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Freighter conversions

Company Profile
Lufthansa Technik Malta

MRO News
from around the world

People on the Move
latest appointments

ICF Analysis



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MRO

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Opinion

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Good night, Malaysia three-seven-zero

On January 17th the transport authorities from Malaysia, Australia and China issued a tripartite joint communique announcing the end of the search for MH370 - the Malaysian Airlines Boeing 777 which disappeared from radar in March 2014.

The statement said flight MH370 had not been located in the 120,000 square-kilometre underwater search area in the southern Indian Ocean. Despite every effort using the best science available, cutting edge technology, as well as modelling and advice from highly skilled professionals who are the best in their field, unfortunately, the search had not been able to locate the aircraft.

Accordingly, the underwater search for MH370 has been suspended.

Since 2014, the search found several pieces of debris in various locations but ultimately, whilst combined scientific studies have continued to refine areas of probability, to date no new information has been discovered to determine the specific location of the aircraft.

Its dispiriting news for the aviation industry and particularly difficult for the families of the victims.

Keith Mwanalushi
Editor



Estimates put the number of good convertible 757s at fewer than 52.
Photo: Precision Aircraft Solutions

Contents

MRO and Production News	4
Finance News	9
Other News	10
Information Technology	10
Cover story: Freighter conversions	11
Company profile: Lufthansa Technik Malta	16
Industry Interview: Jordan Jaffe, CEO, Spectre Air Capital	18
ICF Opinion: The connected fleet	19
People on the Move	22

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Airbus and China Airlines sign MoU on maintenance, engineering and training capabilities
Photo: Airbus

Airbus signs MoU with China Airlines to develop its maintenance, engineering and training capabilities

Airbus has signed a Memorandum of Understanding (MoU) with China Airlines (CAL) to support the development of the airline's maintenance, engineering and technical training capabilities in Taiwan. Under the MoU, Airbus and CAL will evaluate technical and business solutions to develop the carrier's services for all Airbus aircraft types currently operated by the airline, which include the A350 XWB, A330/A340, and A320 families. The companies will also jointly evaluate and promote CAL's retrofit activities and cabin and airframe modifications, the feasibility of approving the airline's maintenance training centre and developing its maintenance training capabilities in Taiwan ranging from ab-initio programmes to courses for mechanics. In addition, they will evaluate the benefits of Satair Group and other Airbus affiliates becoming key parts providers for CAL.

TAM closes 2016 with new maintenance contracts

Täby Air Maintenance, TAM, has closed a successful 2016 with a number of new maintenance and repair contracts, as well as a dual EASA-FAA approval for the high-end Saab

340A and Saab 340B cargo conversion program. During 2016, new customers included Swiss, SkyWork Airlines and Cyprus-based TUS Airways, complementing longstanding partners such as Loganair, Eastern Airways, Swedish Air Force and Next Jet. "I am very pleased to state that during 2016, we consolidated our position as the globally leading Saab 340/Saab 2000 service partner," said Pär Gulle, TAM Managing Director. "We are now gearing up in order to be able to serve more customers in a wide range of capabilities, meaning that we are planning for additional capacity for weekends and evenings as well as expanding our workforce. Our recent Saab 340 cargo conversion orders, in addition to a notable maintenance order backlog, will enable us to further develop and enhance our customer offerings," Gulle summarized.

Lufthansa Technik wins another Canadian customer for Cyclean

Lufthansa Technik has won another customer for the Cyclean Engine Wash product – the Canadian carrier, Air Transat. As of November 2016, the entire Air Transat fleet of aircraft, consisting of Airbus A310s with CF6-80C2 engines, A330s with Trent 700 engines, and Boeing 737NGs with CFM56-7 engines, are benefiting from Cyclean Engine Wash. The engine cleaning is carried out at Montréal Airport in Canada,

where Lufthansa Technik has been operating a Cyclean Service Station for a year now.

AAR signs PBH contract with Allegiant Air

AAR has further strengthened its portfolio of North American PBH customers with the addition of Allegiant Air. AAR will provide repair-by-the-hour integrated component services to Allegiant's fleet of A320 aircraft. Allegiant currently operates 36 A320 aircraft and plans to expand to more than 100 aircraft during the term of the agreement. Allegiant is a low-cost leisure travel carrier connecting America's favorite small cities to world-class destinations, with an aggressive growth plan and strong financial backing.

Lufthansa Technik extends warehouse capacities in the USA

Lufthansa Technik AG has now opened a new warehouse in the USA, close to the Fort Lauderdale airport in Florida. This represents a significant expansion of the site, ensuring stable supply for customers in this growing region moving into the future. The Fort Lauderdale site serves as a connecting point for North, Central and South America. It was thus chosen as the primary storage facility for the American market and central gateway for the extensive customer supply network in the region. The state-of-the-art facility, in operation around the clock all year, and the seamlessly integrated transport network, allow the company to even better fulfill the high quality expectations of its customers. The new 2,000-m² warehouse has capacity for around 9,000 components. It also houses more than 10,000 items of consumables & expendables and various models of aircraft can be supported from here. The warehouse is operated by Lufthansa Technik Component Services (LTCS), making use of the logistic processes and IT systems of Lufthansa Technik Logistik Services (LTLS). The newly introduced LTLS computer-supported logistic order management system will make even more precise scheduling of internal logistic process steps possible.



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Mauro Moretti (left), CEO and General Manager of Leonardo at a press conference in London
Photo: Leonardo

Leonardo strengthens position in the UK as it begins operating as Leonardo MW

Leonardo MW Ltd brings together two prestigious brands with great technological heritage: Westland in helicopters and Marconi in electronics. With the support of the UK Government, Leonardo is ready to invest and grow its business in and from the UK, committing to long-term innovative partnerships. Leonardo continues to invest in on-shore research and development with its 7,100 UK employees, helping build the country's skills base and advancing exports. "With the support of the UK Government, Leonardo is ready to invest and grow its business in and from the UK, committing to long-term innovative partnerships," said Mauro Moretti, CEO and General Manager of Leonardo, at a press conference in London following the amalgamation of Leonardo's UK operations into a new, single-entity Leonardo MW Ltd, the British pillar of Leonardo. The integration makes Leonardo MW now home to more than 7,100 Britain-based employees, one of the UK's largest high-tech engineering companies. Having researched, designed, built and supported technology on-shore in the UK for over 100 years, Leonardo is uniquely-placed to secure future domestic and export work and expand its business in the UK. Leonardo offers UK-designed and built aircraft, sensors and integrated systems serving air-, land- and sea-based customers, as well as offering expertise in cyber security. The new single entity, Leonardo MW Ltd., brings together AgustaWestland Ltd, Selex ES Ltd, Finmeccanica UK Ltd, and DRS Technologies UK Ltd., operating under the Leonardo brand. Norman Bone has been appointed as Chairman and Managing Director of the new company.

Aero Norway achieves CAAC approval

Norway-based Engine MRO facility Aero Norway AS has been granted approval by the Civil Aviation Administration of China. This follows a detailed audit from the Chinese regulatory authority in September. The engine MRO centre is now multi-release FAA, EASA, TCCA and CAAC certified. CAAC certification allows Aero Norway to carry out maintenance of engines for aircraft registered in China in accordance with CAAC Part-145. The certification covers the full spectrum of services offered by CFM-authorized Aero Norway repair station across all three engine models – CFM56-3, CFM56-5B and CFM56-7B.

