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P2F conversions accelerate as demand grows

As the aviation industry continues to evolve, the air cargo sector is at the forefront of market recovery. Since the peak of the Covid crisis in May last year, some 200 aircraft have joined the global freighter fleet with newly converted Boeing 737-800s and A321s making up a significant chunk of recent conversions, so clearly, the demand to convert aircraft from passenger to cargo has grown significantly. Boeing forecasts 1,500 freighter conversions will be needed over the next 20 years to meet growing demand.

In this issue we bring to you a special supplement that brings together the latest developments and initiatives in the aircraft freighter conversions sector. Indeed the covid crisis and subsequent growth in demand for express and e-commerce have given the air freight sector a boost, in particular for all-cargo aircraft capacity.

An interesting report recently released by aviation experts at IBA indicates that older aircraft have borne the brunt of the Covid19 pandemic's impact on values. Whilst the aircraft's suitability for passenger to freighter 'P2F' conversion has given slight cause for optimism, IBA expects a significant number of airframes to exit the fleets of key operators such as Cathay Pacific, Emirates and Qatar in the near future.

The big announcement coming out of the 777-300 is of course the start of IAI's structural modification phase in the conversion of the first Boeing 777-300ERSF, in partnership with GECAS, so we have followed that development closely in this edition. And with the release of our first freighter conversion supplement we would like to thank all the participants and a special appreciation to our advertisers for supporting the initiative: **Aeronautical Engineers Inc (AEI), Precision Aircraft Solutions, GA Telesis, Pratt & Whitney, Ascent Aviation Services and IAI.** Please check out the solutions they offer to the freighter market.

Feel free to contact me if you would be interested in participating in future special reports looking in depth at your sector of the market.

Keith Mwanalushi
EDITOR

Recently, e-commerce has triggered strong demand for all-cargo aircraft.

Photo: ATRAN Airlines



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Cover image:
British Airways

Publisher

Peter Jorssen
p.jorssen@avitrader.com

Editor

Keith Mwanalushi
keith@aeropublications.co.uk

VP Sales & Business Development (Advertising)

Tamar Jorssen
tamar.jorssen@avitrader.com
Phone: +1 (778) 213 8543

Graphic Designer

Volker Dannenmann,
volker@dannenmann.com

Sales & Marketing Manager

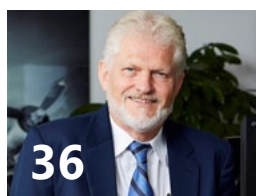
Malte Tamm
malte.tamm@avitrader.com

Managing Editor

Heike Tamm
heike.tamm@avitrader.com

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Suite 305, South Tower
5811 Cooney Road
Richmond, British Columbia
V6X 3M1
Canada
Tel: +1 (424) 644-6996
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Flyadeal takes off with the 1,000th aircraft covered by Airbus' Flight Hour Services

flyadeal, the low-cost Jeddah-based airline owned by Saudi Arabian Airlines, signed a long-term Flight Hour Services (FHS) agreement to support its A320 fleet.

The agreement includes the 1,000th aircraft supported by Airbus Flight Hour Services. The carrier will benefit from integrated material services including spare pool access, on-site-stock at the main base and components engineering and repairs. Through the FHS contract, Airbus will guarantee spare parts availability, contributing to securing aircraft technical performance.

Mikail Houari, President of Airbus Africa & Middle East, said: "Signing this agreement with flyadeal is an important milestone; it is the 1st FHS contract in Saudi Arabia and the biggest Airbus aircraft fleet to be covered by FHS".

"We are proud of our partnership with flyadeal and look forward to continuing working together. This agreement reaffirms our commitment to supporting Saudi Arabia's aviation sector", Houari added.

