

MRO

Aerospace Magazine

Landing Gear Overhaul

Optimised solutions to support return to service



Inside Job

HAECO completes cabin refurb on Aeroflot Boeing 777s

Middle East

In the spotlight, Abdul Khaliq Saeed, CEO, Etihad Engineering

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Singapore sets the tone for optimism and recovery

The Singapore airshow opened on 15 February with a note of cautious optimism for the recovery of the aerospace industry. The biennial event runs through to 18 February at the Changi Exhibition Centre and has seen more than 13,000 trade attendees and almost 600 companies from more than 39 countries converge on Singapore.

The key theme circulating in Singapore was not surprisingly around sustainability. Experts from the public and private sectors discussed the challenges and opportunities within sustainable aviation, including the topic of sustainability of future technology in areas of air mobility and aviation operations. The event organisers said focus areas include the roles of regulators, innovations in engine technology, sustainable aviation fuel, and MRO.

Interestingly, the airshow coincides with a new report by Oliver Wyman that says the MRO market in 2022 and beyond is being reshaped by a fleet in transition. With a record number of retirements in 2020 and the annual average age expected to increase over the forecast period, the report indicates that MRO growth will be slower than in the previous decade, but global MRO demand is expected to recover fully to pre-COVID levels by 2023. By 2030, MRO demand is expected to reach \$118 billion, 13% below the pre-COVID forecast of \$135 billion. These are encouraging stats for an industry that over the last two years saw deliveries reduced and premature aircraft retirements negatively affect MRO.

In this issue we are focusing largely on landing gear overhauls and the solutions in the market that will help aircraft operators optimise their maintenance as they return their fleets to flying schedules. One of our expert speakers points out that although it is inherent in every airline to reduce costs as much as possible, now is not the time to skimp on landing gear maintenance, which is an interesting observation.

And as the industry looks to the Middle East in February for another industry event in Dubai, we have turned our attention to Etihad Engineering whose CEO delves into the business and tells us about the key priorities as the aircraft maintenance industry begins the recovery process. It's a worthy read

Keith Mwanalushi
EDITOR



Ribbon cutting ceremony at the Singapore Airshow 2022.

Photo: Singapore Airshow

CONTENTS



Cover image:
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21

Landing Gear Services

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5

3 Editor's Page

5 News in Brief



12

12 News Analysis

Cabin refresh sees enhanced interiors for Aeroflot 777s



14

14 News Analysis

GAMECO adds new phase to maintenance expansion strategy



17

17 Etihad Engineering

Shifting sands create realigned strategy and focus

21 Landing Gear Services

Flying restart prompts optimised landing gear solutions

27 Industry Interview

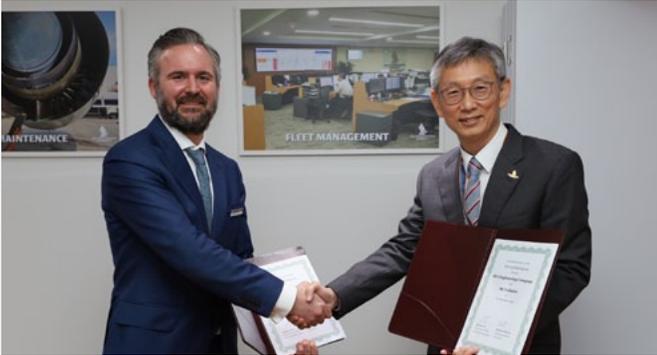
Daniel Tautges – Senior Vice President, Component Control



27

30 People on the Move

SIA Engineering and SR Technics announce component MRO joint venture



Mr Ng Chin Hwee, CEO, SIAEC and Mr Matthias Düllmann, CFO, SR Technics.
Photo: SIA Engineering

SIA Engineering Company Limited (SIAEC) has announced that it has entered into an agreement with SR Technics to acquire a 75% stake in SR Technics Malaysia (SRT Malaysia) to form a component MRO joint venture. The JV will complement SIAEC's existing component repair and overhaul services and fleet management programmes. This follows the earlier announcement on 1 March 2021 of the potential acquisition (in part or whole) of SRT Malaysia, located in Selangor, Malaysia.

The completion of this transaction is subject to the satisfaction (or waiver) of conditions precedents set out in the agreement with SR Technics.

Mr Ng Chin Hwee, Chief Executive Officer of SIAEC, said: "The setting up of this component repair and overhaul JV with SR Technics in Malaysia is a significant step in our strategic plan to grow our component repair and overhaul services network under our recently announced Component Services Division. The JV will complement SIAEC's existing portfolio of engine and component JVs with leading OEMs and will be an additional platform that will broaden the scope of component repair and overhaul services that SIAEC offers to its airline customers and OEM partners."

Mr Jean-Marc Lenz, Chief Executive Officer of SR Technics, said: "With SIAEC becoming a JV partner of SR Technics Malaysia, we are convinced that both partners will benefit from the new synergies created by this JV. SR Technics Malaysia will continue to provide high quality, reliable services, and operational excellence to support the engine component repair requirements of SR Technics. Partnering with SIAEC will not only enable us further to increase the business volume on existing repair capabilities, but it will also allow us to jointly develop new repair capabilities for new engine types and aircraft platforms."

AAR signs ten-year extension of component MRO agreement with IAMCO

AAR, a leading provider of aviation services to commercial and government operators, MROs and OEMs, has extended its component MRO contract with International Aerospace Management Company (IAMCO), which is responsible for depot-level maintenance for the North Atlantic Treaty Organization's (NATO) E-3A AWACS aircraft fleet, for another ten years. The services will be performed at AAR's Component Repair facility in Amsterdam. "IAMCO is very pleased to confirm AAR as one of its sources of repair for component MRO in this extension of the E-3A programme," says Bernard Masuy, IAMCO Branch Manager, Components. "AAR's Amsterdam facility proves to be a reliable partner and a strong pillar of the E3A DLM component maintenance programme."

Topcast Group signs new long-term agreement partnership with Cathay Pacific and HAECO ITM



Photo: Topcast Group at the Singapore Airshow 2022

Topcast Group, a global supplier of parts, services and solutions for the aviation industry, has agreed on a new long-term contract with Cathay Pacific and HAECO ITM at the Singapore Airshow 2022. Starting with a fresh year, Topcast Group took a big step in growth of earning two major multi-year agreements for providing aircraft jack repairing services with the new partner, Cathay Pacific and ACME batteries repair services for HAECO ITM. As the official MRO service provider of Tronair and Acme Aerospace, Topcast's high-quality service is guaranteed. In addition, despite the global challenges in 2021, Topcast has had a strong year of partnering with Eva Air for ACME batteries repairing agreement and commercial proposals of rebate programmes with Evergreen Aviation Technologies and China Airlines.

CDB Aviation orders twelve more conversions from EFW advancing its A330 P2F strategy

CDB Aviation has committed to an additional twelve conversions with Elbe Flugzeugwerke GmbH (EFW), expanding its A330 P2F fleet to fourteen aircraft. Moreover, the lessor is on pace to launch the A330-300 P2F freighter type in China in 2022, with lease commitments from Sichuan Airlines and Jiangxi Cargo Airlines. "We have strategically positioned our platform to be the A330 P2F programme frontrunner among lessors," commented Patrick Hannigan, CDB Aviation's Chief Executive Officer, adding that the A330 P2F marked the lessor's first entry into the air cargo space. "We're very satisfied with this programme's progress and momentum to date and look forward to further expanding our freighter fleet in collaboration with our partners at Airbus, ST Engineering, and EFW." CDB Aviation's first two A330 P2Fs are currently being converted in EFW's facility in Dresden, Germany, and will be re-delivered to its launch operator, Mexico-based MasAir, in early 2022. CDB Aviation will expand its global conversion footprint by becoming the first customer for A330 P2F conversions to take place in the facilities of ST Engineering in Shanghai, China and VT MAE in Mobile, Alabama, USA. These conversion locations have been added to the existing A330 P2F conversion facilities of EFW in Dresden, Germany and ST Engineering in Singapore. By the middle of 2022, the lessor plans to have aircraft converted simultaneously at three locations – in Dresden, Shanghai, and Mobile.