Charter Airline Cobalt chooses Monarch Aircraft engineering

Monarch Aircraft Engineering (MAEL), the engineering division of Monarch, has signed a line maintenance technical handling agreement with charter airline Cobalt. Commencing this month, the agreement will see MAEL's teams provide the new Cypriot operators' Airbus A320 flights from Larnaca into Birmingham and Manchester airports with line maintenance support.

Vector Aerospace receives EASA STC approval for ADS-B upgrade

Vector Aerospace, a global independent provider of aviation maintenance, repair and overhaul (MRO) services, has received European Aviation Safety Agency (EASA) Supple-

mental Type Certificate (STC) approval for its new ADS-B solution, which is applicable for installation on the Airbus Helicopters AS332, Leonardo Helicopters AW139 and Sikorsky S-76 series of helicopters. Vector's retrofitable ADS-B solution has already received STC approval from the national airworthiness authorities of the USA (FAA), Brazil (ANAC) and Mexico (DGAC).

AerFin launch Singapore-based distribution facility and office

AerFin have announced the opening of both, an office and distribution center in Singapore, further emphasizing AerFin's commitment to highly efficient airframe and engine component support solutions to its MRO, airline and lessor customer base on a global scale. The facility will be managed by Tony Stilwell, who has nearly 30 years of industry experience and who will be responsible for directing the operations and sales within the region. Stilwell commented "With the projected fleet growth and retirements in Asia Pacific, it is an obvious region for AerFin to expand into. With a regional office and inventory located in Singapore we will be getting a lot closer to our customers and more able to support their demands from locally held inventory." AerFin CEO Bob James added: "The launch of our distribution center in Singapore underlines our commitment to developing and expanding our operations in a region that currently sees 40% of future aircraft orders and passenger traffic growing at nearly 6% per annum. It's imperative AerFin are at the heart of this strategically important region."

AJW Group signs consignment agreement for A340-500

AJW Group has signed an agreement with a leading aircraft lessor to take on the consignment of an Airbus A340-500 MSN 572. As part of the agreement AJW Aviation will consign the complete airframe, APU and engines, beginning the teardown December 2016. The aircraft teardown is being performed by Tarmac Aerosave in Spain, Europe's largest aircraft storage company, with full traceability on all components involved. AJW's consignment business has completed over 50 individual projects to date, including airframes and engines. It specialises in extracting components and major assets from the aircraft and monetising them to achieve a higher return for the consignee through resale of the parts into the market.



Ameco reports an increase in Boeing 757 conversions
Photo: Ameco

Booming China express delivery brings more workload to Ameco

The booming Chinese express delivery industry brings more engine and conversion workload to Ameco. From last October, Ameco's engine overhaul workshop in Beijing is witnessing workload increase and it is in a peak period in the beginning of 2017. Up to Jan. 9th, the engine types under repair involve Pratt-Whitney PW4000, International Aero-Engines V2500 and Rolls-Royce RB211, with around 50% workload from the last type. The increasing RB211 workload is driven by Chinese air transportation market as well as the new contracts signed last year. RB211s from Chinese freight carriers include SF Airlines, and China Postal Airlines. At the 2016 Zhuhai Airshow, Ameco inked a ten-year RB211 contract with SF Airlines for the carrier's Boeing 757 fleet. New workload is also secured by Ameco from international customers of the Americas and Europe. Ameco has become a Rolls-Royce approved RB211 repair station and began already last year to provide service for this engine OEM. Ameco is speeding up in-house parts repair capabilities for V2500

engines to support both domestic and international customers. As an authorized repair station for Pratt&Whitney, Ameco is overhauling V2500s for IAE. The freight market requirement also brings more conversions to Ameco. The MRO provider is performing passenger-to-freighter conversions on two Boeing 757 aircraft in its Chengdu facility. One of the aircraft is already in the final phase of completion. In addition to the two aircraft in progress, another two more Boeing 757s for conversion are already listed on schedule.

Werner Aero Services expands APU business

Werner Aero Services is expanding its APU business and plans to further invest in this growing market for the upcoming year. In 2016, it acquired additional APU assets for its existing pool supporting narrow body customers; particularly A320 and B737 operators. Werner Aero Services' main customer support has been in the areas of loan, lease and the management of APU repairs. In addition to

the projected increase in capital investment for next year, it has hired additional experts to support its growing customer base.

JetBlue and Premier Aviation sign 5 year heavy maintenance and paint agreement

Premier Aviation and JetBlue together announced the signing of a five-year Embraer 190 heavy maintenance and paint agreement. Under the terms of the agreement the aircraft maintenance of 2 lines of E-190 aircraft begin in Rome, New York on January 2017, and will grow to support the painting of two lines of aircraft, which will initially be supported at Premier's Trois-Rivieres, Quebec facility in 2017. This agreement confirms JetBlue's confidence in Premier Aviation, and long history of supporting the region. The maintenance and paint lines are expected to add skilled jobs to the Oneida area and recruitment for the Rome, NY facility is ongoing.

Revima APU receives Authorized Economic Operator certification

Revima APU, a major APU maintenance services provider headquartered in France, received the Authorized Economic Operator (AEO) certification, allowing the company to offer simplified logistics and improved supply chain solutions. The AEO certification is a recognition of Revima APU's import/export control system, financial stability and safety and security procedures, all of which are qualification criteria for the certificate. The AEO status is one of the biggest security initiatives worldwide. The aim of this certification is to enhance international supply chain security and to facilitate legitimate trade. An AEO certified entity can be considered as a trustworthy economic operator with regards to all customs operations it undertakes across the entire European Community territory.



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328 Support Services GmbH and Duncan Aviation partner to deliver and certify a full cabin completion on Bombardier Challenger 604 Photo: 328 Support Services

328 Support Services and Duncan Aviation partner to deliver and certify full cabin completion on Bombardier Challenger 604

328 Support Services GmbH has partnered with USA-based Duncan Aviation to deliver and certify a full cabin completion on a Finnish registered, Bombardier Challenger 604 aircraft. Following 328's work on the EASA certification, the

aircraft was delivered to the customer on time last month. 328 Support Services was responsible for verifying all the engineering data involved in the project as well as certifying the modification with a new EASA Part 21 Minor Change Approval. On the other hand, Duncan Aviation undertook all the production, installation and testing activity at Duncan's full service facility in Battle Creek, Michigan. The project features a

stylish new interior design for the 604's cabin, including new grey carpet throughout the flight deck, galley, cabin and entrance hallway; flight deck crew seats and an entry jump seat; newly upholstered cabin and conference seating in pale cream leather throughout; co-ordinating upper sidewall/window panels in pale cream; flight deck lower sidewalls and a right hand Corian countertop in grey and white.