Airbus has finalised 11 Flight Hour Services contracts with operators worldwide over the last six months. The latest contract agreements demonstrate the continued interest in Airbus's integrated maintenance service, proving more relevant than ever in post-crisis times when airlines need to carefully monitor their costs and contain investments.



flyadeal has signed a long term FHS agreement to support its A320 fleet

Photo: Airbus

Honeywell and Lufthansa Technik sign MRO agreement for components in CFM LEAP series engines



LEAP engine

Photo: LHT

Honeywell and Lufthansa Technik have signed an extensive collaboration agreement for the maintenance of Honeywell components installed on CFM International's LEAP series engines which are used in Airbus A320neo-family, Boeing 737 MAX, and COMAC C919 aircraft. Under this agreement, Lufthansa Technik will develop Maintenance, Repair and Overhaul (MRO) capabilities for the Honeywell components. By this, the company will be able to offer improved and OEM-certified aftermarket services, with increased component reliability and reduced operator life-cycle costs. Lufthansa Technik and Honeywell have enjoyed a long standing, collaborative relationship including Lufthansa Technik as the licensed component repair center and exclusive global asset provider for all Honeywell products on Airbus A350 aircraft. Moreover, Lufthansa Technik brings a new level of predictive health management expertise to airlines, with the inclusion of Honeywell Forge analytics on Lufthansa Technik's AVIATAR platform.

Magnetic MRO and Aerospheres have signed Chemical Consignment Agreement

Magnetic MRO, a Total Technical Care and Asset Management organization, has signed a chemical consignment agreement with Aerospheres U.K., a London-based leader in real-time distribution of chemicals, paints, adhesives, sealants, and composites in support of commercial airline MRO operations worldwide. Aerospsheres U.K. has been a long-term partner of Magnetic MRO, supplying chemicals and adhesives to the company, but with the new chemical consignment agreement, the partnership extends. It now covers supply chemicals and adhesives required for maintenance tasks as Aerospheres own materials will be stored in Tallinn, Magnetic MRO stock, starting from August 2021.

Causeway Aero Group gets repeat order for Pitch PF3000 seats

Causeway Aero Group has received a repeat order from Israir Airlines for a shipset of its Pitch PF3000 light-weight economy seat. Israir, the Israel-based travel group, became launch customer for the PF3000 in early 2018, fitting it to three Airbus A320 aircraft, each with 150 seats in a 3+3 configuration at 30in pitch. The aircraft are operated on scheduled and charter flights to various destinations in Europe and Israel. The new order is for the fifth A320 to join the fleet, which has just completed a lease transition check and cabin reconfiguration at the BCT Aviation MRO facility in Shannon, Republic of Ireland.



Israir Pitch PF300 light-weight economy seats

Photo: Causeway Aero

StandardAero to provide Lufthansa CityLine with GE CF34-8C engine support



StandardAero will support Lufthansa CityLine with a range of CF34-8C services

Photo: Lufthansa

German airline Lufthansa CityLine has selected StandardAero to provide support for the GE Aviation CF34-8C turbofan engines powering its fleet of MHI RJ Aviation (formerly Bombardier) CRJ900 regional jets.

Under the exclusive seven-year agreement, StandardAero will support

Lufthansa CityLine with a range of CF34-8C services from its overhaul facility in Winnipeg, MB, Canada. StandardAero will also be qualifying its European field service team based in Rijen, the Netherlands to support the CF34, thereby assuring Lufthansa CityLine of responsive local airside assistance.

Lufthansa CityLine is a wholly owned subsidiary of Lufthansa, one of the world's leading airline groups, operating feeder flights from hubs at Frankfurt Airport and Munich Airport. StandardAero was first appointed as a GE Aviation Authorized Service Provider (ASP) for the CF34-3 and CF34-8 in 2001, and in 2013 was named by GE as the first independent TRUengine authorized MRO provider for the CF34. In 2020, the company celebrated its milestone 3,000th CF34 engine workscope.

Commenting on the agreement for Lufthansa CityLine, Michael Lariviere, Vice President Technical Fleet Management said: "Reliable operations are at the center of our business, and for that we need reliable partners. StandardAero has proven to be a professional and committed service provider to us in the past. That's why we absolutely look forward to working with the great team of StandardAero in the coming years even closer than before."

International cargo operator upgrades B767 Flight Decks with Thomas Global's TFD-7000 series LCD displays

A major international cargo operator has selected Thomas Global's TFD-7076 LCD displays from the TFD-7000 series to replace the legacy Cathode Ray Tube (CRT) Engine Indicating & Crew Alerting System (EICAS) displays remaining in the operator's Boeing 767 flight decks, which had previously been retrofitted by Innovative Solutions & Support Inc. (IS&S). The TFD-7000 Series is a drop-in replacement for all legacy CRT displays in Boeing 767, 757 and 737 flight decks. It also provides a standalone LCD solution for the CRT-based EICAS displays remaining in B757/767s installed with the IS&S flat-panel retrofit. The TFD-7000 Series captures all the benefits of LCD technology, delivers dramatic operating efficiency and life-cycle cost improvements, and a growth platform for emerging airspace requirements. The drop-in design avoids major flight deck modifications, significantly reducing associated aircraft downtime and crew retraining costs.