CDB Aviation advances A330 P2F strategy with new conversion order
Photo: EFW

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China Airlines and LHT extend contract for further six years



China Airlines extends TCS contract for further six years

Photo: LHT

China Airlines, the flag carrier of Taiwan, has extended the Total Component Support (TCS) contract with Lufthansa Technik for another six years minimum. The agreement covers component support for the Airbus A330 fleet comprising 23 aircraft. Lufthansa Technik also provides component services for the carrier's Airbus A350 fleet, including simulator components as well as auxiliary power units. Jason Tsai, VP Engineering Division of China Airlines, said: "The reliable and high-quality services we have experienced since 2010 had convinced us to extend the contract. A stable operation is crucial for us and Lufthansa Technik has proven to be a dependable partner."

AerSale orders six additional Precision 757-200PCF conversions plus four options



AerSale Boeing 757 exterior

Photo: Precision Aircraft Solutions

Precision Aircraft Solutions (Precision) has been awarded a contract from AerSale for six additional Boeing 757-200PCF conversions plus four options, bringing the total number of potential commitments to sixteen. AerSale began converting its first 757-200PCF in January 2021 and the sixth unit will be inducted in February 2022. Later this year, AerSale will begin inducting additional Boeing 757-200 conversions in HAECO Xiamen to supplement existing capacity in North America. Nick Finazzo, AerSale's Chairman and Chief Executive Officer said: "Our partnership with Precision addresses capacity constraints of freighter aircraft in the market. Through our collective work, we are able to provide timely relief to the supply chain through converted B757-200 aircraft by leveraging our access to the necessary expertise, feedstock of aircraft and precision conversion kits. Our relationship with Precision is critical to our efforts and we are pleased to work together, both as a customer and maintenance supplier."

IAI completes conversion of 100th B767-300 aircraft



IAI delivered the 100th B767-300 conversion

Photo: IAI

In a major milestone, Israel Aerospace Industries (IAI) has completed the conversion of the 100th B767-300 aircraft. This achievement highlights IAI's leading role in the cargo conversion industry for over four decades and is a testament to IAI's advanced capabilities, robust pace and expanding capacity to provide customers worldwide with the most optimal freighter solution. The 100th B767-300 freighter was converted at IAI's cargo conversion facility in Tel Aviv, Israel, prior to being delivered to the customer. IAI began operating the B767-300 conversion line in Israel in 2007 together with M&B Conversions, a joint venture with Mitsui, and received STC (Supplementary Type Certificate) in 2009. In 2017, IAI opened an additional B767-300 conversion facility in Mexico, increasing operations to meet global demand for the converted wide-body aircraft. The converted B767-300 aircraft provides a competitive and cost-effective solution for customers seeking to increase their cargo fleet.

Lufthansa Technik and WestJet sign CFM56-7B engine maintenance service agreement

WestJet has awarded its CFM56-7B engine maintenance programme to Lufthansa Technik. The agreement provides WestJet with access to a wide range of services including overhaul capabilities and on-site maintenance support. Under a separate agreement, Lufthansa Technik has collaborated with FTAI Aviation to provide access to CFM56 modules and material to support this maintenance programme. An important principle of this maintenance approach is the replacement of modules, which optimizes engine life and delivers a more environmentally sustainable programme. "WestJet is excited to move forward in this new agreement with Lufthansa Technik in a dynamic new programme to support our fleet. We are looking forward to working with this expanded relationship with Lufthansa Technik to provide excellent support and engine life cycle management. Further, working with a support organization that understands the airline perspective and needs, serves to enhance the value of support brought to the table. This is the result of a very competitive process started in January 2021 that resulted in Lufthansa Technik's team being awarded a contract that provides leading value and support through a team approach offering creative solutions," said Gandeephan



Lufthansa Technik will provide CFM56 engine maintenance for WestJet *Photo: LHT*

Ganeshalingam, Vice President of Technical Operations, WestJet. "One major pillar in our collaboration is that we will be able to, where appropriate, further optimize an engine's life. This results in high engine reliability and stable operations for WestJet," said Georgios Ouzounidis, VP Corporate Sales North America at Lufthansa Technik."

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- A340-200



China Airlines, Tigerair Taiwan ink MRO agreements with Collins Aerospace



Maintenance diagnostics

Photo: Collins Aerospace/GettyImages

China Airlines and its low-cost subsidiary Tigerair Taiwan have signed long-term contracts for Collins' FlightSense® programme. Under the contracts, Collins will provide engine accessory repair services for China Airlines' fleet of 25 A321neo aircraft and engine accessory repair and spares support for Tigerair Taiwan's fleet of 15 A320neo aircraft. The fleets are powered by Pratt & Whitney's GTF™ engines, which Collins supplies a number of engine accessories for including electronic controls, starters, pumps, valves, sensors and harnesses. "While we've had smaller, piece part repair agreements with China Airlines and Tigerair in the past, this contract represents our biggest, most comprehensive MRO agreement with the airlines to date," said Henry Brooks, president, Power & Controls for Collins Aerospace. "It's a testament to how our relationship with China Airlines has grown over the years as a result of our commitment to provide round-the-clock quality maintenance and repair to keep their fleets on the move."

ASI Aero starts 737NG dismantling

Aeronautical Support International (ASI Aero) has announced that they will start dismantling one Boeing 737NG this month. This 737NG marks the second Boeing 737NG ASI Aero has dismantled in the last two months. Material from this aircraft will be sent for repair and overhaul direct from the disassembly location to repair facilities and will be made immediately available. "In line with the recovery of the domestic markets that has taken place since early-2021, ASI will continue to make acquisitions of narrow-body, wide-body and regional aircraft platforms to support our global customer base," said ASI Aero President, Dean Morgan.

SIAEP signs agreement with North American aerospace industries to provide aircraft recycling solutions

SIA Engineering (Philippines) Corporation (SIAEP) has signed an agreement with North American Aerospace Industries (NAAI), an aircraft part-out specialist, to provide sustainable, end-to-end aircraft recycling solutions. Under the agreement, SIAEP and NAAI will collaborate to provide a range of services including aircraft parking and storage, component harvesting and dismantling activities on aircraft that will be parted-out and recycled by NAAI. The programme will enhance SIAEC's support in the aircraft lifecycle eco-system, centred on a sustainable platform which includes the recycling, upcycling and used serviceability of materials. The services will be undertaken by SIAEP at its facility in Clark, Philippines.

ST Engineering secures contracts to provide integrated component support to China Airlines Group and Jeju Air

ST Engineering's Commercial Aerospace business has secured component Maintenance-By-the-Hour (MBH™) contracts to support the carriers under China Airlines Group.