Rolls-Royce and Delta Air Lines enter into first ever SelectCare agreement for Trent engines

Rolls-Royce and Delta Air Lines have entered into the first ever SelectCare services agreement for Trent engines. The agreement covers Trent 800 engines on Boeing 777 aircraft operated by the airline. SelectCare is a fixed price overhaul service agreement that includes a suite of supplementary services that allow customers to benefit from Rolls-Royce's OEM insight and aftermarket capability, while providing cost certainty and fleet plan flexibility. It has already been selected by launch customer American Airlines and Icelandair for RB211 engines.

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express drop Photo: Rockwell Collins

Rockwell Collins to acquire Pulse.Aero

Rockwell Collins has acquired Pulse.Aero, a UK-based company specializing in self-service bag drop solutions and airline applications, to enhance the company's passenger processing services for airports and airlines. This acquisition further expands Rockwell Collins' Information Management Services (IMS) strategy to enable the connected aviation ecosystem. "This acquisition expands our already strong passenger processing offerings beyond agent and self-service check-in to include new applications and services that facilitate a seamless travel experience for airline passengers," said Dave Nieuwsma, senior vice president, Information Management Services for Rockwell Collins. Pulse.Aero's products and services will be integrated into Rockwell Collins' IMS Airport Systems portfolio. The self-service bag drop market is experiencing significant growth due to the benefits it provides both airports and passengers. Airports can increase passenger throughput without capital expenditure on building and facilities, and passengers can move through the airport check-in process more quickly and efficiently.

GE to develop competitive financing to stimulate growth in additive manufacturing

GE Additive business will collaborate with GE Capital to sell and finance metal additive machines. Manufacturing companies will now have more ways to access transformative 3D printing technology, spurring growth in several critical industrial markets including medical, aerospace, automotive and machining. GE Capital will develop a range of customized financial solutions for its customers. These solutions will allow GE Additive customers the ability to access strategic and flexible financing solutions to acquire this transformative manufacturing technology in countries around the globe. "Our dual expertise both in manufacturing and in equipment finance, allows us to create competitive financial solutions that support our customers' strategic business goals," said Trevor Schauenberg, President and CEO of GE Capital Industrial Finance. "Additive manufacturing is a key contributor to the manufacturing evolution; we're excited to enable its growth." GE has invested approximately US\$1.5bn in advanced manufacturing and additive technologies, in addition to building a global network of Additive centers focused on advancing the science. GE also recently announced it has acquired a 75% stake in Concept Laser GmbH and 76% of the shares in Arcam AB – both producers of metal additive machines. GE is now well positioned to advance the additive manufacturing revolution across several industries. As a leading end user and investor in additive technology, GE is experiencing its

transformative engineering and manufacturing power across the company's industrial businesses.

Chorus Aviation to launch aircraft leasing subsidiary - Chorus Aviation Capital

Chorus Aviation will establish a new regional aircraft leasing subsidiary, Chorus Aviation Capital, and has entered into an agreement pursuant to which Fairfax Financial Holdings Limited and certain of its subsidiaries will invest CAD\$200m (US\$150m) in Chorus through a private placement of 200,000 convertible debt units. In recent years, Chorus has steadily grown its aircraft leasing revenues from aircraft deployed under the capacity purchase agreement between Jazz Aviation and Air Canada, reaching CAD \$71.9m (US\$53.0m) in the first nine months ended September 30, 2016. On November 9, 2016, Chorus announced a transaction involving the lease of up to four Bombardier CRJ1000 aircraft to Air Nostrum, Lineas Aereas Del Mediterraneo, S.A., marking the first significant aircraft leasing transaction outside of the CPA. The establishment of an aircraft leasing subsidiary supported by Fairfax's CAD\$200m investment in Chorus provides Chorus with a solid foundation from which to realize its ambition of building a globally-competitive, regional aircraft leasing business capable of providing a full suite of services to regional aircraft operators. Chorus Aviation Capital will be led by Steven Ridolfi as President.

Airborne Maintenance and Engineering Services to acquire PEMCO World Air Services

Air Transport Services Group said its subsidiary, Airborne Maintenance and Engineering Services, has acquired PEMCO World Air Services, a privately held provider of outsourced heavy maintenance, repair and overhaul (MRO) aircraft services and passenger-to-freighter aircraft conversions based in Tampa, FL. The company did not assume any PEMCO debt in connection with the acquisition. This acquisition will allow for a number of strategic benefits through combining operational strengths, expanded capabilities and cost savings related to shared services between the companies. The services of the combined AMES/PEMCO businesses will be marketed worldwide to customers as part of a comprehensive set of ATSG solutions, as well as to the ATSG affiliates. Services will be offered from multiple locations, including Wilmington and Tampa for heavy maintenance and modifications, and Tampa, Central America and Asia for passenger-to-freighter conversions. Additional service offerings of aircraft-on-ground field teams, line and turnaround maintenance, component repair and overhaul, engineering repair and design, and extensive manufacturing and kitting capabilities, will be extended from various locations. ATSG President and CEO Joe Hete said, "Based on PEMCO's existing domestic and international scale, this acquisition will expand access to maintenance service for customers of ATSG's expanding fleet of Boeing 767 cargo aircraft. It is consistent with our goal to diversify ATSG's revenue and earnings, for an investment in the same price range as our planned and completed stakes in cargo airlines in China and Europe. The combination of PEMCO's conversion and MRO sales of both Airbus and Boeing products with AMES' existing offerings will create a sustained, growth-oriented aircraft maintenance product and services portfolio." Hete added that based on ATSG's current estimates and outlook, the PEMCO acquisition is expected to be accretive to ATSG's earnings starting in 2017.

Honeywell has received European Aviation Safety Agency certification for its JetWave high-speed satellite communications hardware on the Airbus A319. The certification allows JetWave to be installed and used on the A319 aircraft, providing passengers, pilots and operators with access to **Inmarsat's** Global Xpress Ka-band service, GX Aviation — the high-speed wireless network that covers the entire globe while achieving speeds similar to those experienced at home or in the office. Honeywell's equipment gives users access to a stable "Wi-Fi in the Sky" experience allowing them to easily surf the Internet, check email, download large files, shop online, make video calls and access movies on demand without a drop in service, even when flying over oceans. Several leading global airlines have committed to Honeywell's JetWave hardware and the Inmarsat network, in addition to other business jet manufacturers.

EDM, a provider of training simulators to the civil aviation and defense sectors, has reported that the two Cabin Emergency Evacuation Trainers (CEETs) it has manufactured for **Cathay Pacific** have passed their Factory Acceptance Tests (FATs). Built at EDM's facility in the UK, the B777 and A330 CEETs will enable Cathay Pacific's cabin crew to be fully trained in Safety and Emergency Procedures (SEP). Custom-made to the client's exact specification, the CEETs' interiors have replica galleys, lavatories, attendant seats and associated control panels. The simulators will enable the crew to be highly trained in door and

exit operation, evacuation procedures, pilot incapacitation, fire-fighting, cabin systems familiarization and passenger management.

The Federal Aviation Administration (FAA) has accepted the certification plans for the innovative **WheelTug** aircraft electric drive system for Boeing 737NG aircraft. The WheelTug system enables an airplane to taxi forward and backward, using small electric motors in its nosewheels rather than jet engines or a tow tug. It will benefit airlines by well over US\$1m per airplane per year, reduce fuel consumption and emissions at airports, and save up to 20 minutes in ground time between flights. Additionally, WheelTug will enable airplanes to parallel park at terminal gates; using two doors for narrow-body boarding and deplaning will allow for even more expedited travel.

