engine disassembly facility in the United Kingdom, providing storage, warehousing and parts distribution services. The company, which offers a broad scope of specialist engine support for Rolls Royce, CFMI, GE and Pratt and Whitney products for such engine types as RB211, Trent, CFM56-7/5B, PW4000, CF6 and V2500 with EASA 145 certification planned for late 2014, has taken up space in Caerphilly. AerFin provides specialist management services, primarily focusing on distressed assets requiring innovative and intensive technical and commercial risk management solutions.

Sabena technics signs five-year integrated services contract with CEBU AIR

CEBU AIR, an airline based in the Philippines and operating as CEBU Pacific Air, has trusted Sabena technics with the support of their fleet of ATR 72-500 aircraft until 2019. Within the scope of this five-year contract, Sabena technics will provide CEBU AIR with a large range of solutions including pool access, repair and overhaul of rotatable components for the customer's eight ATR 72-500 to ensure the continuity of CEBU Pacific Air's flight operations. The support will be completed at Sabena technics' new warehouse that will be opening in Singapore within a few weeks and with support from its facilities based in Dinard (France).

AFI KLM E&M and Air China sign GE90 engine support contract

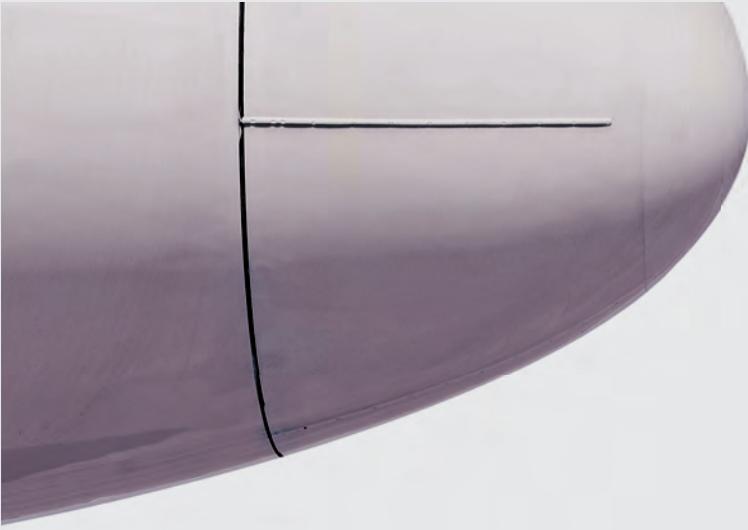
AFI KLM E&M and Air China Technics signed a formal agreement organizing support for the GE90 engines equipping the Chinese carrier's fleet of Boeing 777 aircraft. With this contract AFI KLM E&M signs its largest contract ever and binds the two parties exclusively over the long term with (PBH) "Power By the Hour" support solutions. This latest agreement extends the fruitful aircraft maintenance partnership between AFI KLM E&M and Air China, operating twenty 777-300ER passenger aircraft and its Joint Venture Air China Cargo

eight 777-200 freighters, and is part of wider cooperation moves.

AFI KLM E&M and GMF sign a major component maintenance partnership

Air France Industries KLM Engineering & Maintenance and Garuda Maintenance Facility AeroAsia (GMF), a leading supplier of MRO services in South East Asia, have signed component maintenance contracts enabling AFI KLM E&M to subcontract component repairs to GMF. These contracts were signed as a next step in the co-operation whereby GMF signed

two long term support agreements with AFI KLM E&M last year. One covering component support for 10 777-300ERs and the other for component support of 78 737s operated by Indonesian flag-carrier Garuda Indonesia. The support services provided by AFI KLM E&M include component repair, access to a spares pool, and the creation and provision of a local main base kit at the client's facility in Jakarta. The newly signed agreements will allow AFI KLM E&M to start using the growing GMF component repair capabilities not only for certain component repairs related to the support agreements for the Garuda fleet but also for other operators in the region.



Brave

MONARCH AIRCRAFT ENGINEERING (MAEL) took a brave decision in 2013. In an industry where others have seen contraction and consolidation, we chose to push the boundaries.

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It will also allow us to continue our investment in training and developing the next generation of highly skilled aircraft engineers; a commitment MAEL has made to the industry for the past 40 years.

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AJW Aviation news

AJW Aviation signs 5 year power-by-the-hour pool access agreement with Azerbaijan Airlines

AJW Aviation has signed a new power-by-the-hour pool access agreement with Azerbaijan Airlines. This 5 year agreement will cover two A340-500 aircraft, allowing the airline access to AJW's extensive inventory of A340 components. This sees an extension of the already successful relationship between the two companies; AJW having recently handled the rebranding of the entire AZAL fleet in July 2013; and previously, managed the purchase and refit of the two A340-500 aircraft from Airbus SAS to be entered into commercial service with Azerbaijan Airlines after

extensive repainting and cabin configuration co-ordinated by AJW's in-house technical team.

be covered by the PBH agreement with AJW.

AJW Aviation extends power-by-the-hour support programme with Germania

AJW Aviation has extended its on-going ten year power-by-the-hour contract with Berlin-based airline Germania, to now cover an additional five aircraft, including four A321s and one A319. The addition of these takes the number of aircraft under contract with AJW to a total of twenty-three Airbus and Boeing commercial jets. Germania anticipates future fleet additions as part of its growth strategy and these will also

AJW Aviation signs three year General Terms Agreement with Wizz Air

AJW Aviation has signed a three year General Terms Agreement (GTA) with Hungarian airline Wizz Air. This agreement will cover forty of their A320 aircraft, providing for any additional requirements outside of the airline's existing support contracts, giving extra piece of mind and ensuring the airline can focus on operations. Wizz Air, founded in 2003, currently employs more than 1,700 people and has seventeen operating bases across Europe.



ADAT facility

Photo: ADAT

Etihad Airways signs agreement to acquire Abu Dhabi Aircraft Technologies (ADAT)

Etihad Airways, the national airline of the United Arab Emirates, and Mubadala Development Company (Mubadala), entered into an agreement in which Etihad Airways will acquire Abu Dhabi Aircraft Technologies LLC (ADAT) from Mubadala. The deal will see Mubadala retain ADAT's engine focussed maintenance, repair and overhaul (MRO) business, which will be the catalyst for the continuity and growth of its dynamic engine business through the establishment of a new engine company. The transaction includes maintenance and engineering teams, hangars, component workshops, and paint facilities in Abu Dhabi which will enhance Etihad Airways capability to undertake airframe and component maintenance on its growing fleet of modern aircraft, including the new Airbus A380 and Boeing B787, which will join the fleet in the last quarter of 2014. Engine MRO is set to form a significant component of Mubadala's aerospace strategy, and this new engine company will form the foundation for this growth under the leadership of Abdul Khaliq Saeed, ADAT's current CEO. At the 2013 Dubai Airshow, Mubadala signed deals with Rolls Royce and GE

Aviation to establish next-generation Trent XWB and GEnx MRO centers of excellence in Al Ain. This was further supported with a combined commitment of US\$1.0bn in engine parts production from both manufacturers.

AirAsia X and GE sign MOU for CF6 engines for Airbus A330 fleet

AirAsia X, the long haul, low fare airline affiliate of the AirAsia Group and GE Aviation have signed a Memorandum of Understanding for the selection of CF6-80E1 engines to power AirAsia X's 25 new firm Airbus A330-300 aircraft, with options for an additional three A330 aircraft. These engines will be covered by a multi-year OnPoint solution service agreement for engine maintenance, repair and overhaul. The list price for the engines and the service agreement is valued at more than US\$1.5bn over the life of the agreement.

Spirit delivers first flight test pylon for Mitsubishi Regional Jet

Spirit AeroSystems celebrated the rollout of the first flight test pylon for the Mitsubishi Regional Jet (MRJ) aircraft. The pylon and underwing structure are used to mount the aircraft's Pratt & Whitney power plant to the wing and are designed and manufactured by Spirit at the company's Wichita, Kan., facility. In 2008, Mitsubishi awarded a contract to Spirit AeroSystems to design and build pylons for both the MRJ70 and MRJ90 aircraft models. The work package also includes systems, pylon-to-wing integration hardware and the aft fairing package. Spirit has more than 75 years of experience designing and producing pylons. An industry team of Spirit, Mitsubishi and Pratt & Whitney have worked together to define structural interface points and complete the pylon structural design. The finished product is made of lightweight aluminum, titanium and composite components, and is a combination of purchased items, Spirit-fabricated components and Mitsubishi-furnished equipment.



Spirit AeroSystems and Mitsubishi Aircraft celebrate delivery of first flight test pylon for Mitsubishi Regional Jet
Photo: Spirit AeroSystems

AAR signs 5-year contract to support Air Canada's narrow-body Airbus fleet

AAR has signed a five-year exclusive contract with Air Canada to support its fleet of 89 Airbus 319, 320 and 321 narrow-body aircraft. The scheduled heavy maintenance will be performed at AAR's maintenance, repair and overhaul (MRO) facility at Duluth International Airport. The five-year deal formally extends service that began under a letter of intent signed in October 2012. Work initially commenced at AAR's aircraft maintenance facility in Miami and was transitioned to Duluth after AAR opened the new MRO in November of that year. AAR Aircraft Services – Duluth supports three lines of aircraft maintenance and 305 jobs and is on track to add a fourth line in November, creating another 70 jobs.