Under the new multi-year contracts, which have duration between seven and 12 years, ST Engineering will provide integrated component support to the Airbus A321neo and A330 aircraft belonging to national carrier, China Airlines, and the Airbus A320neo belonging to low-cost carrier, Tigerair Taiwan. The new contracts add to an ongoing Boeing 737-800 component MBH™ programme that ST Engineering has with China Airlines since 2010, while Tigerair

Taiwan is a new customer. Furthermore, the company has secured the extension of component Maintenance-By-the-Hour (MBH™) contracts from Jeju Air to support the airline's Boeing 737NG and Boeing 737 Max aircraft. Under the extension contracts, which will take effect on January 1, 2025, ST Engineering will continue to provide integrated component support to Jeju Air's Boeing fleet till 2030 after the existing contracts expire.

American Airlines expands Embraer fleet



Envoy Air will add three more E175s

Photo: Embraer

American Airlines has signed a firm order with Embraer for three new E175s. The aircraft will be operated by American's wholly owned subsidiary, Envoy Air. With deliveries to be completed this year, Envoy's fleet of E175s will grow to over 100 aircraft by the end of 2022. The contract value is USD 160.2 million at current list prices and will be included in

Embraer's 2021 fourth quarter backlog.

"Reaching the century mark of 100 E175s with American Airlines and Envoy is truly a moment to savour. We thank American Airlines and Envoy for their sustained partnership with Embraer, which began back in 1998," said Mark Neely, Vice President Sales and Marketing for The Americas, Embraer Commercial Aviation. "It's hard to exaggerate the impact this hardworking aircraft has every day, delivering essential connectivity across the US market. The E175 is the backbone of the US regional network, with over 600 aircraft sold, and 86% market share since 2013."

"Our incredible journey with Embraer began almost 25 years ago with the ERJ 145. Our partnership continues to grow today with the E175s, the core of our fleet. Not only are our customers happy with the aircraft, but the jet's outstanding performance has allowed us to continue to provide excellent service to American Airlines," said Pedro Fábregas, President & CEO of Envoy. "We look forward to receiving these three new aircraft later this year as we continue to expand our growing network."

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Spirit AeroSystems reports fourth-quarter and full-year 2021 results

Spirit AeroSystems revenue in the fourth quarter of 2021 was US\$1.1 billion, up 22% from the same period in 2020, primarily due to higher production deliveries of the Boeing 737 and increased revenue from the recently acquired A220 and Bombardier programmes. These increases were partially offset by lower wide-body production rates due to reduced international air traffic resulting from the impacts of COVID-19 and the pause in Boeing 787 deliveries. Overall deliveries increased to 281 shipsets during the fourth quarter of 2021 compared to 231 shipsets in the same period in 2020. This includes Boeing 737 deliveries of 51 shipsets compared to 19 shipsets in the same period of the prior year and Boeing 787 deliveries of six shipsets compared to 20 shipsets in the same period of the prior year. Spirit's full-year 2021 revenue was US\$4.0 billion, up 16% from 2020. Spirit's backlog at the end of the fourth quarter of 2021 was approximately US\$35 billion, with work packages on all commercial platforms in the Airbus and Boeing backlog. Operating loss for the fourth quarter of 2021 was US\$79.0 million, as compared to an operating loss of US\$101.4 million in the same period for 2020. Fourth-quarter 2021 earnings included US\$45.3 million of excess capacity costs and net forward loss charges of US\$46.5 million, US\$32.3 million of which were from Boeing 787

schedule changes. In comparison, during the fourth quarter of 2020, Spirit recorded excess capacity costs of US\$50.1 million and US\$28.1 million of net forward loss charges. Spirit reported a net loss of US\$120 million compared to a net loss of US\$296 million in 2020.

Operating loss for the full year of 2021 was US\$459.2 million, as compared to operating loss of US\$812.8 million for 2020. Full-year 2021 earnings included excess capacity costs of US\$217.5 million, abnormal costs related to COVID-19 of US\$12.0 million, net forward loss charges of US\$241.5 million, US\$153.5 million of which were from the Boeing 787 programme and unfavourable cumulative catch-up adjustments of US\$5.0 million. Full-year net loss was US\$541 million compared to a net loss of US\$870 million for 2020. Other income for the full year 2021 was US\$146.6 million, compared to a net expense of US\$77.8 million in the prior year. The increase was primarily driven by a curtailment gain of US\$61 million recognised in the third quarter of 2021, resulting from the closure of the defined benefit plans acquired as part of the Bombardier acquisition, as well as non-cash expenses of US\$86.5 million as a result of the voluntary retirement programme offered during 2020.

(£1.00 = US\$1.35 at time of publication).



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Cabin refresh sees enhanced interior for Aeroflot 777s



HAECO's first 777 cabin reconfiguration for Aeroflot.
Photo: HAECO

Keith Mwanalushi caught up with senior executives at HAECO to speak about the recently accomplished Boeing 777 cabin reconfiguration work for Aeroflot and the general interior's upgrade market.

In December HAECO announced it had completed cabin refurb work on the first Boeing 777-300ER for operator Aeroflot. Since then, HAECO Hong Kong has accomplished three 777 aircraft for the Russian airline, installing the latest interior design equipped with Collins Super Diamond NG seats and latest generation IFE systems.

"We provided engineering support, assisted in refining the draft installation instructions, and aided the Supplemental Type Certificate application," Kevin Kruger, Director and General Manager at HAECO Hong Kong tells *AviTrader MRO*.

HAECO Hong Kong accomplished the STC

input with Boeing as a design integrator.

"The three aircraft arrived at HAECO's hangar in Hong Kong fresh from Boeing's manufacturing line in factory configuration and our cabin specialists installed and built the new, innovative cabin interior for Aeroflot," Kruger adds. The new configuration increases the aircraft's capacity from 402 to 427 seats, including 28 business class individual suits with a sliding door and an extra armrest, providing a high level of privacy. Each private suite is also fitted with an 18.5-inch HD monitor and a two-meter full-flat bed. The cabins also include 24 comfort class seats (96cm pitch) and 375 economy class seats (80cm pitch).



Kevin Kruger, Director and General Manager HAECO HK

Kruger explains that the aircraft are also fitted with the latest generation Panasonic eX3 in-flight entertainment system as well as onboard high speed internet access. "All interior decorative laminates were replaced, matching the new seating's upholstery, demonstrating a high-quality premium cabin appearance," he says.

When looking at the wider cabin upgrade market, some airlines had paused their interior cabin work, others used the

opportunity of having their aircraft on the ground, to upgrade and refurbish their cabins to the highest of standards in preparation for the rebound with some new innovations coming through.

At HAECO, they saw an increase in RFI and RFP activity for refurbishment and reconfiguration work during the pandemic. "However, most of those decisions were deferred, delayed, or cancelled outright as the crisis wore on longer than most industry experts expected," comments HAECO's Doug Rasmussen, Group Director Cabin Solutions.

“The three aircraft arrived at HAECO's hangar in Hong Kong fresh from Boeing's manufacturing line in factory configuration and our cabin specialists installed and built the new, innovative cabin interior for Aeroflot.”

Kevin Kruger, HAECO

Rasmussen observes that recently, they have seen a refreshing return to work being awarded, especially among leasing companies. "This is in support of return to lessor and return to service activity. This work was initially focused on single-aisles, with a particular emphasis on transition from dual to single-class configurations for increased cabin density. On the other hand, we are starting to see twin-aisle operators moving from dual-class to three-class reconfigurations as airlines add premium-economy cabins."

Rasmussen adds that airlines operating twin-aisles have really embraced the premium economy cabin as a way to increase yield. "If you look at the various twin-aisle cabins, you will find that while first and business classes have high ticket pricing, those seats take up a lot of cabin floor space. Economy class has high density, but relatively lower ticket prices and premium economy hits the sweet spot for a balance of slightly higher ticket prices, but also increased passenger density.