Spirit Aeronautics adds Texas location

Spirit Aeronautics, a leading avionics solutions provider for business, special missions, and military aircraft, has announced its expansion in a key location at Meachum International Airport (KFTW). Serving the Dallas/Ft. Worth metroplex, Spirit Aeronautics will operate from Baker Aviation's new 70,000 ft² hangar



Baker Aviation hangar

Photo: Spirit Aeronautics

facilities providing avionics modifications and flight line support for local aircraft operators. Baker Aviation has recently constructed aircraft hangar facilities at KFTW for large business class aircraft to elevate its growing repair station and charter operations. This new expansion created an opportunity for partnership with Spirit Aeronautics to provide leading-edge avionics installation and complex modifications in partnership with Baker's repair station business. "We saw an increasing need to provide high-level avionics services in the Dallas/Ft. Worth area," stated Rick Ochs, CEO of Spirit Aeronautics, "Baker Aviation has designed state-of-the-art facilities with the capability for our team to continue providing the same level of avionics services and support as we've done for more than 20 years at our OH location".

Rolls-Royce reports good start to the year with improving cash flow and profits

Rolls-Royce Group's underlying revenue from continuing operations for the first half year of 2021 was £5.2 billion, down 2%, which reflected a more balanced contribution from the business units compared with the same prior-year period. It included a positive £160 million Civil Aerospace LTSA revenue catch-up compared with a £(866) million negative revenue catch-up in the first half of 2020. Group underlying operating profit from continuing operations of £307 million included significant cost savings from the restructuring program, primarily in Civil Aerospace, and favorable timing and mix of activity in Defense and Power Systems. The prior period comparative underlying loss of £(1.6) billion included £(1.2) billion of one-off charges mostly related to the impact of COVID-19 on Civil Aerospace. In Civil Aerospace, Rolls-Royce's first-half operational performance saw an overall improvement with a recovery in business aviation and domestic large-engine flying activity together with substantial cost benefits from its fundamental restructuring program, which is reducing the size of its cost base by around a third. Large engine LTSA flying hours were 43% of the 2019 level, up from the 34% in H2 2020; 92

large-engine major shop visits were completed, and 100 large engines were delivered. The Group has already seen a return to 2019 levels of flying activity for its business aviation engines and for large engines operated on domestic flying routes. However, international travel is recovering more gradually, hindered by global variation in vaccination rates and ongoing travel restrictions. The Group's liquidity position was strong with £7.5 billion of liquidity including £3.0 billion in cash at the end of the half year after repaying the 2021 €750 million loan notes and the £300 million Covid Corporate Financing Facility (CCFF) loan in the first half. Net debt (before leases) was £(3.1) billion at the period end. The Group signed an extension to the 2022 £1 billion unused loan facility to 2024, consequently it has no debt maturities before 2024 (excluding ITP Aero). Free cash outflow of £(1.2) billion represented a significant improvement on the same prior-year period of £(2.9) billion, which included a £(1.1) billion negative impact from the cessation of invoice factoring. The £0.6 billion underlying improvement reflected good progress on cost reduction, stronger operating performance, and reduced capital expenditure. (£1.00 = US\$1.39 at time of publication.)

Aergo Capital acquires A330s in sale and leaseback transaction with Iberia



Two A330s are subject to long-term leases with Iberia

Photo: Iberia

Aergo Capital Limited has completed the sale and leaseback of two widebody aircraft with Iberia. The transaction includes the sale and leaseback of two Airbus A330-200 aircraft, bearing manufacturers serial numbers 1864 and 1882. Both aircraft are subject to long-term leases with Iberia.