AAR to support Air Canada's narrow-body aircraft

Photo: Air Canada

UTC Aerospace Systems receives Nadcap accreditation for composites

UTC Aerospace Systems' Engineered Polymer Products (EPP) facility in Jacksonville, Fla. re-

cently received Nadcap (national aerospace and defense contractors accreditation program) accreditation for manufacture of aerospace composites. The company's EPP team specializes in designing, manufacturing, test-

ing and servicing acoustic and structural composite products for both military and commercial applications. Nadcap is a worldwide cooperative program comprising aerospace prime contractors to ensure competency, ca-

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pability and consistency of companies performing "special manufacturing processes." The Performance Review Institute (PRI), which governs the Nadcap program, conducts 5,000 audits of manufacturing processes around the world annually, providing independent accreditation. EPP's Composites accreditation is the second such accreditation earned – it follows a Chemical Processing accreditation achieved in August 2013. Both accreditations certify to customers that EPP meets the most stringent aerospace industry quality standards.

Sneecma and Mecachrome sign contract for production of titanium aluminide blades on LEAP engine

Sneecma (Safran) and Mecachrome signed the procurement contract for titanium-aluminide (TiAl) blades on the low-pressure turbine of the CFM International LEAP engine. Titanium aluminide (TiAl), an alloy of titanium and aluminum, is a new-generation material with outstanding qualities. Standing up to very high temperatures (750°C), it will cut the weight of a blade in half compared with the nickel-based alloys traditionally used in low-pressure turbines. As part of the new LEAP engine, this alloy will be used for the first time on a single-aisle commercial jet. It will contribute to the excellent performance of this new engine, which offers 15% lower fuel consumption than the best engines now in service. Sneecma and Mecachrome developed a special manufacturing process for TiAl blades, and even created a complete production facility. Located at Mecachrome's plant in Sablé-sur-Sarthe, the new production line will require an investment of €60m and create 150 specific jobs. Volume production will kick off in 2015, with a sharp ramp-up already in 2016, on the way to achieving the planned production rate of one blade every three minutes in 2019.

STS Component Solutions signs consignment agreement with Air Maintenance Estonia

STS Component Solutions, a division of STS Aviation Group, has entered to an agreement for parts distribution with Air Maintenance Estonia, a leader in Aircraft Maintenance and Repair Organization that is located in Tallinn, Capital of Estonia. Through this consignment agreement, STS Component Solutions will be responsible for facilitating Air Maintenance Estonia reliable list of components utilizing STS Component Solutions OEM Distribution Product Lines. A key part of this agreement



New CFM-56 Leap Engine

Photo: CFM International

covers superior availability of airframe spares and inventory in this region and across the globe. The consignment agreement is tailored to Air Maintenance Estonia's specific requirements and remains flexible as maintenance demands change in this area.

PART completes certification to perform maintenance on 787 Dreamliner

PART has recently completed certification to perform maintenance on the Boeing 787 Dreamliner. PART's 145 certification permits maintenance support to perform Phase checks and Structural Repairs in care of the B787. PART has multiple, flight ready Boeing 787 Dreamliners on site and has completed maintenance in support of eleven Dreamliners thus far. PART, an ARC Aerospace Industries Company and Boeing Gold Care Provider, is located in Victorville, California. PART provides Maintenance, Repair, and Overhaul services for Airbus, Boeing, Embraer, and other leading manufacturers.

AAR secures contract with Aeromexico to perform heavy maintenance

AAR, a global aerospace and defense contractor, has secured a contract with Aeromexico to provide heavy maintenance, or C checks, on three of the airline's Boeing 767 aircraft. AAR will perform the work at the Indianapolis

Maintenance Center, its largest maintenance, repair and overhaul (MRO) facility in the U.S., located on the Indianapolis airport. Work has already begun on the first 767; two more aircraft will be delivered in the coming weeks. The contract is the first between AAR and Aeromexico, and expands on the aerospace and defense contractor's global presence, which includes supply chain, cargo and transport, component repair and inventory management operations in Europe, the Middle East, Africa and Asia.

West Star Aviation opens new maintenance facility in East Alton, IL

West Star Aviation is nearing completion of their brand new 47,000 ft² maintenance facility at their East Alton, IL (ALN) location. In addition to the new maintenance facility, the multimillion dollar expansion includes a 14,000 ft² wood shop and 6,000 ft² accessory repair shop, bringing the East Alton facilities from 250,000 to 317,300 ft² with approximately 300 employees. The new facilities are scheduled to be complete by May 2014. In order to further strengthen their service offerings, West Star Aviation also recently broke ground on a state-of-the-art paint facility as well as an additional maintenance facility and shop at their Grand Junction, CO (GJT) location. An additional 10,000 ft² feet of maintenance facilities are also planned at their Columbia, South Carolina (CAE) location.



The GTN 725 GPS navigator

Photo: Garmin

Garmin International, a global leader in satellite navigation, has received certification from the **European Aviation Safety Agency (EASA)** for the installation of dual touchscreen-controlled GTN 725's in the ATR 42 and ATR 72 aircraft. The GTN 725 GPS navigators expand the operating utility of the ATR 42/72, by offering Precision-Area Navigation (P-RNAV) capabilities to operators in Europe. When incorporating dual GTN 725's into the ATR 42/72, operators gain additional access to airports with higher levels of operating requirements. The dual GTN 725 installation offers pilots flying the ATR 42/72 the ability to fly shorter, more direct routes in airspaces utilizing P-RNAV procedures. Fewer radar vectors are needed thereby reducing the workload for both the pilot and air traffic control, which streamlines navigation through complex airspace. Similar to the functionality of B-RNAV, P-RNAV procedures feature the same capability with a higher level of accuracy.

Portuguese operator **Hi Fly** has selected Flight Focus to provide a wireless in-flight entertainment system for its fleet of Airbus A330-200/300 aircraft. The airline and wet lease provider is taking a lead position among European charter operators and will offer wireless

in-flight entertainment across their entire fleet. The solution will enhance the passenger experience by providing entertainment, information and shopping through the passengers' own personal electronic device whilst opening up new ancillary revenue opportunities for Hi Fly's airline customers. The Flight Focus solution that Hi Fly will deploy is comprised of Flight Focus's own FFP Server, NGA Wireless Access Points, and Cabin Control Panel. Together the Wireless Access Points and FFP Server have been proven capable of streaming video to every passenger simultaneously on both narrow and wide-body aircraft. The Cabin Control Panel can load content from physical media at speeds up to 400 Megabytes per second.

Vector Aerospace UK, a leading provider of aviation maintenance, repair and overhaul (MRO) services, has selected **Atkins Global** as a collaborative partner in producing a Safety Management System (SMS) which will enhance the support of its operating processes. "We are looking to optimise and widen our current practices to ensure that we have a single, flexible and appropriate approach to Safety Management across all areas and locations of our business", said Chris Hosking, Quality Director at Vector Aerospace. "We see SMS as something more fundamental to the way we operate than mere compliance; it is integral to how we work and correlates with the company's core values in terms of the responsible behaviours and culture which we have historically cultivated". The SMS will build upon the company's successful pre-existing strategies, such as its 'Quality & Safety 1st' campaign, which have helped to place health & safety, airworthiness and flight safety at the centre of all that it does.

AerData, a provider of software and services for the aviation industry announced that **DAE Capital (DAE)** the aircraft leasing and finance arm of DAE, has chosen AerData's STREAM software. STREAM (Secure Technical Records for Electronic Asset Management) is the industry's foremost web-based solution used by some of the world's largest airlines, lessors and MROs to digitally manage aircraft and engine records. DAE Capital, the aircraft leasing and finance arm of DAE was formed in 2007. DAE Capital's fleet is currently comprised of a combination of 53 single aisle and wide-body aircraft.

Mxi Technologies, a leader in aviation maintenance management software, reported that **China Airlines** has successfully gone live with a full-fleet upgrade to the Maintenix version 8 (v8) stream. Deployed across a maintenance and engineering network of more than 1600 users, Maintenix v8 offers China Airlines a scalable platform that will facilitate organizational expansion, business process efficiencies, and the seamless adoption of new features and usability enhancements.



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767 modification – Boeing's twinjet is still in the game

Analysis by **Keith Mwanalushi**

Since 1982 the Boeing 767 has enjoyed an uninterrupted production run, but with the existing backlog of the passenger variant possibly coming to a close, what is the current and future market for 767 modifications? *AviTrader MRO* investigates.



IAI Bedek has its own Supplemental Type Certificate for 767 modifications

Photo: IAI Bedek

As Kazakhstan-based Air Astana prepares to take delivery of a new 767-300ER at any moment (the 1,062nd 767 to be built), this will be the last passenger delivery on the order book at present.