Eastman Chemical Company received approval from engine manufacturer **Pratt & Whitney** for use of Eastman Turbo Oil 2197 and 2380 in the PW1100G-JM and PW1500G engines. Eastman Turbo Oils oil continues to enable innovation, safety and efficiency within the engine market and aviation industry. Pratt & Whitney's PurePower Geared Turbofan engines are already in service with nine carriers around the world, and have completed more than 30,000 revenue hours.

Information Technology

Pentagon 2000 Software, a market leader in fully integrated aviation and defense enterprise MRO & ERP systems, has completed an interface and integration with The145.com, an industry leader in supplying online marketing and support services to the aviation repair industry. Gabriel Mofaz, President at Pentagon 2000 Software, commented that "The145, formerly OneAero MRO Repair, has a long history of providing comprehensive solutions to MRO companies. With over 16 years in the industry, they are able to provide search capabilities within their database of over 500 repair stations and over 3 million repair capabilities." Justin Spaulding, President of The145 added "Pentagon 2000SQL is widely deployed across companies in the Aviation and Defense industry. We have a common set of customers today that will benefit immediately from this new integration, and we are looking forward to expanding our service to new customers that will benefit from the combined offerings".

Marshall of Cambridge Aerospace, part of the **Marshall Aerospace and Defence Group**, has signed a new, extended contract to use OASES for its growing CAMO activities. An OASES user since 2008, Marshall plans to use the OASES system to support an on-going CAMO operation in the Middle East. Marshall is working hard to secure further CAMO contracts and sees a potential for OASES to be used in support of these programmes. OASES

MRO IT system offers technical sophistication whilst being intuitively user-friendly. To allow for scalability, OASES is structured in a modular format and, for this new contract, Marshall has selected the Core, Airworthiness and Planning modules. OASES can either be installed on a local server or accessed via the internet through **Commsoft's** Private Cloud hosting service, avoiding the need to install any additional hardware. As part of its new contract, Marshall has migrated to the new cloud environment.

Jeppesen has signed a five-year service agreement with **LOT Polish Airlines**, the flagship carrier of Poland, to provide digital charting for LOT's electronic flight bag (EFB) platform. LOT will incorporate Jeppesen FliteDeck Pro on Windows tablets as its charting EFB solution and, through the agreement, will continue to use Jeppesen NavData for digital navigation. The use of FliteDeck Pro will eliminate operational paper content from LOT aircraft, which improves fuel consumption based on weight reduction. FliteDeck Pro features real-time, data-driven flight information for all phases of flight, and is displayed per the preferences of the pilot. FliteDeck Pro also significantly reduces pilot workload through automated processes.



Freighter fantastic

Older 737 freighters are experiencing escalating maintenance and operating costs.
Photo: Kenya Airways

The passenger-to-freighter conversions market has seen significant activity in the past year. **Keith Mwanalushi** speaks to some of the key players about the latest trends and the new opportunities.

In December last year, Bombardier announced the delivery of the first CRJ-200 Special Freighter (CRJ-200SF) aircraft to launch operator Gulf and Caribbean Cargo. The aircraft was converted from the passenger version by Aeronautical Engineers, Inc. (AEI) of Miami.

"To date, we have received commitments for 45 aircraft conversions from a variety of operators and we fully expect to convert over 100 aircraft over the life of the programme," said Robert Convey, Vice President, Sales and Marketing, Aeronautical Engineers. "I believe that most CRJ-100SF, CRJ-200SF aircraft will be operated on longer-range regional services with thin demand that require the speed of a jet but can't support larger narrow-body freighters."

The regional aircraft market up to the 757 size segment is a particularly interesting one. Precision Aircraft Solutions in Beaverton, in the U.S. state of Oregon currently offers a 757-200PCF (Precision Converted Freighter). Precision has converted 72 aircraft to-date with nine currently in-work.

"We are expecting the market to 'top out' somewhere above 135 to 140 757 PCFs," estimates Brian McCarthy VP Marketing and Sales at Precision Aircraft Solutions. "For the next three years we expect solid orders because there is nothing that replaces a 757 and we have a pretty big value and availability gap between the retirement of 737 classics and the oldest 757s and the availability of affordable 737-800s or A321-200s for that matter," McCarthy continues.

PCF 757 conversions are known throughout the industry for having the lowest operating empty weight (OEW) and highest available payload of any 757-200 conversion in production today.

Back to the CRJs, the freighter design by AEI includes a large 94 in. x 77 in. (238.7 cm x 195.6 cm) cargo door, hold up to 14,840 lbs. (6,731 kg) of payload on the main deck and offer eight 61.5" X 88" pallet positions for containerisation.

"CRJ-100 and 200 jets are the assets upon which regional airlines have built their existence, however they are gradually being replaced in favour of larger aircraft and are finding homes in secondary markets with modifications such as AEI's freighter conversions," said David Speirs, Vice President, Asset Management at Bombardier. "We are continuing to



McCarthy - There is nothing that replaces a 757.
Photo: Precision Aircraft Solutions



CRJ200 Special Freighter Aircraft.
Photo: Bombardier

see growing interest in these pre-owned aircraft from both traditional and emerging sectors of the industry.”

“The CRJ-100 and 200 operator base has grown by about 120% over the past eight or nine years, a strong indication of the aircraft’s continuing strength, versatility and appeal,” adds Speirs.

Some years back the concept of Low Cost Freighter (LCF) conversion was being developed. The potential advantage of the LCF approach over conventional P2F process was that it does not have a main-deck door, and the LCF avoids the need to make changes to the external structure of the aircraft.

Rafael Matalon, Senior Director and GM for Marketing and Business Development at the Bedek Group feels this kind of method [LCF] is not really efficient. “This is because in order to carry cargo on the main deck you should modify the existing floor beams, change ECS system and reroute new electrical bundles and on top of that you are limited with cargo size due to entrance door dimensions, hence in order to get the maximum payload and cargo size you need flexibility to modify the external of the aircraft and have a standard cargo door,” he explains.

Mike Andrews, Director of Conversion Programmes at PEMCO World Air Services is not convinced with the practicality of the LCF either and believes this approach is simply a concept. “I only see a small market for this. Small volume, small profits,” he suggests.

There is no such thing as affordable air freight; however, McCarthy from Precision believes the LCF concept could be utilised by the right operator. “The absence of a large main-deck door means unique up-load and offload techniques and restricted cargo size.”

McCarthy explains that whether the cargo is loaded via specialised hampers or conveyor belts, the process could take longer than traditional

containerised/palletised positions on a traditional P2F. He says the upfront cost of a traditional P2F conversion utilising a main-deck door on a narrow bodied aircraft could range between US\$3 to 5 million.