"Premium economy is actually the highest yield per square inch of floor space compared to other cabins. Passengers are electing to move up from economy and feel the extra price per ticket is worth the



Doug Rasmussen, Group Director Cabin Solutions, HAECO

upgrade for comfort and social distancing. As a result, airlines benefit from improved yields and customer loyalty."

HAECO is also seeing a refurbishment trend with airlines painting / powder coating interior surfaces instead of laminating partitions and sidewalls – "This can be accomplished on-wing and simplifies the refurbishment process with a lighter weight solution," Rasmussen concludes.





GAMECO adds new phase to MRO expansion strategy

China Southern Airlines is a key partner.
All photos: GAMECO

Keith Mwanalushi and GAMECO's Chief Executive Norbert Marx discuss the opening of the new phase III maintenance hangar in Guangzhou, new capabilities and creating a broader space for cargo conversions.

In December, an A380 and a 747 were towed into GAMECO's new Phase III hangar, marking the completion of a strategic expansion project that started in May 2019. The new hangar is located to the north of Phase I and Phase II in Guangzhou.

Norbert Marx, CEO at GAMECO says the capacity will increase from 20 heavy maintenance production lines to 31. "The additional influx of work will strengthen our offerings as a one-stop shop for lease transitions, modifications, conversions and heavy checks. We have all the dedicated shops for cabin, composites, landing gears, exterior painting and all kind of components and accessories."

Marx indicates that GAMECO will continue to support legacy aircraft, for example, with cargo operators, but also invest in new generation aircraft and components. "The large fleet of China Southern Airlines provides a strong base load and our comprehensive facilities add the necessary scale," he adds.

Figures provided by GAMECO indicate the new facility covers an area of

50,482.7 sqm with the total construction area of 98,086.7 sqm. The complex consists of a 34,000 sqm maintenance hall with a span of 334 meters, a three-

floor office and workshop building and a 15,000 sqm basement for parking, civil defence, and equipment storage.

Additionally, aircraft washing, engine



Norbert Marx, CEO at GAMECO



Capacity will increase from 20 heavy maintenance production lines to 31.

run-up and limited maintenance work will be performed on a newly added 59,000 sqm apron area. The phase III hangar can simultaneously park six widebody aircraft and five narrowbodies and designed to accommodate various aircraft types from the A380, A330, 777, 787, A320 and 737.

With the additional maintenance production lines, GAMECO will potentially alleviate the shortage of widebody slots. Marx explains that the shortage was caused by the tremendous growth of China Southern Airlines. "Over the last ten to fifteen years, they were adding 50, 60 sometimes 70 aircraft annually to their fleet and it takes a big pipeline of support to make this happen."

When GAMECO opened the phase II facility in 2013, they already projected the upcoming shortage to be in the early 2020's. "To attract additional third-party business, we needed to offer full nose-to-tail lines to potential customers, two or three of them in parallel and not just some slots here and there. Our phase III hangar adds six widebody and five narrowbody lines, which gives us the necessary space to make long-term

commitments and support the needs of our third-party customers in a flexible way," Marx continues.

GAMECO has strategically placed itself to cater for the growing needs of the air freight sector. "The cargo conversion market is very hot at the moment; demand is stable and the conversion workload is labour intensive and repetitive." Marx predicts that over the next five to eight years cargo conversions will be a key element of the new hangar. "We have set up a dedicated organisation for cargo conversions, with all functions and an optimised workflow."

The current projects include conversion lines for 767-300, 737-800 and ARJ21-700 and GAMECO is open to add additional projects in the future, for instance the 777, A330 or A320XLR. "Medium term we have to see how the heavy maintenance demand will emerge from COVID impacts. With C-Check lines you create a higher workload in terms of man hours per day. On the other side the growing demand for cargo conversions will level off at one point in time and there is enough, maybe even too much supply in the market. At that time, we

“Our phase III hangar adds six widebody and five narrowbody lines, which gives us the necessary space to make long-term commitments and support the needs of our third-party customers in a flexible way.”

**Norbert Marx,
GAMECO**

will rebalance cargo conversions versus C-Check lines," Marx explains.

Currently, GAMECO is running two other hangars: Phase I and Phase II, in operation respectively from August 2004 and November 2013. The completion of Phase III hangar symbolises another milestone for GAMECO and China Southern Airlines' maintenance and engineering system.

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As the industry focuses on the Middle East this month, *AviTrader MRO* editor **Keith Mwanalushi** speaks exclusively to Abdul Khaliq Saeed, Chief Executive at Etihad Engineering about his career, MRO in the region and the priorities post-pandemic.

“
As restrictions ease, we want to understand what airlines are really looking for, be as flexible and competitive as possible, and not just meet but exceed their expectations.

*Abdul Khaliq Saeed,
Etihad Engineering*

”



Shifting sands create

realigned strategy and focus

Etihad Engineering managed to deliver more than 300 aircraft in 2020.
Photo: Etihad Engineering

In February the aviation industry finally regroups in Dubai to discuss the pressing issues in aircraft maintenance but of particular importance this time around is getting businesses back into growth momentum following the extreme challenges caused by the COVID pandemic.

CEO Abdul Khaliq Saeed took a moment to reflect on his journey to the top job and recalls being inspired by his family to join the aviation industry. "When I started my career, I was sent abroad for training in Scotland following my job placement in school. After completing my training, I took many courses to enhance my knowledge in the field and seized the opportunity to take on more responsibilities. This helped me grow my experience and exposure of working with international airlines and customers from around the world.

"It has been an incredible journey of more than 40 years, which has never seen a dull moment."

Etihad Engineering is showcasing its comprehensive range of aircraft maintenance and engineering solutions from heavy maintenance and advanced composite structural repair to major modifications, cabin refurbishment, livery paint, and component repair on

commercial Airbus and Boeing aircraft.

Saeed reveals that the company has the Middle East's first EASA-certified 3D printing lab and flammability testing facilities onsite and it is an authorised repair centre for MOOG Inc., the specialists in flight control and utility actuation systems.

He also speaks of a strategic partnership in place with Argentina's main aircraft manufacturer, Fabrica Argentina de Aviones (FAdeA), for offering narrowbody aircraft maintenance services at FAdeA's hangars in South America, and Etihad Engineering is also working with Israel Aerospace Industries (IAI) to establish two passenger-to-freighter conversion lines for the Big Twin 777-300ERSF at its 500,000 sqm facility in Abu Dhabi.

The downturn caused by the COVID pandemic brought with it unprecedented challenges including a rapid decline in regional and international passenger traffic due to government restrictions and local lockdowns which impacted airline's revenues and budgets and fewer aircraft in the air meant less frequent flying cycles and maintenance work. "We at Etihad Engineering realigned our strategy and focused on how we could support our customers, deliver value, and keep our revenue streams flowing in the constantly

changing environment."

Instead of viewing grounded aircraft as a problem, Saeed and his team focused on how to capitalise on the operator's fleet downtime by carrying out upgrades to their fleet and bringing forward aircraft maintenance. "We also took the time to scrutinise our operational costs. By optimising our resources and enhancing our processes we capitalised on working in a more efficient manner."

Saeed reckons the pandemic was a real test of the agility and resilience of MRO and aviation companies as he steered the company to weather the storm by being proactive and flexible. Despite all the challenges, Etihad Engineering managed to deliver more than 300 aircraft in 2020, because of what Saeed believes was good planning and crisis management, diligent cost control, and being adaptive to the changing needs of the market – "The MROs who managed to evolve and grow during this challenging time have emerged stronger and more prepared to face the future in the post-pandemic world," he says.