Despite orders for the passenger version have dried up, orders for the 767-300 freighters are still healthy.

Newly built 767s will surely be in service for a considerable time to come since they have borrowed much of the technologies of the 777; but considering that the 767 has effectively been in service for 32 years, this presents opportunities for the aftermarket, modification/conversion and tear down segment.

In the meantime, its business as usual for 767 heavy maintenance providers. Aeroflot Russian Airlines (Aeroflot) in December last year agreed to the airline's 15th 767 C-check at Boeing Shanghai's facility at Pudong Airport. Boeing Shanghai's support to

Aeroflot also includes full paint, cabin modification and aircraft records management services, as well as A- and C-checks for their new 777-300ERs.

"IAI and M&B are expanding the conversion lines to include new customers, we are looking forward to the next years and the apparent growing demand for converted 767-300 freighters."

Jack Gaber, SVP Marketing and Business Development at IAI - Bedek Aviation Group

Earlier this year Boeing Shanghai also signed two new 767 C Check agreements with Air Astana and Rossiya Airlines. Boeing Shanghai will conduct two 767 C-checks for Air Astana and three 767 C-checks for Rossiya Airlines at Boeing Shanghai's facility at Shanghai Pudong International Airport, work began in January.

The industry has observed a continued demand for 767 heavy maintenance as some of these aircraft are remaining in service longer than anticipated.

“It is true that the 767, especially the very popular 767-300, are remaining in service longer than was anticipated,” confirms Jack Gaber, SVP Marketing and Business Development at IAI - Bedek Aviation Group.

“This is due partially to the delays in the new 787 aircraft, that were planned to replace the aging 767s, as well as the varying demand in passenger and freight traffic. Therefore the feedstock

for the 767-300 conversions is less available than desired. Still, IAI and its customers are searching and finding the right aircraft to convert, albeit at higher cost than was expected,” Gaber explained.

The range of modifications for the 767 family is vast. Daniel Hofmann, spokesman at Lufthansa Technik (LHT) tells *AviTrader MRO* that in the last 18 months, the company (which has 767 competences within LHT at Shannon Aerospace in Ireland) have installed the latest cabin modifica-



Operators of 767-300ERFs might require P2F units to supplement new freighters in future

Photo: Boeing

tions from redesigned overhead bins, new seat installations to the latest IFE with touch screens.

"The established airlines are retrofitting so that they can compete in the 787 market for customers and this is leading to engineering projects that are complex in design but also revitalise the 767 product," says Hofmann.

Technical experts at LOT Aircraft Maintenance Services (LOTAMS) in Poland have observed a similar trend. The Warsaw-based facility is able to carry out maintenance on 767s both outside and inside the hangar. Base Maintenance Manager, Marcin Kwieciński says that with experience from the LOT Polish Airlines 767 fleet, the company has carried out a large number of modifications on this type of aircraft, as they were introduced during service.

"Some of them were part of the prolonged life of the airframe, some included interior refurbishment. As an MRO we are able to incorporate this experience into any type of work, as long as we have enough source data to work with and the work to be accomplished complies with applicable regulations," states Mr Kwieciński.

Of particular interest these days is the 767 conversion programme, most of which involves passenger-to-freighter conversions. Israel Aerospace Industries (IAI) last year signed a licensing agreement with Boeing covering modifications of 767 and 747 airliners by its Bedek Aircraft Group division. The agreement means that Boeing provides support for aircraft converted by Bedek without

charging operators an annual fee, ending a policy introduced by Boeing in 2009.

Boeing and Bedek compete directly in the freighter conversion market, and the Israeli company holds its own Supplemental Type Certificate (STC) for the modifications. IAI/Bedek Aviation Group has to date converted 60 767-200s to its Bedek Designed Special Freighter (BDSF) configuration and 12 767-300ER to its BDSF configuration.

"These conversions were performed under the STCs (certified by both FAA, EASA and the Israeli CAAI) that were developed by IAI, since 2004, and are continued today, for various customers," confirms Jack Gaber.

"The 767-300 STC was developed in partnership with Mitsui of Japan, in the framework of the M&B joint venture that was established in 2006, dedicated to the development and marketing of the 767-300BDSF conversion. IAI and M&B are expanding the conversion lines to include new customers, we are looking forward to the next years and the apparent growing demand for converted 767-300 freighters," Gaber adds.

Supposedly, proprietary OEM design data is crucial in order to successfully integrate the many complex systems required during any modification process. So how are MROs and modification specialists working around this?

Gaber responds by saying IAI/Bedek has developed its own STCs, for the various 737, 767 and 747 configurations utilising its vast past experi-

ence in P2F conversions, without OEM design data. "The IAI Engineering developed its own theoretical models and drawings by the use of reverse engineering, substantiated by ground and flight tests, as required. The aircraft systems that had to be modified for the freighter configurations are mostly replaced by IAI new design, which interfaces perfectly with the retained original systems."

Notwithstanding, Gaber reminds that IAI is licensed by Boeing for all of its conversions, 737, 767 and 747, in all conversion configurations.

"We are constantly challenged by the uniqueness of the 767 as every aircraft has a different

High quality maintenance can keep older 767s flying for another 5-10 years says Marcin Kwieciński
Photo: LOTAMS



The 767 Freighter still enjoys a healthy order book

Photo: Boeing

configuration in terms of wiring, structures and modification status," notes Hofmann from Lufthansa Technik.

Hofmann adds: "We constantly encounter engineering issues where the modification is not matching the aircraft configuration. With a dedicated and highly trained production staff along with an excellent in-house engineering department we are able to support the OEM in re-engineering the modification or updating the revision status of the modification we are installing."

Hofmann says the planning department at Lufthansa Technik is able to develop detailed schedules that support customers in getting their aircraft back in service in the shortest possible time.

As the 787 programme speeds up, 767 feedstock should become available and provide a boost for P2F conversions. Interestingly, FedEx, which has production 767-300ERFs ordered will most likely expect to require P2F units to supplement its fleet in due course.

Earlier this year U.S. regulators ordered safety checks of more than 400 767s over potential concerns that a jammed mechanism could cause loss of pilot control, reportedly. The final FAA order published in the Federal Register, says "failures or jams in the elevator system" can result "in a significant pitch upset and possible loss of control." Some carriers have already replaced suspect parts to avoid onerous inspections, ac-

cording to sources familiar with the details.

The mandate took effect in March and requires U.S. airlines to replace suspicious parts within six years, according to the Journal.

With high fuel prices in the minds of every aircraft operator, it will be interesting to observe how much emphasis will be put on continued modifications of the 767, particularly the older variants. Marcin Kwieciński from LOTAMS is convinced the 767 is one of most strongly and solidly built airliners still in service.

"With several years of maintaining LOT's fleet and redelivery checks (more than five 767s) this has taught us that the potential for this type of aircraft is still very high. With high quality maintenance and relatively low costs you can still have a very reliable and cost-effective plane that will serve for five to 10 more years," says Kwieciński.

A good example of this is possibly with Qantas. The Australian carrier refurbished 16 of its 23 aging 767s and disposed of the rest. However the issue for airlines such as Qantas [and British Airways] has been the added cost of keeping 767s in service way beyond their use-by date, which was to be by 2010 when the airline originally ordered the 787 in December 2005 for delivery from 2008.

According to the Qantas, its 767 cabins are fitted with new leather seat covers in Business Class and

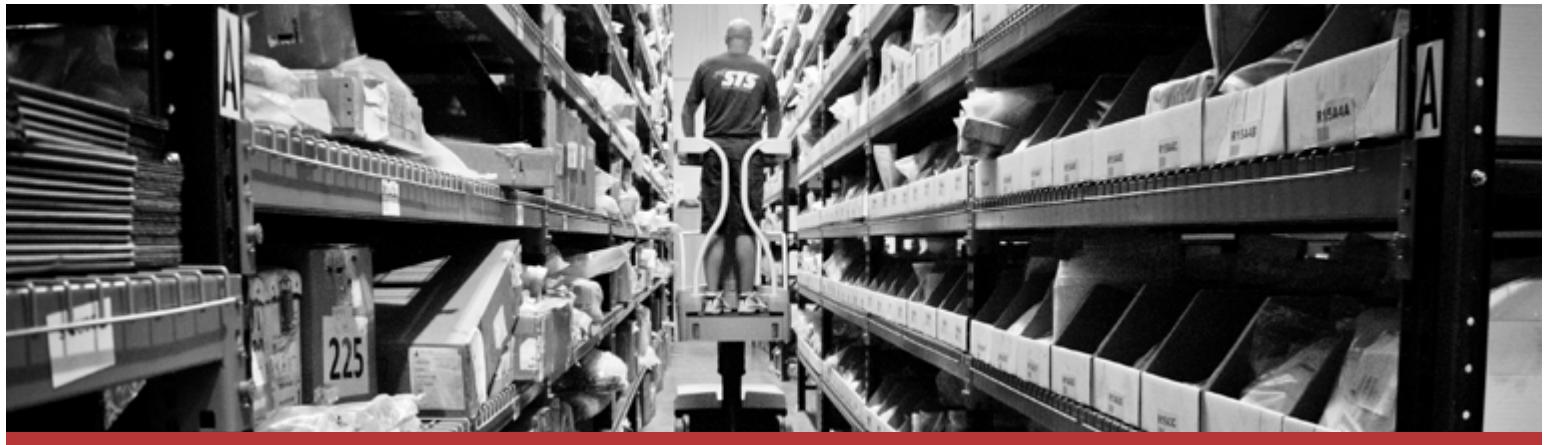
a new look and feel in Economy. The airline also installed new carpets, lighting, curtains, dividers and individual inflight entertainment systems.