“If the LCF requires more down-time and man-power for upload and offload throughout its useful life of say, 10-15 years, this cost would need to be calculated and ran against the cost of a traditional conversion to see if it makes sense,” McCarthy continues. In summary, he says the type of cargo carried and the operational needs of the

carrier would need to be considered to determine if the LCF is a better choice. “It will take a deep study of the operating costs of say, a light weight 777 and the value, density and volume of the cargo being considered because the LCF loses a certain amount of main deck volume because of the limited pallet position height which is limited by the size of the lower hold door dimensions.”

Some industry insiders have stated that the ‘classic’ freighter feedstock is becoming increasingly scarce and expensive to operate and there is a push to purchase in-fleet next generation aircraft for conversion as they have more attractive economics.



Mike Andrews, Director of Conversion Programmes, PEMCO



The 757 is on the front line of demand.
Photo: Dylan Ashe

"I don't agree that they are scarce, but they are less available," declares Andrews from PEMCO. "There are a few more aircraft out there that are good candidates for conversions. There is a push for the next generation fleets, but the small freight carriers are pushing back to order them due to the price of the aircraft at this time," he adds.

Matalon, from Bedek points out that in order to maintain ageing 737 classics the maintenance cost becomes higher. "This is a major factor in maintenance cost calculation and this is the main reason that we recently found a large interest for operator regarding our 737-700 conversion programme."

Jordan Jaffe, CEO at Spectre Air Capital has observed that since Southwest Airlines bought 80 plus used 737-700s, this really tightened the CFM56-7B engine market and boosted the 737-700 used aircraft values. "But this, particularly the aircraft value increase, may be short lived."

With over 1100 737-700NGs and 4300 737-800NGs in the market, propelled by nearly 11,000 CFM56-7B motors, there are going to be plenty of aircraft retired with refurbish able engines, he reckons.

Shifting the focus back to the aircraft, and e-commerce exploding, Jaffe expects to see express freighter demand to be higher than ever. "The opportunity on the 737NGF extends from the fact that the availability of attractive feedstock for classic freighters [737-300/400 and 757-200] is extremely limited."

Jatte reports that some estimates put the number of "good convertible" 757s at fewer than 52, and the number of 737-400 and 300 candidates even fewer still. "In fact, all but the youngest 737 classics and 757s are already too old to import into major markets, and based on major fleet operators' retirement plans, there simply aren't enough classic narrowbody aircraft to support the 50 plus conversions needed each year to support the express airlines and their subcarriers' fleet needs."

Jatte does stress that a critical point lost on some airplane investors (but not the carriers) is that 737 classic freighter feedstock is becoming

overly expensive for their age, as older 737 freighters are experiencing escalating maintenance and operating costs. He notes that they are also unable to operate in congested areas and meet coming noise and emissions regulations, making them short term solutions at best.

"As such, the industry is looking to the 737NGF to augment and replace the 737 classic freighter and eventually the A321F as the 757's heir apparent. The problem for some carriers is that 737-700 and 800 freighters will cost more than the older 737 classics they replace for several years to come. This may be an obstacle to fleet growth and modernisation for many operators. This is what Spectre's leasing arm is designed to resolve," says Jatte.

By providing operators with modern, efficient 737NG freighters at attractive monthly lease rates, it eliminates aircraft acquisition and project management risks and transfers budget, technical, schedule compliance responsibility to Spectre, he further notes.

Jatte adds: "We think that this de-risking, combined with the higher cash value of 737NG freighters relative to the 737 classic, will result



Atlas and ATSG has been buying and converting 767's in record numbers.
Photo: Boeing



An RJ passenger-to- freighter conversion could be ready by end of 2017.
Photo: BAE System

in as much as half of our future narrowbody [737NG, 757, A321] and medium widebody [767-300] freighter transactions being leases.

Most will agree that ideal 737-400 feedstock is among the scarcest of the classics. "I would not label the 757-200 feedstock as 'scarce' just yet," McCarthy observes. "We believe feedstock will be adequate for the next three to four years, and then gradually decrease over the following five to six years."

It's no secret that ageing aircraft cost more to operate and maintain than their newer counterparts. Higher maintenance costs and older-technology mean more costs per flight cycle/flight hour. "However, with fuel prices low and stable (for now), it is hard for operators to justify spending many millions more to move into a next-generation freighter.

"Many of these old freighters are owned outright by their operators. The fact that 60 plus 727F's [source: ACAS] are still in service throughout the world speaks volumes. The operator market has an uncanny way of if waiting for values to fall to rock bottom before they make a move and it usually takes significant maintenance cost rises or fuel pricing to drive them into the next generation of any freighter fleet renewal," McCarthy stresses.

Looking at the freighter conversion market today, and its influences, Refael Matalon says the market is devised by leasing companies and operators while the leasing companies are the major players. "The

reason is to 'stretch' the existing passenger asset life as a cargo aircraft and generate revenue for additional 15 years. A major factor that influences operators to consider converting aircraft, is the asset residual value comparing to the used aircraft market price."

McCarthy sums up that operators who operate older aircraft such as the 727 and early 737/757 variants probably see that the window of opportunity to convert ideal feedstock for the 737-300/400 and newer 757-200 is closing. "If they choose not to capitalise on this opportunity, they could be forced to operate their older aircraft until next-generation freighters such as the 737-800 and A320/321 become available. The pricing will be a premium compared to today's MD-80, 737-300/400, and 757-200 on-ramp costs."

He points to another major influence that cannot be overlooked in P2F conversions - the recent boom of e-commerce. "Atlas and ATSG has been buying and converting 767's in record numbers to fulfil contracts for the e-commerce giant Amazon. This is on-going and will be interesting to see which other fleet types become the next hot-commodity. Cargo density related to e-commerce players is getting lower and higher volume aircraft are absolutely the new consideration. The 757 is on the front line of this demand and as we look ahead, the next ideal alternative will likely be the A321-200 because of its volume and operating economics."



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Maltese speciality



Lufthansa Technik Malta was established in 2002.
Photo: LTM

Back in 2002, Lufthansa Technik AG and Air Malta established an MRO service facility based at Malta International Airport in Luqa, consequently known as Lufthansa Technik Malta (LTM).

Initially specialising in C Checks and comprehensive aircraft modifications, the company has now significantly expanded its service portfolio following the construction of a 64,000-square-meter hangar complex.

Since taking over as the new CEO at LTM around October last year, Marcus Motschenbacher, tells *AviTrader MRO* that he is very content with the job largely due to having a good team around him. "Both the management as well as the technical expertise of the staff have positively surprised me. A real grown and matured company with a solid customer base and a dedication to the customers' needs," says Motschenbacher.

He described a strong desire and determination to achieve success at the facility saying his ambition would be to make the company the first choice for investment in Lufthansa Technik's base maintenance network along with controlled profitable growth in the services offered.

The strategically favourable location in the Mediterranean region of southern Europe, with its proximity to Africa and to the Arabian Peninsula, supposedly gives Lufthansa Technik Malta a special role within the Lufthansa Group.

Motschenbacher agrees and says Malta is a popular choice for Airbus widebody maintenance including the A330s, A340-200, -300, -500 and -600 with all engine types. Expertise in A320 and B737 work is also significant.

"We perform all types of maintenance [heavy and light base maintenance], structural modifications, cabin modifications and every work that requires more than just hands on work, for instance combined with engineering and demanding logistics," Motschenbacher explains.