Fred Browne, Chief Executive Officer of Aergo, commented: "We are extremely happy to partner with Iberia and further strengthen our relationship with IAG by adding one more carrier to the portfolio. We found Iberia to be

proactive and fully supportive in this transaction, resulting in a smooth closing process. We are looking forward to further developing our relationship with the Group and Iberia"

Justin Bradburn, Principal Carval Investors. "We are delighted to close this transaction and broaden the growing relationship with Iberia and the IAG group". Mal Murphy, IAG Head of Fleet Investments, commented that IAG was very pleased to add Aergo to the IAG panel of trusted lessors with this transaction.

Oriental Air Bridge signs with TRAX eMRO

Nagasaki-based Oriental Air Bridge has inked a deal with TRAX to implement the web-based eMRO system to manage maintenance activities on its fleet of Bombardier Dash 8 aircraft.

The airline operates charter flights throughout southern Japan in addition to scheduled services between Nagasaki and remote islands and between Fukuoka and several destinations. The airline has been flying since 1961 – originally known as Nagasaki Airways having been renamed as Oriental Air Bridge (ORC) in 2001.

Implementing the eMRO cloud solution with its leading-edge technology will bring many advantages to ORC. Users can have maximum mobility while accessing required documentation and electronic data, viewing assigned maintenance tasks, receiving real-time updates on planned and completed work, tapping into integrated materials modules, and an overall increase in lowered costs, enhanced productivity, and efficiency.

Muirhead Avionics achieves accreditation to the Joint Supply Chain Register

Muirhead Avionics, a business unit of AMETEK MRO, has successfully renewed its JOSCAR accreditation as Muirhead Aerospace Ltd. JOSCAR (the Joint Supply Chain Accreditation Register) is a collaborative tool used by the aerospace, defence, and security industry to act as a single repository for pre-qualification and compliance information. Using JOSCAR can determine if a supplier is fit for business.

"Pre-qualification and full compliance on the Hellios Information JOSCAR supplier accreditation register streamlines work-flow agreements and ensures the sustainability of our long-term customer relationships. Muirhead Avionics' ongoing commitment to our customers in the aerospace, defence, and security industries is underpinned by this reassuring accreditation," said Steve Wells, Managing Director and Divisional Vice President of Muirhead Avionics.

Muirhead Avionics is a major supplier to many fixed and rotary wing operators worldwide with capabilities covering navigation, communication, flight recorders, cockpit voice recorders, instrumentation, and test equipment.



SIMPLICITY **FOR THE** **WIN**

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Ensuring a quality mindset

Icelandair was looking to streamline its operational safety and quality management and ASQS GmbH subsequently won the contract to modernise the airline's safety approach. **Keith Mwanalushi** speaks to its Chief Executive Günther Schindl.

In June, Vienna-based ASQS announced a new contract with Icelandair for integrated, web-based aviation quality and safety management software IQSMS as an auditing, reporting and safety management tool for its international and domestic flight operations.

The introduction of the system is taking place in separate phases and has already started with the implementation process of the IQSMS Quality Management Module. "Basically, the implementation process varies from customer to customer," Günther Schindl, Chief Executive at ASQS explains to *AviTrader MRO*. He says the process depends on what has been contractually agreed or how the customer envisions the process. "Normally, one of our project managers, who is the single point of contact for new customers on the ASQS side, accompanies the clients through the entire implementation process. This

usually starts with an implementation kick-off meeting to outline the project scope, followed by the joint elaboration of the project plan, according to which the configuration of the commissioned IQSMS modules is carried out in various meetings."

Certainly, ASQS offers dedicated IQSMS training for the selected modules to equip operators with the necessary ability to use

the software solution in the best and most efficient way, notes Schindl. "Once the project is completed and our customers have launched the system and gone live, our committed customer support service team takes over and assists IQSMS users almost 24 hours during the weekdays."

By implementing IQSMS, Icelandair joins the steadily growing global ASQS family of



ASQS CEO Günther Schindl
Photo: ASQS

currently more than 220 small to large airlines, business jet and helicopter operators, maintenance organisations, and airports. With Icelandair, the Austrian quality and safety management software provider has now welcomed its second customer in Iceland.

Schindl agrees that the operational and monetary impact of Covid-19 has been tremendous for the aviation industry considering that safety and quality management is essential for aviation operators. He believes that this has not altered during the crisis. On the contrary especially in the Management of Change (MoC) area where risk analyses are needed in times of strong operational changes. "In many companies, the MoC was heavily challenged by downsizing measures and the management of the

associated changes in the company," he highlights.