The recent level of fuel prices has acted to encourage freight operators to withdraw the older, less fuel effective freighter aircraft, from service, in favour of the newer converted 767 freighters. "This facilitated the conversion of 60 767-200s, when this aircraft type was in the right age for economically viable conversion," Gaber observes.

He explains that the same consideration now creates the demand for the newer 767-300 converted freighters, "which we expect to be the leading cargo aircraft in the mid-to-long range, for at least the next couple of years. Currently the 767-300 conversions are the main core business of the Aircraft Programmes Division at the Bedek Aviation Group, IAI, which is subcontracting for M&B for this type of aircraft."

The 767 has achieved many milestones and has been a pioneer in its own right. Back in 1984 the first 767ER for Ethiopian Airlines set a twin-jet airliner distance record, flying 7,500 statute miles (12,082 km) from Washington, D.C., to Addis Ababa, Ethiopia, in 13 hours 17 minutes and subsequent 767s continued to break records on their delivery flights.

Despite now reaching the golden years, it seems 767s are not going away any day soon.



STS Component Solutions

STS Component Solutions, a division of STS Aviation Group, supports some of the largest passenger and freight airlines and MROs in the world by providing dedicated support teams for each region, and marketing our aircraft components and services world-wide. STS Aviation Group is a diversified company that specializes in support services for the aerospace industry through its four divisions: on-call and scheduled line maintenance through STS Line Maintenance; inventory solutions for airframe and engine components through STS Component Solutions; aerospace specific staffing services through STS AeroStaff Services; and, Engineering Support including 24x7 DER services through STS Engineering Solutions.



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Simplifying Complex Engine and Airframe Component Services

STS Component Solutions leverages Quantum MRO & Logistics software to transform its aftermarket operations

The Challenge

The immense complexity of engine and aircraft component services at STS Component Solutions comprises background processes for sourcing, teardown, disposition, cost, logistics, sales, support and detailed regulatory data management for global engine and airframe parts distribution services. To further streamline operations, STS wanted to move from using disparate systems for accounting and ERP, into a modern solution that would integrate business processes across their division to become more efficient and responsive to their customer needs.

The Solution

Designed specifically for aviation aftermarket services, STS selected Component Control's Quantum MRO & Logistics software to meet its accounting, ERP and Lot Costing integration needs and allow for expansion over time to encompass more integrated capabilities. With the Quantum accounting module, compliance, auditability and quality control requirements are incorporated into simplified processes to better manage customer accounts,

inventory, and sales. The Lot Costing module consolidates management of acquisition of inventory lots, the purchase, teardown and sale of engine and airframe components, and selling inventory consignments. To expedite online parts sales, STS uses Quantum's Parts Search App module to list updated inventory and receive RFQs through their website in real-time 24/7.

"A significant benefit of Quantum is found when business processes are structured around the Quantum database, giving us a business intelligence environment for maximizing our understanding of operational data and while continuously optimizing productivity," said Nick Chambers, Vice President of Operations at STS Component Solutions.



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Airbus Group reports first quarter 2014 net income of €439m

Airbus Group reported first quarter 2014 results reflecting the company's continued focus on programme execution and achieving its operational milestones. Group order intake was €21.1bn (Q1 2013: €49.5bn), with the order book value amounting to €683.2bn on March 31st, 2014 (year-end 2013: €680.6bn). Airbus received 103 net commercial aircraft orders (Q1 2013: 410 net orders), including 20 A380s for Amedeo. Order intake at Airbus Helicopters rose 50% and was broadly stable at Airbus Defence and Space, with good momentum seen in the Space Systems business. Revenues increased five percent to €12.6bn (Q1 2013: € 12.1bn), with all three Divisions contributing positively and Airbus Helicopters showing a double-digit increase as deliveries rose to 74 units (Q1 2013: 58 units). Airbus revenues increased as a more favourable delivery mix, including two additional A380s compared to a year earlier, offset the overall reduction in volume to 141 commercial aircraft deliveries (Q1 2013: 144 deliveries). Airbus Defence and Space revenues rose three percent, driven by good programme execution in Space Systems. Two Ariane 5 launches were conducted in the quarter. Reported EBIT increased 22% to €719m (Q1 2013: €589m) and included a €19m positive contribution from the dollar pre-delivery payment mismatch and balance sheet revaluation after a negative charge of €131m a year earlier. The finance result was €-107m (Q1 2013: €-273m) while net income increased to €439 m (Q1 2013: €227m). Net income and EPS also reflected favourable foreign exchange effects while EPS benefitted additionally from the reduction in the number of shares linked to the buyback programme. Group self-financed R&D expenses increased to €727m (Q1 2013: €617m), due mainly to the R&D profile at Airbus and increased activity at Airbus Helicopters for the EC175 and EC145 T2 models.

Bombardier Aerospace announces financial results for first quarter 2014

Bombardier Aerospace's revenues amounted to \$2.1bn for the three-month period ended March 31, 2014, compared to \$2.3bn for the same period last fiscal year. EBIT totalled \$93m or 4.5% of revenues for the first quarter, compared to \$101m, or 4.5%, last fiscal year. EBIT before special items totalled \$105m, or 5.0% of revenues, for the first quarter 2014, compared to \$101m, or 4.5%, last fiscal year. Free cash flow usage amounted to \$545m (including net additions to PP&E and intangible assets of \$484m) for the first quarter 2014, compared to a usage of \$461m (including net additions to PP&E and intangible assets of \$503m) for the same period last fiscal year. Bombardier Aerospace delivered a total of 56 aircraft during the first quarter 2014, compared to 53 for the same period last fiscal year, and received 91 net orders, compared to 28 for the same period last fiscal year. In Commercial Aircraft, Bombardier Aerospace received a total of 17 firm orders for Q400 NextGen turboprops from six customers, from North America, the Middle East and Asia-Pacific. It also signed a firm order with Al Qahtani Aviation Company from the Kingdom of Saudi Arabia for 16 CS300 aircraft, valued at \$1.2bn based on list price, with options for an additional 10. As of today, the group has signed firm orders and other agreements for a total of 447 CSeries aircraft with 18 customers and operators in 15 countries, including 203 firm orders.

Triumph Group reports fiscal year 2014 net income of \$206.3m

For the fiscal year ended March 31st, 2014, Triumph Group reported that net sales totaled \$3.763bn, a 2% increase from fiscal year 2013 net sales of \$3.703bn. Organic sales for the fiscal year decreased 6%. Net income for fiscal year 2014 was \$206.3m, versus \$297.3m for fiscal year 2013. The fiscal year's results included approximately \$72.4m pre-tax (\$46.9m after tax) of non-recurring costs. Excluding the non-recurring costs, net income for fiscal year 2014 was \$253.2m. For the fourth quarter ended March 31st, 2014, net sales were \$936.4m, a 5% decrease from last year's fourth quarter net sales of \$986.3m. Organic sales for the quarter decreased 11% primarily due to production rate cuts on the 747-8 program, lower revenues on the 767 program and a decrease in military sales. Net income for the fourth quarter of fiscal year 2014 was \$42.3m, versus \$65.6m for the fourth quarter of the prior fiscal year. The quarter's results included approximately \$48.1m pre-tax (\$31.2m after tax) of non-recurring costs related to the Jefferson Street facility closure and start-up of the Red Oak facility, early retirement incentives offered to certain Triumph Aerostructures employees and a net curtailment gain related to the Triumph Aerostructures pension plan.

Air Lease Corporation announces first quarter 2014 results

Air Lease Corporation reported another consecutive quarter of fleet, revenue and profitability growth. Diluted EPS increased 50% to \$0.57 per share for the three months ended March 31st, 2014 compared to \$0.38 per share for the three months ended March 31, 2013. Revenues increased 28% to \$246m, compared to \$192m in 2013. Income before taxes increased 54% to \$95m with a pretax margin of 39% for the first quarter in 2014 compared to income before taxes of \$62m with a pretax margin of 32% in 2013. Air Lease Corporation recorded \$15.9m in gains on aircraft sales, trading and other activity for the first quarter 2014 and placed orders for nine additional aircraft from Airbus S.A.S., Avions de Transport Régional and The Boeing Company scheduled to deliver in 2014 through 2017. The Company signed forward lease placements with four new airlines.