Malta is in fact an interesting location for an MRO base as it has a very favourable climate, not only meteorologically, but more importantly from a business and investment perspective. "With excellent spoken English, continental law, a skilled young and motivated work force which naturally has a problem-solving technical inclination and a welcoming and open minded population, both investors and customers feel equally welcome here."

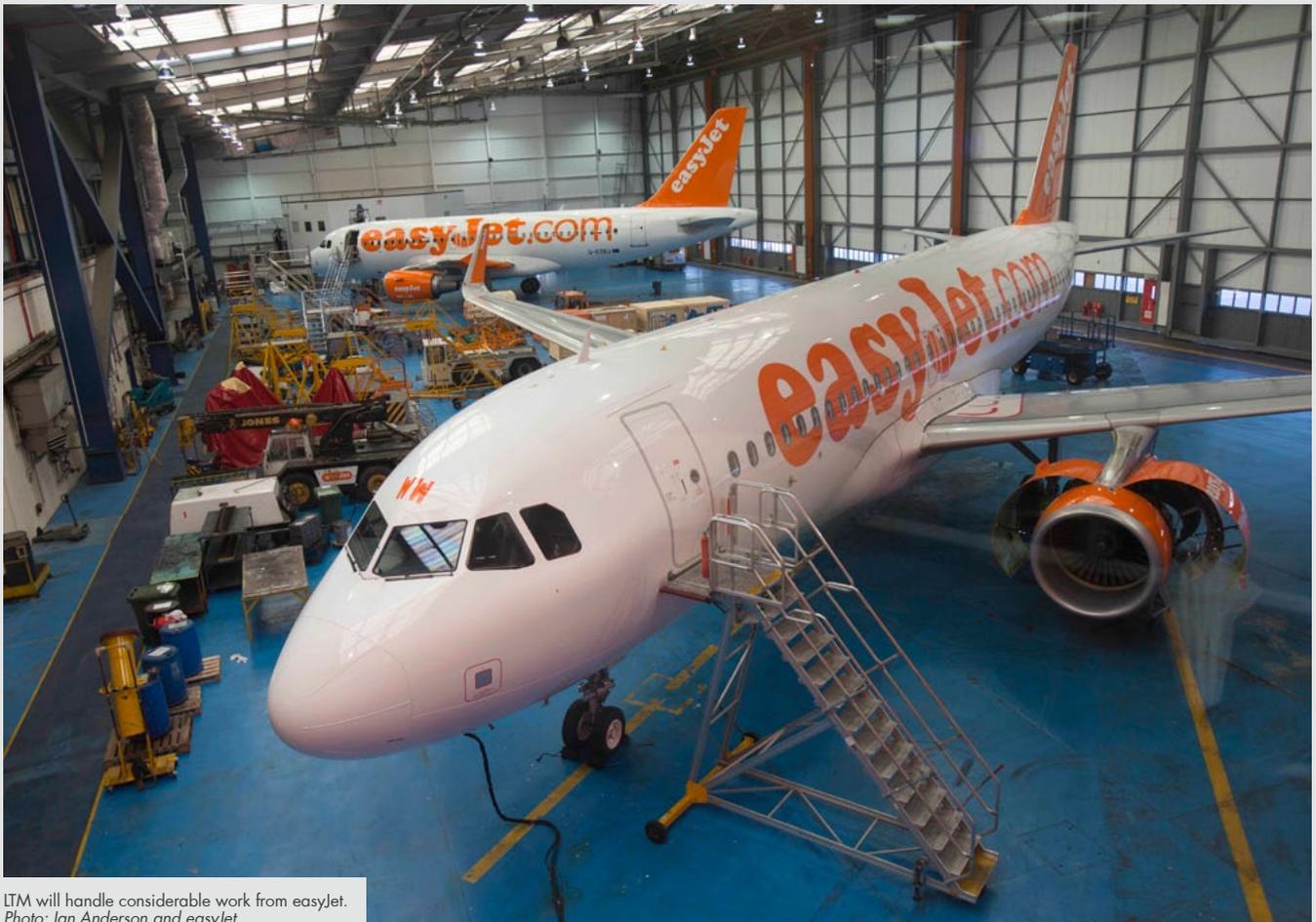
In September last year news surfaced that European low cost carrier easyJet had signed a multi-year deal with LTM to service the entire fleet. "The deal is as a matter of fact a network deal, involving also our sister company in Sofia for a smaller portion of the work," Motschenbacher clarifies.

The CEO appreciates that LTM was selected by easyJet, and says the low cost carrier appreciated the flexibility and reliability of LTM besides attractive pricing. "And naturally, easyJet have many frequencies into this attractive destination. There is a strong and rapidly growing partnership between easyJet and Lufthansa Technik on several levels and LTM is happy to work with this demanding customer to meet their level of expectations in quality and digital integration."

Looking ahead at challenges Motschenbacher sees the need to broaden the customer basis further and prepare for the future as the company cannot rely on A340 work long term, for instance. "So we have to look for a long-term replacement. The business flexibility must be increased making most use of the space LTM enjoys and we must succeed in withstanding the fight for new talent," Motschenbacher concludes.



Motschenbacher - Long-term, we cannot rely on the A340s anymore.
Photo: LTM



LTM will handle considerable work from easyJet.
Photo: Ian Anderson and easyJet

In the hot seat.....

Jordan Jaffe, CEO, Spectre Air Capital

AviTrader MRO: What aircraft types are currently in your portfolio and what is your customer base?

Jaffe: Spectre Air Capital is a Texas-based aircraft and engine trading and leasing company that focuses primarily on midlife mainstream commercial aircraft like the Boeing 737, 757 and 767 series, and Airbus A320 series along with the CFM56, CF6, RB211, Tay650 and CF34 engines that power them. But we're not afraid to step outside the comfort zone of more traditional aircraft lessors and acquire assets that are less mainstream if we think there is a market.

Spectre's Cargo Solutions group supports narrow and medium body freighters including 737-300F and 400F, 757-200F, 767-300F, plus 737-700F and 737-800F beginning Q2 2017 and Q4 2017 respectively.

While historically our customer base takes us into what others would perceive as riskier markets (primarily due to the mature asset class we focus in), our increased focus on the P2F market has provided a unique opportunity whereby the mature assets we specialise in, once converted, behave more like new aircraft. This transition has opened up an entirely new customer base for Spectre, allowing us to operate in a space once reserved only for the world's largest leasing companies.

AviTrader MRO: What impact has cheap oil had on the mid-life passenger and freighter aircraft market, and how does this relate to Spectre's recent investments in 757 and 767 aircraft?

Jaffe: Cheap oil means airlines' third largest cost component was perhaps half that of a few years earlier. In addition to higher operating



Spectre will be IAI's launch customer for the 737-800 P2F programme. Photo: IAI

profits and cashflow, this meant airlines could adjust fares to attract more passengers and still profitably operate less efficient classic aircraft that would otherwise have been parked. Predictably, this sustained demand buoyed market values and extended useful lives of aircraft, resulting in higher transaction values, lease rates and part out values.