In November Etihad Engineering announced a new heavy maintenance contract by Virgin Australia for its Boeing 737 fleet. The scope of the contract covers heavy maintenance and modifications



The cargo sector was growing prior to the pandemic.
Photo: Etihad Cargo

on more than 30 nose to tail aircraft. The company has been consistently adding to its comprehensive capabilities on major commercial Boeing and Airbus platforms including the A350 and the A320neo and partnering with industry leaders regionally and globally to strengthen its global customer footprint.

During the worst of the COVID crisis, the spotlight turned to the air cargo sector for growth, but as Saeed reminds, the cargo sector was growing prior to the pandemic – “We have long been supporting our cargo customers from around the world with our comprehensive MRO solutions, including passenger to freighter conversions,” he notes.

Etihad Engineering now has the EASA STC approval for carriage of cargo on passenger aircraft for the 777-300ER and is working towards EASA STC approvals for A321-251NX and A321-271NX for a major airline in India.

“With our extensive experience and expanding capabilities on both passenger and cargo aircraft, we are in a strong position at Etihad Engineering to leverage the growth of the cargo market.”

To further boost its fuel efficiency and to reach its sustainability goals, parent airline Etihad is focusing on digital and sustainable tech-ops and recently signed an MoU with Lufthansa Technik and PSJC regarding a comprehensive partnership on the exploration of digital solutions that is set to further optimise the airline’s technical fleet and operations management.



Etihad is focusing on digital and sustainable tech-ops.
Photo: Etihad Engineering

The collaboration was announced in November last year aimed at encompassing several products from Lufthansa Technik’s AVIATAR digital operations suite and covers the use of fuel analytics, condition monitoring and automated line maintenance planning. For instance, The AVIATAR condition monitoring solution will allow Etihad a real-time overview on the current status of all its aircraft and their components – on the ground as well as in flight. This will enable the Etihad maintenance department to proactively manage the condition of their Boeing and Airbus fleets by combining fault messages, parameters, flight information and maintenance information on one screen.

On the engineering side, Saeed is placing innovation and technology as at top priority to stay ahead of the game. “We are pursuing digitisation and

automation across multiple areas of our business, with a view to streamlining our workflow and speeding up our turnaround times.”

Etihad Engineering was one of the first MROs in the world to design, manufacture, certify and fly 3D printed aircraft

parts using its additive manufacturing lab onsite and further exploring new technologies like robotics, drones, wearables, augmented reality, and artificial intelligence to further enhance productivity and efficiency.

“Innovation and transformation are not just business functions but highly encouraged values and traits at Etihad Engineering.”

Looking ahead, Saeed wants to continue adapting to this new environment in the post-COVID era and the main priority going forward, he says, will be to focus on how best to serve customers who rely on Etihad Engineering to keep their fleets in top shape.

“As restrictions ease, we want to understand what airlines are really looking for, be as flexible and competitive as possible, and not just meet but exceed their expectations.”



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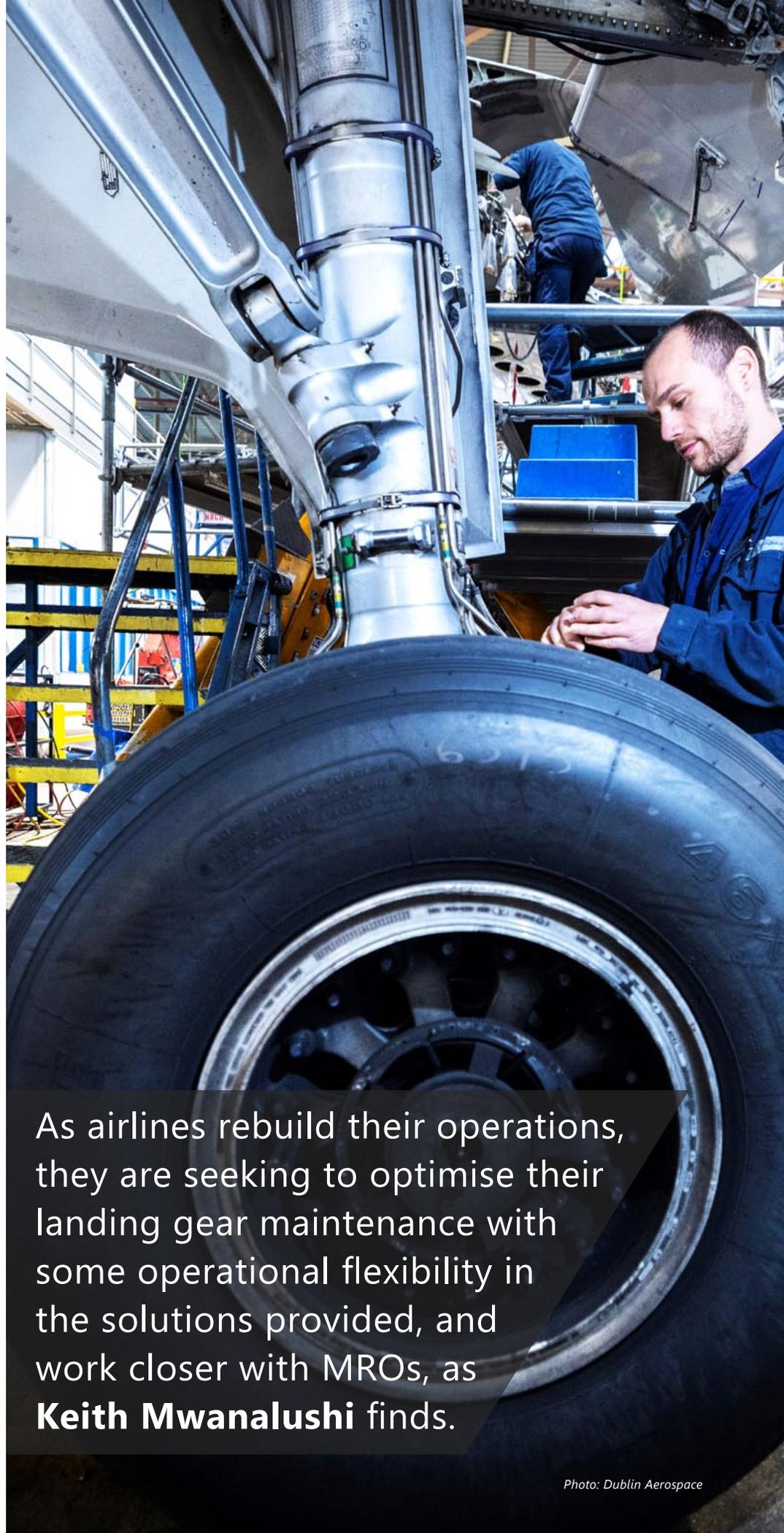
Flying restart prompts optimised landing gear solutions

As the COVID pandemic subsides in many global regions and aircraft operators begin to return their fleets into flying schedules, critical components such as landing gears will require meticulous planning for maintenance events.

Despite all the remaining market uncertainties, Xavier Mornand, the Business Development Director at Revima believes anticipation is key in optimising landing gear maintenance costs and aircraft availability. He highlights the current tensions on transportation and supply chain, combined with the anticipated increase in MRO demand, make it even more important to plan maintenance events well ahead of time.

“As we have seen recently, last minute bookings of landing gear shipments can result in very high shipping costs, not to mention added risks on space availability and hence on maintenance schedules,” Mornand tells *AviTrader MRO*. “Our experienced logistics and customs department is proving to be a great added value, when it comes to helping customers optimise shipping times and cost.”