FLY Leasing reports first quarter net income of \$3.6m, down from \$32.8m in 2013

FLY is reporting net income for the first quarter of 2014 of \$3.6m, this compares to net income of \$32.8m for the same period in 2013. First quarter 2013 results benefitted from \$30.6m of end of lease income and \$6.5m in gains from aircraft sales. First quarter 2014 results were impacted by increases in interest expense as a result of FLY's unsecured debt issuance last December, with much of the proceeds still unused. Operating lease rental revenue increased 13% to \$90.5m. End of lease revenues were \$3.7m in the first quarter of 2014 compared to \$30.6m of end of lease revenue recognized in the same period in the previous year. Adjusted net income was \$5.1m for the first quarter of 2014 compared to \$38.5m in the same period in the previous year, which included end of lease income and gains from sales of aircraft. On a per share basis, adjusted net income was \$0.12 in the first quarter of 2014 compared to \$1.37 for the same period in the previous year.

Boeing Commercial Airplanes first-quarter revenue increased to \$12.7bn

Boeing Commercial Airplanes first-quarter revenue increased to \$12.7bn on higher 787 and 737 deliveries. First-quarter operating margin improved to 11.8% reflecting the delivery volume and mix and lower period costs partially offset by higher R&D. During the quarter, the 787 program reached a 10 per month production rate and completed preliminary design review on the 787-10. The company selected the Everett, Washington site as the location for a new composite wing center for the 777X. In April, the 737 program reached a production rate of 42 per month. Commercial Airplanes booked 235 net orders during the quarter. Backlog remains strong with over 5,100 airplanes valued at \$374bn.

Aircastle posts first quarter 2014 net income of \$5.8m

Aircastle reported first quarter 2014 net income of \$5.8m down \$17.3m and adjusted net income of \$13.3 million. The first quarter results included operating and finance lease revenues of \$178.3m versus \$160.5m in the first quarter of 2013, up 11%. Thus far in 2014, Aircastle acquired or has committed to acquire thirteen aircraft for more than \$1.1bn. During the first quarter, the Company closed on the purchase of four 777-300ER aircraft built in 2012 leased to LATAM Airlines and also completed the purchase of two A330-300 aircraft leased to Singapore Airlines and two 737-800 aircraft leased to Alaska Airlines. During the first quarter of 2014, Aircastle sold six 737 "classic" aircraft, four of which were in a freighter configuration. Aircraft sales and dispositions during the quarter totaled \$28.0m, which resulted in a net gain on the sale of aircraft of \$1.1m.

AerCap Holdings reports strong financial results

AerCap Holdings reported that its adjusted net income was \$79.9m for the first quarter of 2014. Adjusted earnings per share were \$0.70 for the first quarter of 2014, an increase of 17% over the first quarter of 2013. The debt to equity ratio was 2.5 to 1 at March 31, 2014, compared with 2.6 to 1 for the same period in 2013. AerCap signed financing transactions for \$2.82bn, primarily relating to an agreement to replace ILFC's \$2.3bn unsecured revolving credit facility with a new \$2.75bn four-year unsecured revolving credit facility, to become effective upon the closing of the ILFC transaction. Fleet utilization rate was 98.9% for the first quarter of 2014. The average age of the owned fleet as of March 31, 2014 was 5.6 years and the average remaining contracted lease term was 6.6 years. During the first quarter 2014, the Company purchased three aircraft with a total value of \$0.2bn and the future aircraft purchases were \$3.3bn as of March 31st, 2014, relating to 41 aircraft, including five purchase rights. The 36 aircraft that are fully committed are all placed on long term leases with an average term of 11.9 years. As previously disclosed, 29 aircraft transactions were executed during the first quarter of 2014. Subsequent to the first quarter of 2014, on April 22nd, 2014, AerCap completed the sale of 100% of the class A common shares in Genesis Funding Limited, an aircraft securitisation vehicle with a portfolio of thirty-seven aircraft with an average age of thirteen years valued at approximately \$750m.

Ultra acquires specialist provider of aerospace electrical power management systems

Ultra Electronics, an internationally successful defence, security, transport and energy company, has acquired ICE Corporation ("ICE") based in Manhattan, Kansas for an initial cash consideration of \$8.6m. Ultra has acquired ICE from private investors, which includes the original founder. All of the management team will stay with the business. ICE designs, develops, manufactures and supports aerospace products including, motor control electronics, electrothermal ice protection controllers, pneumatic valve controls and engine control interface units. ICE customers include Parker Hannifin Corporation, Cessna Aircraft Company and Meggitt. The acquisition of ICE will be financed using Ultra's existing facilities and will be fully earnings accretive in 2015. Additional payments of up to \$3m will be made subject to certification of the new WheelTug electric taxi system for which ICE provides essential parts. ICE, which has 50 employees, will continue to operate from its existing facilities as a bolt-in acquisition to Ultra's Controls business within Ultra's Aircraft & Vehicle Systems Division.

SIAEC Group posts profit of \$265.7m for financial year ended March 31st, 2014

SIAEC Group posted a profit of \$265.7m for the financial year ended March 31st, 2014. Revenue grew by \$31.5m or 2.7%, mainly due to an increase in line maintenance and airframe and component overhaul work, while expenditure increased \$44.0m or 4.3%. As a result, operating profit was \$12.5m or 9.8% lower at \$115.6m. The increase in expenditure came mainly from higher staff costs, subcontract and material costs. Performance for the year was also impacted by an exchange loss of \$3.6m as compared to a gain of \$1.2m last year. Associated and joint venture companies showed steady growth, as share of profits increased \$12.5m or 8.3% to \$162.6m. This represented 61% of the Group's net profit. The main contributors were the engine repair and overhaul centres which accounted for \$125.0m of the share of profits, an increase of \$12.4m or 11.0% from last year. As of March 31st, 2014, equity attributable to owners of the parent of \$1,360.9m was \$59.0m or 4.5% higher than of March 31st, 2013. Total assets increased by \$74.4m or 4.6% to \$1,707.1m at the end of FY2013-14. The cash balance of the Group as of March 31st, 2014, amounted to \$535.7m.

Willis Lease Finance earns \$4.3m in 1Q14

Willis Lease Finance Corporation (WLFC), the premier independent jet engine lessor in the commercial finance sector, reported first quarter 2014 net income was \$4.3m, compared to \$1.6m, in the first quarter of 2013, and \$6.6m in the fourth quarter of 2013. At March 31, 2014, Willis Lease had 200 commercial aircraft engines, 5 aircraft parts packages and 4 aircraft and other engine-related equipment in its lease portfolio, with a net book value of \$1.02bn, compared to 193 commercial aircraft engines, 3 aircraft parts packages and 7 aircraft and other engine-related equipment in its lease portfolio, with a net book value of 1.02bn, a year ago. The Company's funded debt-to-equity is 3.53 to 1 at quarter end, compared to 3.70 to 1 at December 31, 2013 and 3.75 to 1 a year ago.

MTU Aero Engines' 2014 first-quarter revenues and earnings on previous year's level

The results reported by MTU Aero Engines AG for the first quarter 2014 are in line with the previous year. Group revenues remained stable at €913.0m (1-3/13: €906.0m). MTU's operating profit in the first three months of 2014 amounted to €89.0m (1-3/13: €88.3m), resulting in an unchanged EBIT margin of 9.7%. Earnings after tax also reached the previous year's level, and amounted to €56.0m (1-3/13: €55.5m). In the OEM segment, revenues from both commercial and military engines were slightly up on the previous year. An increase of 2% to €500.5m (1-3/13: €488.4m) was reported for the commercial engine business, which includes engine manufacturing and spare parts. The engines that generated the highest share of revenues were the V2500 engine for the Airbus A320 family, the GP7000 engine for the Airbus A380, and the GEnx engine for the Boeing 787 and 747-8. Commercial maintenance revenues decreased by 3% to €303.6m (1-3/13: €313.1m). The main source of these revenues was the V2500 engine deployed in the Airbus A320 family. The order backlog at March 31, 2014 amounted to €9,832.4m, which corresponds to a production workload of almost three years.

B/E Aerospace reports record first quarter 2014 financial results

B/E Aerospace's first quarter 2014 revenues of \$1.01bn increased 20.1% as compared with the prior year period. First quarter 2014 operating earnings, excluding \$2.2m of costs related to first quarter acquisitions, were \$185.2m, an increase of 20.6%. Operating margin, adjusted to exclude acquisition costs, was 18.3% and increased 10 basis points as compared to the prior year period. On a GAAP basis, operating earnings of \$183.0m increased 19.1%. First quarter 2014 earnings before income tax, excluding first quarter acquisition costs, were \$154.6m, an increase of 25.7%. On a GAAP basis, earnings before income tax increased 23.9%. First quarter 2014 net earnings and earnings per diluted share, excluding first quarter acquisition costs, were \$110.5m and \$1.06 per share, representing

increases of 22.9% and 21.8%, respectively, as compared with the prior year period. First quarter 2014 commercial aircraft segment (CAS) revenues increased 24.6% while operating earnings of \$93.1m increased 25.5% as compared with the prior year period. Operating margin of 17.8% increased 10 basis points. First quarter 2014 business jet segment (BJS) revenues increased 26.9% while operating earnings of \$21.1m increased 44.5% as compared with the prior year period. Operating margin of 17.4% expanded 210 basis points as compared with the prior year period, reflecting an improved mix of revenues and ongoing operational efficiency initiatives.