With respect to the 757/767, Spectre and Jetran have collaborated to acquire 20+ B767-300s and 10 B757-200s over the past few quarters, with more fleet-sized transactions planned. A majority will be converted to freighters and be operated by express carriers in support of their own networks and/or under CMI or ACMI arrangements for entities like Amazon's Prime Air and Alibaba's Aliexpress.

AviTrader MRO: Spectre is working with IAI for 737 P2F conversion. What is the exact scope of this collaboration? Who is doing what?

Jaffe: Spectre has agreed to be IAI's launch customer for the 737-800 passenger-to-freighter program - a derivative of the 737-700 PTF which IAI is performing on 3 plus Alaska Airlines aircraft presently. Spectre's initial commitment is fifteen firm 737-800 freighter conversions, plus rolling options that can be exercised nose-to-tail as required to meet demand for the 12 position full-freighter. IAI, and its PTF installation affiliates, may also provide certain airframe heavy maintenance and painting services.

AviTrader MRO: Are 737-800s in particular mature enough to be available to meet demand for P2F conversion?

Jaffe: Absolutely. The oldest 737-800s entered service in 1998 and will be nearly twenty years old by the time the Supplemental Type Certificate-based major modification engineering is certified. These aircraft will be coming out of tier 1 carrier fleets in large numbers within the next few years. Their age and condition, combined by what is increasingly perceived as a glut of excess single-aisle aircraft, inevitably drives down midlife values to a range that allows them to be converted and profitably operated by express cargo airlines.

AviTrader MRO: Why did you select IAI to provide these 737-800 PTFs?

Jaffe: Based on experience developing similar 737 and 757 STCs, our team expects that IAI's prototype 737-800 freighter could be certified



Jordan Jaffe, CEO, Spectre Air Capital

and delivered as soon as Q4 2017 - much earlier than other STC developers. And since the IAI -800 PTF STC is a derivative of their 737-700 STC which is now production-complete and in advanced stages of certification, risk of substantial delays is lower than with newly developed STCs. This low technical and schedule risk, combined with ample conversion capacity and speed to market are attractive to us and to cargo operators looking for freighters for growth and fleet modernisation.

AviTrader MRO: What is influencing aircraft operators to consider converting aircraft?

Jaffe: Rapid growth in e-commerce, expansion of the global middle class (doubling in the next 10-15 years), and consumer preference from much shorter time definite delivery are among the primary drivers of today's all-time high demand for express freighters. At the same time, air freight rates in key growth markets are as low as US\$ 1.25/kg, down substantially from N. America's and W. Europe's historical rates. As a result, it is imperative that operators have the right equipment at the right economics to allow them to operate profitably; thus the need for lower cost, converted freighters such as the 767 and 737-700/800 P2F.

Spectre Cargo Solutions helps customers achieve these objectives by leveraging its ability to purchase in fleet-sized transactions to offer current and next-generation freighters for lease and purchase at attractive economics to forward-thinking customers, with Spectre taking the attendant technical, financial and schedule risks.



The connected fleet

Further implications of aircraft health monitoring for the aviation supply chain.

Many airlines have outsourced much of the MRO on new e-enabled aircraft.
Photo: Boeing

Analysis by Richard Brown, Principal, and Alexander Diepeveen, Analyst at ICF Aerospace and MRO Advisory

It is difficult to avoid a hot topic currently permeating the aviation supply chain. The issues surrounding big data and aircraft health monitoring (AHM), data ownership, access and management are increasingly discussed in industry forums, publications, conferences and boardrooms. Yet, the benefits and challenges for airlines, OEMs, MROs and lessors continue to be debated, as does the role of each player in the AHM market.

ICF examined how e-enablement was disrupting business as usual in the April 2016 edition of *AviTrader MRO*. The arrival of highly connected aircraft such as the 787, A350XWB and CSeries now allow for the measurement, storage and transmission of more data from aircraft engines, airframes and systems than ever before. The opportunities presented by e-enablement continue apace. It is against this fast-moving landscape that ICF revisits this important topic.

E-enabled aircraft are on approach

The arrival of e-enabled aircraft brought the promise of increased efficiency for airlines. OEMs discussed a new way of operating aircraft – a connected and integrated operation driving increased efficiency for airlines. The greater availability of maintenance and performance data encouraged a step-change towards health monitoring. Until recently, the adoption of aircraft health monitoring services has been slow. Though health monitoring has been available on aircraft engines since the 1990s, the benefits beyond the engine to the aircraft systems are only now gaining traction. The reason for monitoring engines is clear given the potential to maximize time-on-wing and avoid costly AOGs. Yet e-enabled aircraft now provide the ability to monitor key aircraft

systems such as avionics and electrical components.

While approximately ~3% of the current fleet is e-enabled, ICF forecasts that approximately 45% of the fleet (over 15,000 aircraft) will be e-enabled by 2025. As the connected fleet grows and service offerings mature to taking advantage of big data, ICF sees operator maintenance increasingly benefitting from advanced analytics. The heart of the debate centers on the form the analytics takes and who performs the analysis.

Enter the MROs

With an increasing amount of data, it is likely that only the very largest operators will develop internal analytical capability. Since the arrival of a new aircraft type provides operators with an opportunity to change their maintenance approach many airlines that have traditionally performed MRO in-house have outsourced much of the MRO on new e-enabled aircraft. There is a variety of suppliers for operators to choose from ranging from the airframe OEMs to integrator MROs and independents willing to offer MRO services often under multi-component cost-per-flying-hour contracts. The growing popularity of maintenance contracts covering a broad range of component types provides an opportunity for the maintenance supplier to use data analytics to drive down cost, increase reliability and ultimately improve the profitability of such service offerings.

Given the relatively recent arrival of new e-enabled aircraft the advantage in providing aircraft health monitoring systems has typically resided with the aircraft, engine and system OEMs. However, more recently major integrator MROs have also been developing their own offerings. Air-



More major MROs have developed their own health monitoring systems. Photo: Lufthansa Technik

bus and Boeing launched their health monitoring service around 2012 and they continue to invest in data analytic capabilities. Rather than develop systems completely in-house, Boeing and Airbus signed agreements with Microsoft and IBM to provide IT infrastructure thereby speeding up the development of analytical capabilities.

2016 saw the large MRO integrators enter the data analytics market. Air France KLM E&M developed “Prognos” and Lufthansa Technik launched “Condition Analytics”. The approach taken appears to differ from the OEMs. The OEMs have taken the “Big Data” path by analyzing large sets of data to find nuggets of information. On the other hand, MROs appear to be leveraging their maintenance expertise by focusing on a smaller number of specific, known and frequent reliability/cost issues caused by certain components. Lufthansa Technik offers analytical services to any airline and not just customers of their integrated support programmes.