At Revima they have stressed the importance of working with an MRO partner that can help optimise the landing gear maintenance schedule. As an example, Mornand says operators



As airlines rebuild their operations, they are seeking to optimise their landing gear maintenance with some operational flexibility in the solutions provided, and work closer with MROs, as **Keith Mwanalushi** finds.



Landing gear monitoring can also assist with predictive or condition-based maintenance.

Photo: Portugalia

“Although it is inherent in every airline to reduce costs as much as possible, now is not the time to skimp on landing gear maintenance.”

Rafi Matalon, IAI

can save cash on assets by optimising the number of overhaul lines for the programme. “We focus on working hand in hand with customers to refine their removal schedule and associated costs. The more they can tell us about their needs, the better we can tailor a programme for them.”

Although it is inherent in every airline to reduce costs as much as possible, Rafi Matalon, VP of Marketing at Israel Aerospace Industries (IAI) Aviation Group warns that now is not the time to skimp on landing gear maintenance.

He reminds that grounded aircraft are vulnerable to corrosion and wear of parts and must be maintained to the optimum upon return to service. “We are receiving many customer requests to perform the ten-year maintenance overhaul and we



Rafi Matalon, VP Marketing IAI Aviation Group

try our utmost to provide a reasonable, all-inclusive package that provides a comprehensive service while keeping costs as low as possible.”

For those airlines that have an older fleet, Matalon suggests several options such as an upgrade of the landing gear based on a detailed analysis of factors like the age and service history of their landing gear shipset. “Such an upgrade can improve equipment reliability at a competitive price. Additionally, engineering solutions and parts salvage where possible, can also help cut costs during this difficult time,” he says.

Pastor Lopez, President, MRO Services Group at GA Telesis observes that while inherently different situations, the industry experienced similar conditions after 2001. He recalls that back then, and now, aircraft operators managed green-time gears by swapping gears from parked aircraft – “Today, the belief is that demand is returning faster than it did after 9-11. This time around, operators are pulling a large quantity of parked aircraft from the desert and



Landing gears are a major element of the ecosystem at GA Telesis.
Photo: GA Telesis



Pastor Lopez, President, MRO Services Group, GA Telesis

airline industry is coming out of a very difficult and challenging time but also seeing a strong recovery in most markets. "Ultimately, optimisation for aircraft operators is competitive costs allied to excellent quality and on-wing

getting them ready for operation to meet the demand."

At GA Telesis landing gears are a major element of the company's ecosystem. Lopez points to an example from 2019 when GA Telesis' Flight Solutions Group (FSG) provided a complete solution-suite for an operator in the Asia-Pacific region – "As a result of our comprehensive offering, both companies were able to secure a five-year contract to provide lease and overhaul services whereby FSG provided the leasing and MRO Services Group delivered the overhaul for their entire fleet. Moreover, when the customer experienced a scheduling crunch, they returned to GA Telesis to lease a second set," Lopez states.

Joe Daly, Head of Landing Gear at Dublin Aerospace can see that the



Joe Daly, Head of Landing Gear at Dublin Aerospace

"A relatively new consideration arising from the extended grounding during the pandemic is storage and preservation history."

Joe Daly, Dublin Aerospace

performance," he mentions.

Daly explains that optimising landing gear green time must dovetail with airframe and component maintenance events so access to MRO slots has become critical to minimise operating impact and cost for operators. "Securing competitive low costs, turnaround time certainty and best-in-class quality, at the optimum maintenance event times is a challenge for MROs and aircraft operators. We have doubled our capacity during the pandemic period to position ourselves as an optimum partner for airline operators," he says.

Landing gear monitoring can also assist with predictive or condition-based maintenance. Nick Filce, Director, Asset Sales and MRO at AerFin says the monitoring can reduce maintenance costs and prevent costly shop visit that require traditional inspection, repair and extensive downtime.

"By planning and arranging for landing gear removal and overhaul in advance operators can work on gear rotation or ensure that gears are sourced at competitive rates. Having maintenance agreements in place will assist operators with time and financial planning." Filce indicates that working closely with MRO's who can offer an overhaul package with advance planning will ensure lengthy delays and downtime are prevented due to availability of production maintenance slots with landing gear overhaul workshops.

Leasing and exchange offers operational flexibility

The leasing and exchange of spare landing gears during overhaul periods can give airlines some operational flexibility. To support the requirements of operators, AEM - a division of AMETEK MRO, has invested heavily in both loan and exchange assets. "Clearly this enables us to offer a flexible approach to what can be a rather complex arrangement,"



Nick Filce, Director – Asset Sales and MRO, AerFin

comments Andy Wheeler, DVP and Managing Director at AEM.

As Wheeler explains, this could constitute a regular loan or exchange whilst the aircraft remains operational and revenue earning or perhaps to coincide with a heavy maintenance event where the operator could also select a tariff to cover flying cycles; or alternatively just to move the aircraft around the hangar during this time – "This may also include an option for an extended loan, re-assignable warranty or even a tripartite agreement to include the operator and lessor for lease return aircraft.

"For an airline, maintaining an inventory of landing gear can incur significant expense, so typically airlines avoid the cost by relying on contracted specialist providers," says Wheeler.

Spare assets availability is a critical element of landing gear maintenance and currently, Revima owns more than 45 landing gear shipsets, according to Mornand, he feels this is testament to how much Revima is committed to investing in assets to support operators. "In addition, we manage several shipsets on behalf of our customers, who rely on us to generate additional lease or exchange revenue for their own assets. We add further value by sharing our analysis of the market, connecting people and organisations, and proposing optimised solutions."

Revima plans to continue investing in landing gear assets in line with the growth of activities in its two landing gear shops in France and Thailand and with the development of new programmes.

Certainly, some of the bigger operators will invest in their own spare gears but even they need lease sets occasionally. "It is then a policy decision for the airline whether or not they chose the exchange or lease option," says Daly from Dublin Aerospace. "Either way, they want access to these critical assets from dependable suppliers and we have invested heavily in assets to support both options."

For exchanges, Daly says the operators need certainty on the back-to-birth records for each part of the landing gear. He continues: "A relatively new



Andy Wheeler, Divisional Vice President and Managing Director of AEM

consideration arising from the extended grounding during the pandemic is storage and preservation history. Access to exchange or lease assets, whether directly from Dublin Aerospace or through our network of partners and suppliers, provides great flexibility for operators to minimise downtime and costs."

With the current state of the supply chain spare assets can ease some constraints. At AAR Corp they invested in these assets or partnered with leasing companies to ensure operators can minimise fleet disruptions. "MRO's will invest in these assets to the extent they can afford to but airlines that share in the investment have more control over the utilisation and use of these assets, so we recommend airlines own their own exchange sets," states Brian Sartain, SVP Repair and Engineering at AAR.

Sartain stresses the most critical and most difficult aspects of aviation MRO is planning – "To the extent that our partners provide schedules and stick to them, it helps us deliver on time since many programmes depend on rotatable assets and the gears that are removed." In addition, he says airlines that can procure a spare asset can make their lives much easier when unexpected schedule interruptions occur. "And also ensuring

LANDING GEAR SERVICES

that trace, storage programme, and prior overhaul records are accurate. In the current market there are some shortages of critical LLP's and on-hand inventory can help avoid a critical delay in overhaul," Sartain points out.