Avcorp announces Strategic Aerospace and Defence Initiative Funding Agreement from Government of Canada

Avcorp Industries has received a Strategic Aerospace and Defence Initiative (SADI) Contribution Agreement from the Government of Canada for up to \$4.4m to support development of advanced metal bond manufacturing processes and capabilities. In particular, this SADI supported project will assist Avcorp to undertake specific capability development for large, complex metal bonded structural components, for its customers, including The Boeing Company and Cascade Aerospace. This project will also support implementation of Lean Manufacturing process improvements and advancements along Metal Bond Technology Roadmap. This funding support from the Government of Canada will be instrumental in enabling Avcorp to achieve these capability and competitiveness enhancements in a timeframe that meets both Avcorp customers' requirements and the demands of the market.

DAE reports full year 2013 revenue of US\$2,105m

Dubai Aerospace Enterprise (DAE) reported revenue for full year 2013 increased to US\$ 2,105m (AED 7,735m) from US\$ 1,943m (AED 7,140m) for full year 2012. Net Income for full year 2013 increased to US\$111.6m (AED 410m) from US\$7.8m (AED 29.0m) in 2012.

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Geared for efficiency

Issues regarding engine performance are getting a greater hearing industry-wide. There is growing emphasis on the need to develop and deploy more advanced propulsion technologies to counteract high fuel prices and maintenance costs.

Undoubtedly, the race to deliver greater engine efficiency is heating up as new aircraft programmes are coming out of the design stage. Pratt & Whitney (P&W) for instance is banking on its new "geared turbofan" to stay ahead of the game.

Royal Brunei Airlines is the latest carrier to sign a letter of intent with Pratt & Whitney for the PurePower PW1100G-JM engines to power seven firm A320neo aircraft (together with three options). To date, the PurePower engine family has more than 5,300 orders and commitments, including options, from more than 50 global customers.

Matthew Bromberg, president, Aftermarket at Pratt & Whitney, delivered a keynote address to a packed crowd at the recent MRO Americas 2014 conference discussing the forces that have shaped today's MRO environment and trends influencing the future of the industry.

In an interview with *AviTrader MRO* he explains that capacity and demand for MRO services are two trends impacting the global engine



Matthew Bromberg, President, Aftermarket at Pratt & Whitney



Advanced propulsion technologies aim to address issues with engine efficiency.

Photo: Pratt & Whitney

MRO market today. "We see demand growth decreasing as fleets become younger," says Bromberg. He adds that over the next decade, the average age of aircraft will drop as new aircraft are introduced and old aircraft are retired.

Regarding capacity, Pratt & Whitney sees three key drivers affecting capacity: commonality, globalisation, and outside investment. "As the worldwide fleets grow, they become less diverse and more common. Over the past decade, Boeing and Airbus aircraft models have reduced from 13 platforms to seven. Today, 75 percent of all aircraft are narrow-body, and 90 percent of those are Boeing 737 and Airbus A320. Consequently, the industry will require less diversity among parts, tools, and shops, and less capacity to deliver the same MRO services," Bromberg shares.

Globalisation is another driver. Bromberg reminds that thirty years ago, airlines all had internal MRO capability. Fifteen years ago, many airlines began outsourcing MRO, but on a local or regional level. He adds: "Today shops are competing on a global scale, and, outside investment is having an effect on engine MRO. Motivated by strong OEM market fundamentals, not only are airlines and existing MRO providers adding capacity, but outside investors such as private equity firms, continue to pour money and people into the MRO marketplace."

To address these trends, Pratt & Whitney is

transforming the aftermarket business to offer their customers "better quality, speed and value." Bromberg reports that the company will be introducing more innovation into the MRO business and providing faster overhaul services, "recognising that every day an engine is in our shop, it is not generating revenue for our customers. We will also transform into a comprehensive service organisation, supporting engine fleets with long-term maintenance agreements. In this model, our incentive is aligned with our customers: keep the engine in service and operating efficiently."

Improving engine reliability is crucial for engine operators. According to Bromberg Pratt & Whitney engine service agreements provide operators with predictable maintenance costs, optimised engine performance, reliability and increased residual value.

"Our service agreements are centrally managed, enabling us to leverage fleet knowledge, identify trends and issues that may affect engines in the future, and proactively manage engines in operation. Engines under long-term agreements stay on wing longer and consume less fuel," assures Bromberg.

Pratt & Whitney is a world leader in the design, manufacture and service of aircraft engines, auxiliary and ground power units, and small turbojet propulsion products.

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In the hot seat.....

Keith Mwanalushi speaks to Tom Covella, Group President STS Components Solutions.

AviTrader MRO: What attracted you to this business?

Covella: For me I wanted to do something different. Something that you can deliver value and make a difference. The aviation aftermarket business is a very dynamic and fast paced business. Every day represents new opportunities and challenges. But the most fascinating part of the business is the relationships that can be established in all of the global markets. I have been very fortunate to be able to forge great relationships in many global markets and that coupled with the items mentioned above is what makes this business what it is.

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

Covella: There is rarely a typical day in our business. This is what makes aviation the exciting business it is. However, the goal is to take the opportunity to check in with the various international offices we have, review the current opportunities and strategies and how we are progressing and interacting internally with our team and our strategic business partners.

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

Covella: It's finding the time to interact with everyone. For me the people in aviation and especially within STS is what makes us who we are and the business that we are in. Sometimes finding the time to meet and speak with all of your team members and business partners since we have offices in different parts of the world, managing the different time zones is sometimes a challenge.

AviTrader MRO: What is the best way for operators to minimise costly AOG situations?

Covella: Airlines and MRO's are constantly finding ways to effectively manage their inventories as a means to avoid costly

AOG situations. The best ways to accomplish this is to establish a technology based planning and forecasting tool in addition to aligning yourself with best strategic partners. By implementing these strategies operators can maximise their inventory utilisation and minimise these costly AOG situations.

AviTrader MRO: STS Components Solutions opened a regional office in Singapore late last year. How important is the Asia Pacific region for future growth?

Covella: The Asia Pacific region represents the largest growth market for MRO and aftermarket services. We are committed to supporting this market and are a firm believer that you need to have a physical presence in these markets to effectively support the operators and MRO's. For STS this region represents the largest opportunity for growth within our business.

AviTrader MRO: There are some industry concerns about the high cost of spare components for new generation aircraft, what are your thoughts?

Covella: Although I have stated that the aviation market is very different than other businesses at the end of the day the old economic proverb "supply verses demand" has its effect in every market. Thus, the perceived high cost of spare components for new generation will eventually be challenged by "supply verses demand". Now with this being said, we need to look at the new technologies that are being introduced on the newer generation aircraft and what impact these technologies have on the "lifecycle costs" of the components before a true determination is made. I think this has to be looked at on a "case-by-case" basis and over an extended period of time before a firm stance can be established.

AviTrader MRO: How can airlines and/or MROs best manage their spares inventory at a minimum cost?

Covella: Airlines and MRO's are constantly being challenged to provide optimal inventory utilisation a cost effective price. This is always difficult to balance but in my mind if you have the right technologies and the best strategic business partners this can be accomplished. What needs to be clearly defined in your business strategy is what your core competency is and how you want to maximise this. From there, you can compliment this with synergistic business partners to maximise the efficiency and utilisation of your spares.

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

Covella: That is a good question but obviously a sensitive one as well. STS prides itself on its ability to provide "Solutions to Keep you Flying". Thus, we are always looking at new ways to provide value based solutions that can effectively utilise our capabilities and services. We are committed to being a global provider of services with a physical presence in each of the geographic markets. If you look at the past year we have established a physical presence in South America (Brazil); Asia (Singapore) and Eastern Europe (Estonia). In our mind we will continue to look at new markets and regions that we can further expand our business.

In addition to this we have built the footprint to becoming a service provider on some of the newer generation aircraft such as the B787. It is our goal to be on the leading edge of these new aircraft platforms and we are committed to becoming a market leader on these aircraft.

For STS, 2014 and beyond represent some exciting new opportunities and strategic developments. Stay tuned and you will see these roll out in the next couple of months as we continue to build our legacy. We are excited about the opportunities in front of us and we look forward to our continued growth and success.

OEM offerings to provide long term MRO support are not new

by Phil Seymour - President & COO, International Bureau of Aviation

Both Boeing and Airbus have put significant resource and effort into promoting their GoldCare and FHM (both trademarked) services.

Initially these have been aimed at new aircraft programmes (787 and A350) but they could clearly be aimed at older aircraft.

My personal view was that for the modern complex aircraft with "new" composites and more demanding electrical/avionic systems, that the OEM provided services would mean an almost 100% take up.