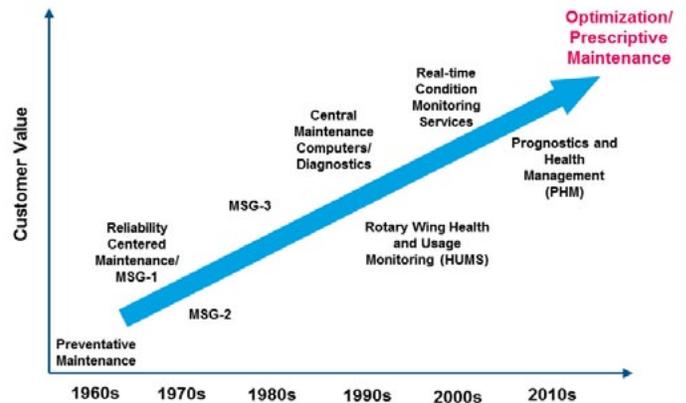
Examining the benefits

The potential benefits offered by aircraft health monitoring are varied. ICF expects the majority of savings to come from improvements in dispatch reliability, reductions in inventory and better line-maintenance troubleshooting. With improved reliability comes the potential for reduced provisioning spend- a key source of revenue for component OEMs. The potential is for \$3B+ in industry wide savings. In fact, the benefits are only just starting to be understood.

To fully achieve the potential benefits that AHM offers operators will need to go beyond just monitoring the aircraft and predicting when

parts will fail. Maintenance will need to be further integrated into an airline’s operation. If AHM can predict when a part will fail, the airline’s scheduling department needs to be able to efficiently utilise this information to minimise disruption to the operation. Information from aircraft health monitoring systems should enable airlines to make better-informed decisions such as whether to cancel or delay a flight or substitute another aircraft instead and of course perform the proactive maintenance. Health monitoring provides airlines with valuable time to make better decisions. Consequently, the industry is moving towards a prescriptive maintenance principle where data analytics works to prescribe maintenance activities based on the best outcome.

For prescriptive maintenance to work optimally, OEMs and regulators



Source: Air France KLM E&M, ICF



The arrival of highly connected aircraft such as the CSeries now allow for the measurement, storage and transmission of more data. Photo: Bombardier

need to continue to evolve current maintenance practices. Despite all the advances in maintenance computers, real-time condition monitoring and prognostics, MSG-3 is still the underlying process for most maintenance programmes. For instance, even if a system monitors oil levels and pressures during every part of the flight, the maintenance manual may still require a mechanic to visually inspect the oil level. Should such activities be reduced through AHM airlines can reap the benefit of quicker aircraft turnarounds and the reduction of some labour intensive activities.

Supplier considerations

E-enablement is arriving now. AHM capabilities are advancing and the benefits are being better understood. Suppliers are preparing for the implications that AHM will have on their business. Engine OEMs are well aware of the benefits of increased time-on-wing which drive increased profits given that many of their engines are on \$/HR maintenance programmes. System OEMs offering their own maintenance solutions can also drive reliability improvements into their products by better understanding how rotables perform in-flight. AHM offers the chance to



Over 15,000 aircraft will be e-enabled by 2025. Photo: Airbus

reduce frustrating and unnecessary line removal of components.

A challenge for the smaller independent MROs is how to gain access to data given the increasing strength of the OEMs in the aftermarket. Furthermore, there is less opportunity for smaller MROs to justify investment in AHM offerings. Partnership with OEMs or larger integrator MROs may be the realistic approach should they wish to service the newest equipment.

Airframe and system OEMs – well placed to benefit from AHL - need to do a better job of demonstrating the real benefits that AHM heralds to operators. Some airlines see the benefits for MROs and OEMs but are less convinced about the tangible benefits AHM offers them directly. AHM is likely to assist the move to a more OEM-centric MRO market and airlines are aware of this. Furthermore, airlines are keen to avoid AOGs. How can AHM analytics help reduce AOGs and the associated costs these entail?

AHM also allows the airframe OEM to leverage their broad scope of services beyond maintenance thereby supporting their desire to grow revenue from services. It provides OEMs with an opportunity to demonstrate value without turning wrenches.

The benefits and challenges posed by AHM therefore continue to evolve as more e-enabled aircraft enter service. AHM offerings from stakeholders continue to be developed and new partnerships are being established. The benefits of advanced AHM and the implications for the supply chain are still being quantified and understood. AHM adoption is moving fast and provides real opportunities to reduce maintenance cost and improve aircraft reliability. Yet more still needs to be done. For instance, antiquated airline IT systems need to be improved to take advantage of what is being offered and the benefits to the end-user more clearly communicated. It is necessary to further consider how AHM is likely to influence your business and the role you will play as the market evolves. The time to act is now.

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Toby Smith

Following the opening of Avtrade’s new office in Guangzhou China, the company has appointed **Toby Smith** as Regional Sales Director – North Asia. Toby joined Avtrade’s Sales team in 2008 and developed his career managing key accounts in Europe and, importantly, the Asia region. Since 2013, Toby has become a key figure in the development of the Singapore office where he developed a broad understanding of aviation requirements specific to the Asian region. Now based in Guangzhou, Toby will be responsible for the strategy and development of the China office, and the North Asia region.



Jean Lydon-Rodgers

Manager for Monarch Aircraft Engineering. As Accountable Manager, Chris Dare has overall responsibility for the organization remaining in compliance with regulations.

Dubai Aerospace Enterprise (DAE) has hired **Bertrand Grabowski** as Senior Strategic Advisor. Bertrand was most recently Member of the Board of Directors of DVB Bank in charge of Aviation and Rail. Under his leadership, DVB Bank solidified its pre-eminence as a leading aviation asset based lending platform and expanded its franchise to include aviation asset management, investment management and advisory businesses. Prior to joining DVB, Bertrand had a well-known career in transportation finance in London, New York and Tokyo. He worked at Citibank and Bank Indosuez providing highly structured asset financing solutions to clients in the transportation sector.



Tony Mathis

GE Aviation has reported that **Jean Lydon-Rodgers** was named President and Chief Executive Officer of GE Aviation Services, and **Tony Mathis** was promoted to President and Chief Executive Officer of GE Aviation, Military Systems.

Dion Garner has joined the team of Werner Aero Services. He will be focusing on expanding the company’s current business in Asia Pacific with increased emphasis on the growing APU business. Dion joins Werner Aero Services with over 30 years’ experience in the aerospace industry, much of it spent in the Asia Pacific market. He has worked at Honeywell in their APU division for the majority of his professional career.

Monarch Aircraft Engineering (MAEL) has appointed **Chris Dare** as Accountable



Andreas Tielmann

Since January 1, 2017, **Andreas Tielmann** is the new CEO of Lufthansa Technik Logistik Services (LTLS). He took over from **Dr. Christian Langer**, who was moving to Lufthansa Technik as Head of Digital Fleet Solutions. Andreas Tielmann has been with Lufthansa Technik since 1998. He began his career as project coordinator in the Department of Business Development. In 1999 he was sent to Dallas, Texas, as Project Manager for the establishment of Lufthansa Technik Component Services, before returning to Hamburg in 2000 and taking on the position of Group Leader, Hydraulic Equipment Maintenance. Two years later, Andreas Tielmann was appointed Head of the Business Area Development department within the Aircraft Component Services Division.



Eli Alfassi

Mr. Eli Alfassi has been named Executive VP Marketing for Israel Aerospace Industries (IAI). Mr. Alfassi is currently Executive VP for IAI’s operations in India and following his appointment to the position of Executive VP Marketing, the two operations will be merged under his responsibility.