Meanwhile, at AerFin they are working closely with major landing gear MRO's, operators, owners and leasing companies. "We are always looking at investment opportunities which include the acquisition of whole aircraft or individual assets. Landing gears can be provided on sale, exchange, long and short-term leases to support operators and we are regularly reviewing our stock and availability to meet demands and provide cost effective landing gear solutions," says Filce.



Brian Sartain, SVP Repair & Engineering at AAR

In addition to whole gear sets AerFin provides landing gear LRU support through sales, exchanges, leasing and cost per hour services. AerFin also disassembles assets to provide Used Serviceable Material (USM) to reduce cost of landing gear spares parts ensuring that tech records and back to birth is tracked and traced in line with OEM requirements.

A key element is support services for aircraft operators

Typically, a landing gear will require a full overhaul every ten years and can be



Operators can save cash on assets by optimising the number of overhaul lines,

Photo: Marc Josse

overhauled any number of times subject to total number of life cycles, which is set by the OEM, comments Wheeler from AEM. Overhaul workscope for landing gear largely comprises standard overhaul requirements as set out in the CMM, so a large proportion of costs are predictable. "That said, when the unpredictable does occur we can usually offer an array of different part replacement strategies including USM and authorised OEM repair schemes."

Wheeler says engineering services teams work closely with operators and owners when it comes to planning such events which will also include a review of traceability and documentation without which the assets have little to no value.

IAI's Matalon recognises that customer support and service should be at the top of the list, right up there with adherence to safety and working by the book. IAI has a dedicated project manager for each customer and offers full support, including technical, engineering, quality assurance, finance, and even field support if requested – "These are not separate services, nor do we charge by the hour and are all part of the package that we offer."

Over at Dublin Aerospace, they are focused on providing cost-competitive support to operators, especially at a time when several airlines are restarting services quickly; they want support for back-to-birth record review, technical

support and advice, a fast-engineering response, and very pro-active supply chains for components. "We find that our customers recognise the value of the continuity and stability we have been able to provide throughout the crisis. Our partnerships with the OEMs and our wider supply chain are invaluable to airlines in ensuring a smooth restart and rapid build-out of their operations," Daly comments.

Meanwhile Mornand from Revima adds that operators rightly expect their MRO partners to anticipate their needs, to advise them, and to stand by them in challenging or unexpected situations. He mentions several other areas that Revima has developed and continues fostering. "By way of examples, we maintain a full-time on-wing services team that can rapidly be deployed around the globe to assist with specific landing gear repairs, removal and installation. We allocate dedicated support managers to each customer, and we conduct regular meetings including programme review meetings with technical added value. We also offer extensive in-house repair capabilities for landing gear components such as actuators and wiring harnesses," says Mornand.

In addition, the opening of Revima's new Thailand landing gear repair facility in March 2021 is strategically located to be of proximity to operators in Asia.



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Q & A

In the hot seat...

Daniel Tautges
Senior Vice President,
Component Control



Daniel Tautges, Component Control

What attracted you to this industry?

It was really happenstance for me. I have 20 years' experience in the software business with both an executive management and consulting background and worked within several industry verticals. I was originally brought on in 2017 in a consulting capacity to look at how to continue to expand and grow Component Control (Quantum-ERP). I am enjoying the industry and the opportunity to drive innovation with an industry leading aftermarket aviation ERP solution.

What does a typical day involve in your role?

My role in the company is customer

facing. My typical day includes working with customers, my team, and with internal stakeholders. I am a customer advocate that looks to create opportunities for the company to expand our commercial business.

Are you seeing much recovery in the market for integrated MRO software services?

The market is growing for us but not in the typical way. We are seeing customer expansion both organically and through acquisition. Our growth is typically on new logos, where we add on average, 100 new customers per year. 2020 was below average in new logos but the company still grew at double digit rates.

Briefly, tell us how Quantum-ERP benefits the aviation aftermarket?

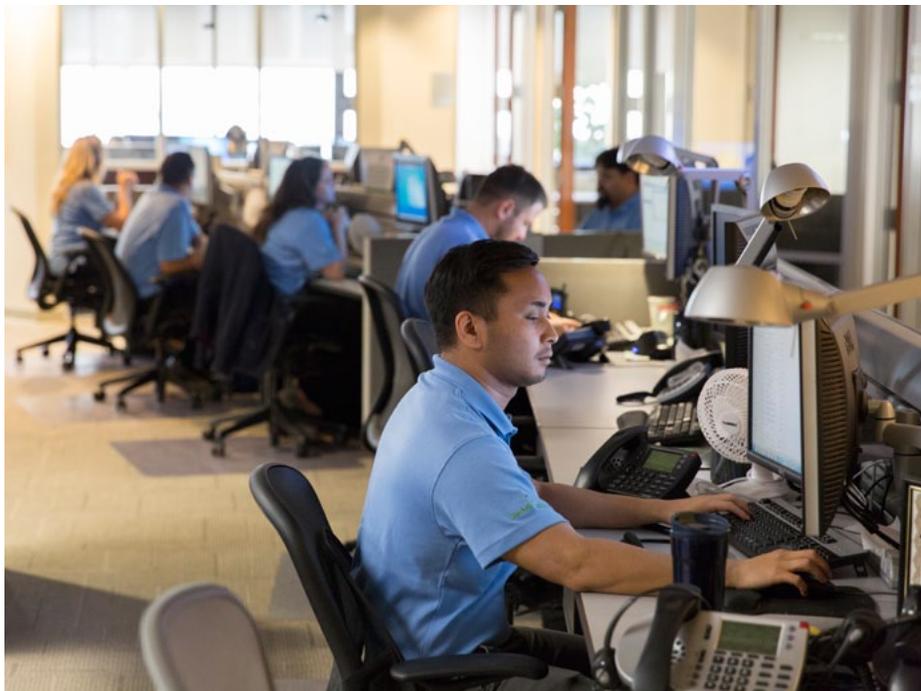
Quantum-ERP is the leader in aftermarket aviation for MRO, distribution, and aircraft services. Some 1,700 customers leverage Quantum to reduce risk through controlled and documented compliance, improve profitability by reduction in labour through automated work processes, and improve profitability through integration to marketplaces, partners, and quoting intelligence.

What is the connection between Quantum Control and Inventory Locator Service (ILS)?

ILS is a subsidiary of CAMP Inc's EIS division. Component Control is an Incorporated company also owned by CAMP and part of the EIS division. Basically, a sister company in the CAMP EIS organisation.

What are your thoughts on the pace of MRO digitisation in the industry?

Digitisation has been a goal for the industry for several years. Quantum-ERP supports digitisation in several ways including document imaging, mobile imaging,



CC is investing in existing tools to add more capabilities and flexible user interfaces.

bar coding, mobile receiving, mobile warehouse, response manager, digital publications, shipping manager, FedEx/UPS integration and mobile technician. Our software is purpose built to support our customers digitisation initiatives.

We see the only barrier in adoption as the comfort level of the user. Moving

completely away from paper in MRO requires retraining and adoption by users who have been reluctant to change their workflow.

How is the digital push progressing at Quantum Control?