However, given that many of the airlines taking the initial batch of new deliveries are relatively mature with a significant in-house MRO resource, they are choosing to either go their own way or taking only limited aspects of the services that are on offer.

For an airline taking a new aircraft these offerings can deliver more than just an outsourced MRO service. They can provide a form of risk transfer and cost guarantee. Lessors have tended to take a negative view of the offerings as it takes away the potential for them to accrue maintenance reserves for the future maintenance obligations.

Questions of transferability and credits loom large on the list of FAQs that lessors have.

The leasing and finance industry have learnt lessons from the engine OEMs long term MRO offerings. There has been a lot of bad press about how these have left investors with little to fall back on at the end of the initial term with the originating airlines. I suspect there is a similar fear about the Airframer MRO offerings – it's not so much what do they offer today, as "how do they unravel when a 12 year old B787 or A380 is returned to the lessor/financier," any of the original commercial deal motivation that both the airline and the OEM had when negotiating the deal will have passed by.

In simple terms –

1. For an airline that is in control of its fleet (i.e. doesn't lease) then the OEM deals are almost a no-brainer but see point 3 below.
2. For the lessor and finance community the need to fully understand the future benefits are very, very important. Since an airline may change its financing and aircraft acquisition strategy then

they need to look carefully at point 3.

3. As an airline you must pay attention to the longer term cost and value implications if you perform a future Sale/Leaseback and the aircraft you thought you owned becomes someone else's asset on lease to you.

4. Point 4 is make sure you read point 3 again!

In summary, the Airframer OEM offerings are still in their infancy. They will need more strategic partners to act as the Boeing and Airbus agents. There is a real added value benefit if the offering is fully assessed and potentially residual value can be enhanced – but as we often say, the devil is in the detail.



The IBA is an independent aviation consulting firm based in Leatherhead, UK, with representation worldwide.

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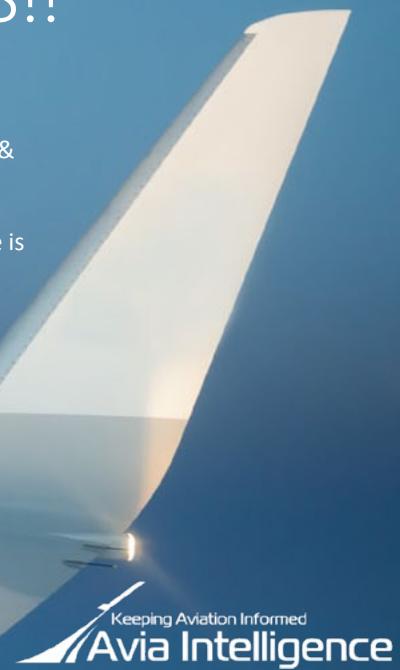
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Making bowtie risk analysis fashionable

Analysis by Rus Sutaria – Avia Intelligence Limited, London

Aviation's commitment to sustainably improve global safety performance has already taken the important step of developing the Significant 7 under most state safety plans. Based primarily within the remit of bow-tie risk analysis, regulators like the UK CAA are already on the verge of publishing each of the 'Significant 7' in the form of easily absorbed and understood pictographic representations that actually take the form of a Bow-tie.

As will be discussed, the benefits of this approach appear to be completely obvious. Yet this rather ingenious approach to presenting risk is far from being fully accepted by the aviation industry. Together with Peter Moore, the Production Manager of BowTie Pro Limited of Aberdeen, Rus Sutaria considers the true value of Bowties to aviation risk analysis, and attempts to cut through some of the misperceptions that this technique seems to have picked-up over the years.

Originally invented for the oil and gas industry, this technique provides individuals and stakeholders with an almost instantaneous representation of a company's risk position whilst ensuring that the observer does not misinterpret the risk data presented before them. Bowtie risk analysis as a tool started out as a very mechanical process that usually involved pieces of string and post-it notes being carefully applied to infinitely vast office walls. The problem is that the finished project will often take on an impression of complexity simply because it is overwhelming to look at. Even with the development of easy to use software applications, the dear old Bowtie still hasn't shaken-off that clunky, laborious and over-whelming image, yet is by far one of the most successful means

through which priorities in terms of resource, not least safety policy and objectives can be applied.

The progression of Bowtie analysis within aviation.

Regardless of the size of the individual business, the complexities of managing aviation safety has always been bolstered by our industry's need to adhere to 'Best Practice' through a regimented approach involving regulation, guidance material and acceptable means of compliance. In the author's mind this would mean that Bowtie risk analysis is in actual fact an excellent fit in an increasing safety regulated aviation world. The application of Bowtie tools to the development of the UK CAA's Significant 7 only serves as encouragement that Bowtie is becoming an increasingly accepted tool for analysing and controlling risk.

"Very few aviation organisations and businesses even realise that Bowtie is so much more than a graphical means of presenting risk analysis" says Peter Moore. Where there are a large number of both internal and external working relations, Bowtie has the capability of drawing together all of the issues from all-over the place into a singular location. Even with the benefit of bow-tie tooling, to make sense of so much risk data from so many locations would still be a challenge for those involved with the formulation of bow-ties, regardless of just how 'spatially aware' we aviation professionals are.

Happily, aviation has the uncanny ability to overcome problems with solutions that are the epitome of simplicity. The general good-will amongst all of us in aviation has served to create the basis of a very posi-

tive and constructive working culture that facilitates bowtie development right across the aviation board. For the oil and gas industry, these businesses have successfully utilised bowties as a launching-point to the identification of hazards, events and consequences, but more particularly they have been able to successfully specify and implement defensive and recovery controls to very good effect, whilst acquiring and retaining a good understanding of the impact of these controls through the structure of the organisation. According to Peter Moore this is something that the aviation industry still needs to get a handle on.

Failure to get this right could lead us to our very own aviation equivalent of 'Deepwater Horizon', where the oil and gas industry failed in terms of identifying key risks, not least, ensuring that their managers had a strong understanding of risk with regard to critical tasks. The reader might be forgiven for thinking that aviation is an inherently safe business, but the truth is, that with recent incidents involving pilots attempting to hijack their own aircraft, insufficient testing that has led to significantly early structural compromise and last but by no means least the mysterious disappearances of commercial heavy-jets, it does seem apparent that our handle on risk with regard to critical tasks is perhaps not as good as we first thought.

Correct utilisation of applications like BowTie ProTM will facilitate aviation's ability to generate a 'cascade' of bowties that will ultimately lead to the release of the critical event, thus allowing us to hypothesize about just how bad, bad can get.

Helping aviation join the safety dots.

According to Peter Moore, "developing a software application and providing training for its use is simply not enough". Mr Moore's experience suggests that an increasing number of aviation businesses seek consultancy and advice with regard to the creation and management of effective bowties for their businesses. "We are constantly being asked for a joined-up solution to risk analysis that involves us applying our own expertise in concert with BowTie ProTM to the forthcoming Significant 7 safety issues".



Rus Sutaria, Director – Content and Knowledge Services
Photo: Avia Intelligence Ltd



Managing the safety of flight is a crucial issue.

Photo: swedavia

This makes a lot of sense. Any safety professional involved in the development of aviation grade Safety Management Systems will tell you that the main challenge of effective safety management generally lies with the problem of the 'silo effect' and the SMS' ability to integrate with other systems and departmental functions throughout the aviation organisation. With the BowTie's ability to chain-react, defensive and recovery controls can be designed into our processes, not least blow a hole in these pesky silos. Allowing ourselves to see outside the silo affords us the benefit of being able to effectively assess the impact our procedures may be having on the rest of our aviation organisation. Hence, the key to integrated safety management lies in the basics of any SMS. This means integrated risk analysis. Enter BowTie ProTM!

This article has already alluded to the fact that regulatory authorities like the UK CAA, have already committed a significant amount of time and resources in the development of generic bowties around each of the significant 7 issues. Peter Moore points out that any Bowtie works best at the "grass roots" level, and to this effect BowTie Pro Ltd supports its clientele by offering training and consultancy approach that is more "bottom Up" than "top down". Ultimately the success of any developed Significant 7 bowtie in context of the unique aviation business is as much about best practice and common sense as it is about consultancy, training and implementation.

Making BowTie attractive to use through solutions that make the experience less painful.

Numerous commentators state that there is no easy solution to overcoming BowTie's clunky image. "Not so" says Peter Moore. "We have a number of clients from within the aviation industry all of vary sizes, and they have all successfully produced effective bowties". According to Moore, "this so-called clunkiness is generally due to mis-representation and poor implementation". BowTie Pro Limited have adapted their business model by offering their clientele a far less painful experience through the introduction of their new consultancy services, together with their BowTie ProTM software application and training.

"We can help aviation organisations achieve their safety goals through a combination of direct application on the part of our clients, together with our technical expertise in actually delivering the bowtie, whilst remaining compliant with both our clients' and their regulators requirements". The key to BowTie Pro Ltd.'s success is their ability to work with their client towards universal buy-in, and ensuring that "key personnel with the right skill-sets" are introduced to the project. Furthermore, these

key personnel could assume the role of "BowTie Champions". Working alongside BowTie Pro's own specialists, this would be an excellent way for the aviation organisation to take ownership of their risk analyses.

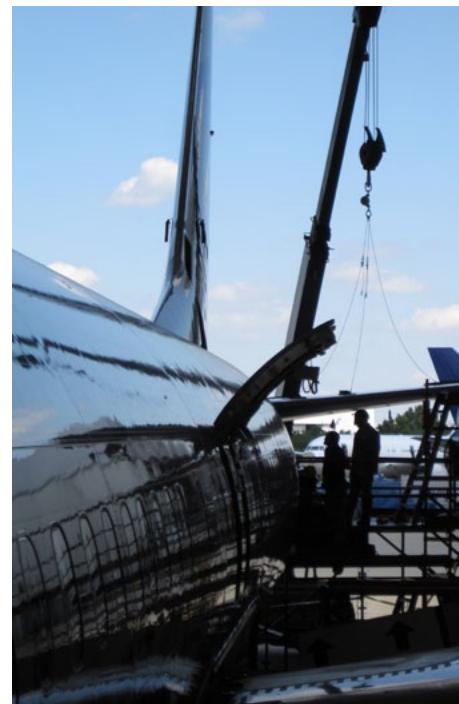
The difficult question is one of where and at what level, the BowTie champions are placed in the safety management structure of the aviation business. Moore says "these guys would be effectual somewhere between a strategic and a middle management level." However he reminds us that "BowTie risk analysis is far more effective at the middle management level, since these guys are closest to the coal-face". There may also be a need for more than one champion each with vary levels of knowledge of bowties and the applications that produce them. As a case in point, the further the champion is away from the coal-face, the less comprehensive his knowledge of bow-tie analysis and generation needs to be.

To illustrate the point, consider a safety management organisation with a Safety Review Board (SRB) at strategic level and a Safety Action Group (SAG) within the middle management. The champion that has been placed at the strategic level with the SRB is simply not going to be involved with anything more than advising his or her SRB colleagues of issues affecting safety policy and objectives. These guys usually leave the risk analysis to the representatives of the SAGs. Therefore, it stands to reason that the SRB champion will only need to know how to interpret bowtie results, and not how to produce them. Therefore offering training and comprehensive technical support at this level would seem a waste of time, money and other resources.

However, the middle management are nearer to the coal-face; they will be involved in the risk analysis, the development of defensive and recovery controls, not least the production of bowties. Therefore the SAG champion will need the level of training and consultancy to be far more comprehensive than his or her SRB counterpart. It would seem sensible to allocate more time, resource and money here. The number of 'Bowtie Champions' would tend to be a direct function of the size and complexity of the safety management structure, as such training and consultancy support levels would have to be individually considered.

Scalability – Can bowtie risk analysis be made to work in all size and manner of organisation?

A common complaint about safety management in general, is the view that safety management in its current form is only affordable if you are the likes of a major international airline or a blue-chip



Aviation organisations should start to think about the way they manage risk.
Photo: TIMCO

aviation business. Regulators have recognised this somewhat awkward issue, and Peter Moore recognises that Bowtie risk analysis can be a part of the problem. "Yet again, the technique is a victim of mis-interpretation", but points out that Bowtie risk analysis does lend itself to scalability, something that aviation business are yet to realise and take advantage of.

"Once again, it is a matter of utilising consultancy support", says Peter Moore. It has been noted that any concerns over BowTie Pro radically reduce when timely and correct advise is provided via consultancy and training support.

Overall, BowTie Pro and other equivalent applications are here to stay. The UK CAA has already sent out a signal to the aviation industry of its intention to manage risk through the production of generic bowties around the Significant 7. Aviation organisations should start to think about the way they manage risk, and start making arrangements to really get to grips with applications like BowTie ProTM. Alternatively they should consider approaching organisations like BowTie Pro who will assist them with safety and risk management support which is nowhere near clunky.

This will be important, because when the Significant 7 eventually does roll-out, we should all be in a position to respond to the changed reality of safety regulation, and get use to BowTie risk analysis being at the very heart of aviation safety.



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Embraer and **SkyWest Airlines** have reached a 12-year component management service agreement by which Embraer will provide support for the carrier's entire fleet of E175 jets. The agreement includes more than 160 repairable part numbers, covering 21 ATA (Air Transport Association) chapters of the **SkyWest Airlines** E175 fleet. Embraer also signed a 10-year contract with the airline to provide the Ahead-Pro system. Embraer currently provides support for more than 30 airlines, worldwide, with its technical expertise and its vast component service provider network.

DS Aviation, the aircraft leasing unit of German financial services company Dr. Peters Group, and UK-based aircraft lessor, marketing and management organisation **Skytech-AIC** have formed a new joint venture company, **DS Skytech Limited**, to provide technical management for the combined owned and managed aircraft portfolios of both organisations. The new company is designed to enhance the in-house asset management service provided to the clients of DS Aviation and Skytech-AIC and will facilitate the expected expansion of the combined portfolio which currently numbers 25 aircraft and includes types ranging from Bombardier Q400s through Airbus A319s, Boeing 787s and Boeing 777s to Airbus A380s. Both companies recognise that providing professional, comprehensive asset management is a key element in attracting additional and competitive investors into the industry and DS Skytech is designed to provide a new industry benchmark in management service quality. In addition, the combined strengths and capabilities of the two companies will ensure that DS Skytech is well positioned to generate technical management business from third party clients. The Directors of the new company will be Anselm Gehling: CEO of Dr. Peters Group, Christian Mailly: Managing Director of DS Aviation together with Skytech-AIC's Julian Balaam and Jeff Solomon.

Xiamen Airlines has selected **Boeing's Airplane Health Management (AHM)** system to enhance efficiency in its maintenance and engineering operations. The agreement includes implementation of AHM for the current Xiamen Airlines fleet of 94 Next-Generation 737s and six 787 Dreamliners on order. Xiamen Airlines will use AHM to collect and evaluate airplane operations data while the airplane is in flight. This real-time data is used to signal ground operations crews of any potential maintenance issues before the airplane lands, minimizing flight schedule disruptions and maintenance-related delays.

Fokker Services, part of **Fokker Technologies**, has received the order from Russian operator **ATRAN Cargo Airlines** for the introduction of TCAS 7.1 on their Boeing 737 fleet. The development of version 7.1 of the Traffic Collision Avoidance System (TCAS) was initiated by EUROCONTROL and will bring improvements to the reversal logic by detecting situations in which, despite the Resolution Advisories, the aircraft continue to converge vertically. The mandate is applicable in European Union airspace as of March 1st, 2012, to all aircraft above 5,700 kg Maximum Take-off Mass or authorised to carry more than 19 passengers. An extended deadline, i.e. December 1st, 2015, is granted to aircraft with an individual certificate of airworthiness issued before March 1st, 2012 and equipped with version 7.0. The EU Implementing Rule sets an earlier equipage requirements than those published in ICAO Annex 10 (January 1st, 2014, new installations, January 1st, 2017, existing units). The modification is certified by Fokker Services under their DOA EASA.21J.059 privileges. Fokker Services offers both update and replacements with the TCAS 7.1 software for Thales/L3/ACCS, Honeywell and Rockwell Collins computers.

People On The Move

Spirit AeroSystems has added aircraft industry veteran **William (Bill) Brown** to its senior leadership team as senior vice president, Aftermarket. Brown most recently served as executive vice president, Global Operations and president of Global Customer Service and Support at Beechcraft. Prior to joining Beechcraft, Brown also served as president and general manager of AAR Aircraft Services in Oklahoma, and held senior-level positions with Independence Air, Avborne Inc., and Midwest Airlines.

GA Telesis welcomes **Dale Karraker** as new Director of Government and Defense Programs. Dale Karraker joins the company from Chromalloy, where he held the position of Country Manager for Saudi Arabia and was responsible for management and project development. At Chromalloy, Karraker worked directly with Ministries of Defense and private industries in the Middle East for military, commercial

aviation and industrial gas turbine portfolio offerings.

Singapore Technologies Engineering released that with effect from July 1st, 2014, **Mr Chang Cheow Teck** will step down from his position as President of ST Aerospace, to pursue personal commitments. Mr Tan Pheng Hock, the Group's President and CEO, will oversee the business of ST Aerospace until a successor is appointed. To facilitate a smooth transition, Mr Chang will take on a role as Advisor to Mr Tan until December. Singapore Technologies Engineering released that with effect from July 1st, 2014, Mr Chang Cheow Teck will step down from his position as President of ST Aerospace, to pursue personal commitments. Mr Tan Pheng Hock, the Group's President and CEO, will oversee the business of ST Aerospace until a successor is appointed. To facilitate a smooth transition, Mr Chang will take on a role as Advisor to Mr Tan until December 31st, 2014.



Mr Chang Cheow Teck steps down as President of ST Aerospace
Photo: ST Engineering