Quantum-ERP has supported digitisation

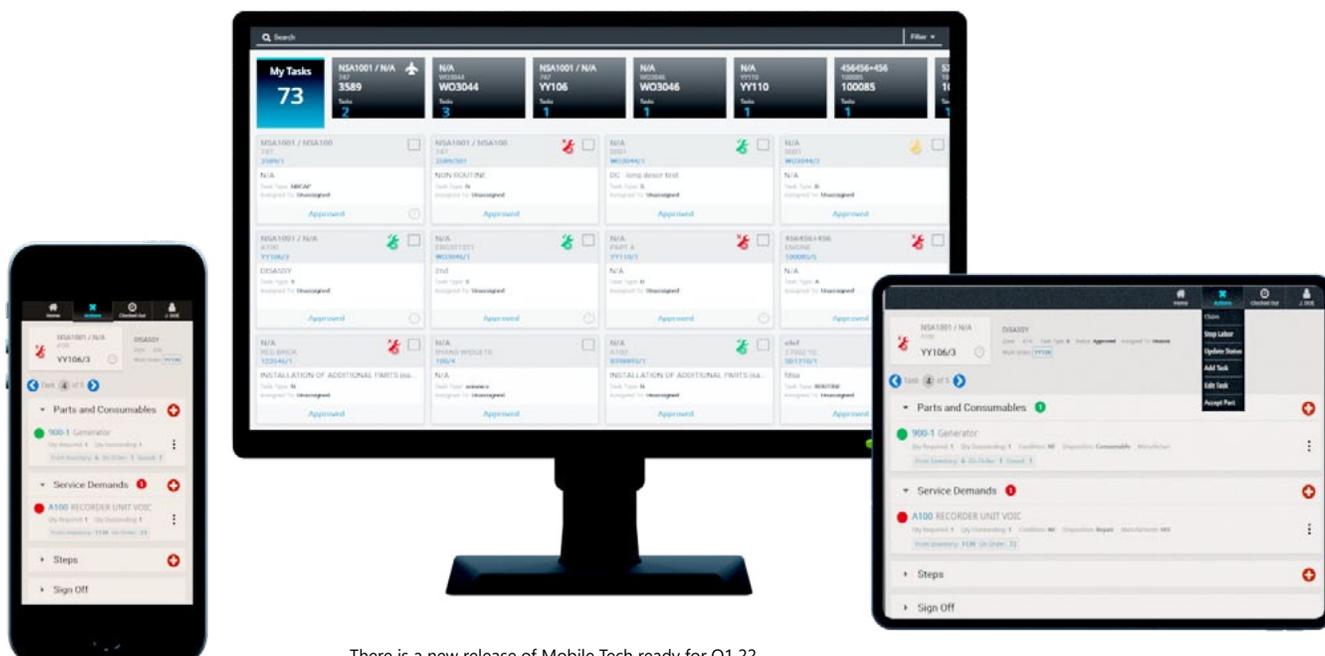
for several years. We are investing in our existing tools to add more capabilities and flexible user interfaces on web, mobile and desktop. Our Mobile Tech product has been on the market for several years and is designed to replace job card and work order paper with a mobile digital/tablet interface. We have a new release of Mobile Tech ready for Q1/22 and a roadmap to add even more functionality to the shop floor or aircraft hangar in 2022.

What are your priorities for 2022?

Our strategic priorities for 2022 are firstly, continue to support our customers as they recover from the commercial downturn, secondly have resources available to assist our customers with implementation expansion and train on best practices. And thirdly, develop new technology that supports modern design through NexGen capabilities.

Growth areas for Component Control are in our Hosted Services Business, Quantum-to Quantum-integration, new portals for customer service and e-commerce, integration with third-party systems and continued joint development initiative with ILS and CAMP EIS.

Learn more about Component Control on the website www.componentcontrol.com.



There is a new release of Mobile Tech ready for Q1 22. .

»»»» → on the move



Christopher T. Calio (l) and Shane G. Eddy (r)

Raytheon Technologies has announced the appointment of **Christopher T. Calio** as Chief Operating Officer and named **Shane G. Eddy** to succeed Calio as President of its Pratt & Whitney business unit, effective March 1, 2022.

As Chief Operating Officer, Calio will oversee the company's four business units as well as its technology and engineering, enterprise services and digital and operations, quality, environmental, health and safety and supply chain functions. Calio will continue to report directly to Chairman and CEO **Greg Hayes**. Eddy, currently SVP and Chief Operations Officer at Pratt & Whitney, replaces Calio as President of Pratt & Whitney. He joined Pratt & Whitney in 2016, with prior experience at GE Aviation, Sikorsky Aircraft Corporation and Bell Textron.



Dr. Johannes Bussmann (l) and Sören Stark (r)

The Chairman of the Executive Board of Lufthansa Technik, **Johannes Bussmann**, will leave the Lufthansa Group at his own request later this year. After more than seven years in his current role and ten years on the Executive Board, he

will hand over leadership of the company to COO **Soeren Stark**. Stark has been a member of the Executive Board of Lufthansa Technik since 2019. He previously held a number of other executive functions at Lufthansa Cargo and Lufthansa Technik. Subject to the approval of the Supervisory Board, he will assume his new role on July 1, 2022. Bussmann assumed leadership in 2015 after overseeing human resources on the Executive Board for three years. After leaving Lufthansa Technik, he will become CEO of a major German technology company.



Luis Giacomani

Barfield, a subsidiary of Air France Industries KLM Engineering & Maintenance (AFI KLM E&M) in the Americas, has appointed **Luis Giacomani** as Accountable Manager and Senior Vice President of Operations and Quality for its Miami, Doral, Phoenix and Louisville facilities. He will oversee day-to-day company operations, develop and implement operation processes and monitor company operational performance to meet Barfield customer expectations. Giacomani will

work closely with the Federal Aviation Administration (FAA) to ensure Barfield complies with the agency's regulatory requirements. Giacomani joined Barfield over 11 years ago as Director of Strategic Purchasing and Subcontracting. He previously held the position of Director of Technical Services and Director of Supply Chain at Aeroman. He also held several managerial positions at TACA International and Aeroman over a 19-year span, providing him with extensive airline and MRO experience in engineering, flight operations engineering, procurement, inventory planning and logistics and quality management.



James Stamp

ACC Aviation, the global aviation services group, has appointed **James Stamp** as a Non-Executive Director, effective February 1. Stamp is currently Group Commercial Director of National Express PLC, driving mergers and acquisitions activity, strategy development and new business. He also sits on the Board of National Express Middle East and WeDriveU, its North American employee shuttle operations. Prior to joining National Express in 2017, Stamp was a Partner at KPMG,

where he advised leading transport companies in his roles as UK Head of Transport and Global Head of Aviation. There he was instrumental in helping the practice grow its market share to 40%-plus, working as lead relationship partner for various established legacy and low-cost airlines. His deep sector experience gained at KPMG, in addition to his current role with a leading international public transport operator, active in the UK, Europe, North Africa, Americas and the Middle East – core markets for ACC Aviation's aviation services and consulting business – makes for a natural fit.



Richard Marston

MAAS Aviation, the globally recognised experts in aircraft painting and exterior coatings, has announce changes to its senior team as **Richard Marston** assumes the role of Chief Commercial Officer and **Fran Carew** retires after 35 years' loyal service to the business. Marston joined MAAS Aviation in January 2020 as Director of Customer Service, Sales and Marketing EMEA, having previously held high-level positions with Herberts, DuPont and AkzoNobel Aerospace Coatings.

Transitioning to the global role of CCO, he will be responsible for strategic business growth and further increasing the company's global footprint.



Marc Wittingen

Iberia Maintenance has released that **Marc Wittingen** has been appointed MRO Commercial & Business Development Director from February 1, 2022. Wittingen has more than 20 years of experience in International Sales, Business Development and Strategic Partnering in commercial and defence aviation, specializing in MRO of engines, airframes and aircraft components. Since 2008, he has held several commercial senior management roles across the

industry. He holds an Industrial Engineering & Management (MSc) degree from the University of Twente, in the Netherlands.



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