Now that the market is recovering, the relaunch of flight operations must of course also be accompanied appropriately. "In this respect, our product IQSMS has been in demand during the crisis, especially in the realm of the MoC, and supported our clients well in adapting to what is the new normal. In general, if you have an AOC, quality and safety management remains essential for operations, which is why there was hardly any noticeable changes in the market in this area and,

“In general, if you have an AOC, quality and safety management remains essential for operations, which is why there was hardly any noticeable changes in the market in this area and, luckily, we got through the crisis comparatively well.”

Günther Schindl, ASQS

luckily, we got through the crisis comparatively well."

For ASQS as a company, it was important to accompany and support operators in the best feasible way. "We found very individual solutions and were then able to go through the crisis together with our clients. What the Corona pandemic showed very clearly, however, was that automation, as we offer it with our IQSMS solution, is also becoming increasingly

ensure the flow of information between different software applications and third-party solutions. Especially in the quality management area, the system must be able to fulfil diverse needs on different fronts, for example, it must be simple to use, but comprehensive and powerful in its functionality."

The industry has clearly been moving towards a digital,



The introduction of the system at Icelandair is taking place in separate phases.
Photo: Boeing

important in the safety and quality sector, especially in times of crisis, but also in general," Schindl observes.

Speaking further on innovation and technology this sector too is evolving and Schindl says Big Data analyses are becoming more important as are interfaces (APIs) between software solutions. "For this reason, we have increasingly focused our developments in recent years on offering our customers a wide range of APIs to

connected world, an evolution that is reflected in the advancing digitalisation in the aviation industry. Schindl stresses that the linking of different software solutions and the uncomplicated sharing of data and information is becoming increasingly important in the safety and quality assurance sector, as collected data can be quickly transmitted to the responsible persons and further processed in other applications.

Positive climb as **digital** flight takes off

Airlines are seeking digital solutions to overcome challenges in the industry.
Photo: Lufthansa Technik

Digital Flight, a new hub for digital technology in aerospace launched in July, **Keith Mwanalushi** met with the Founder Craig Skilton to discuss the importance and benefits of the platform to the industry.

Right across the industry, we are seeing growing interest in the uptake for digital solutions in support of aircraft maintenance and aftermarket activities and recent industry news from several industry players shows examples of the growing pursuit for digital solutions.

Recently, Digital Flight officially launched its new online hub designed to promote the digital technology available to the aerospace market. The platform was launched in July 2021 with an initial showcase of over fifty companies covering all aspects of the aerospace industry from aircraft maintenance, component repair, blockchain, flight operations, process automation and ecommerce providers. Some of the solutions featured on the platform include AJW eventory, skyselect, WinAir ROAM and others.

"Now more than ever, businesses are seeking digital solutions and the benefits will help overcome the challenges we face in the industry," Digital Flight Founder Craig Skilton tells this publication exclusively. "We've seen that you can operate quicker, more efficiently and often more accurately with the help of technology but knowing what the options are and more importantly finding a dependable provider has been incredibly difficult – we have been there." Skilton says Digital Flight helps to prepare for that journey ahead, giving the seeker all the available options and providing them with guidance to make the right choice.

Skilton stresses that Digital Flight is serious about change, aiming to influence the adoption rate of digital in the industry, through increased awareness, accessibility, and community. "We are



Craig Skilton, Founder, Digital Flight

enthusiastic about digital advancement in aerospace, particularly in parts trading and MRO but we knew there was something missing. There's not enough awareness of all the technology that is available in the market and finding the right solution is not easy, which means change up until now has been slower and much harder than expected. That is why we have created Digital Flight, to connect those seeking a solution to the providers of them."

“We are enthusiastic about digital advancement in aerospace, particularly in parts trading and MRO but we knew there was something missing.”

Craig Skilton, Digital Flight

Several airlines and MROs are looking to accelerate digital initiatives, clearly and at Digital Flight they are observing more airlines partnering with innovative solutions, which is encouraging for the industry. “Others are forming teams and developing their own solutions in house, so there is most definitely some acceleration. And speaking from experience, we know supply chain is a focus point for many looking to automate the lengthy process associated with the procurement of a part. There has also been an emergence in blockchain

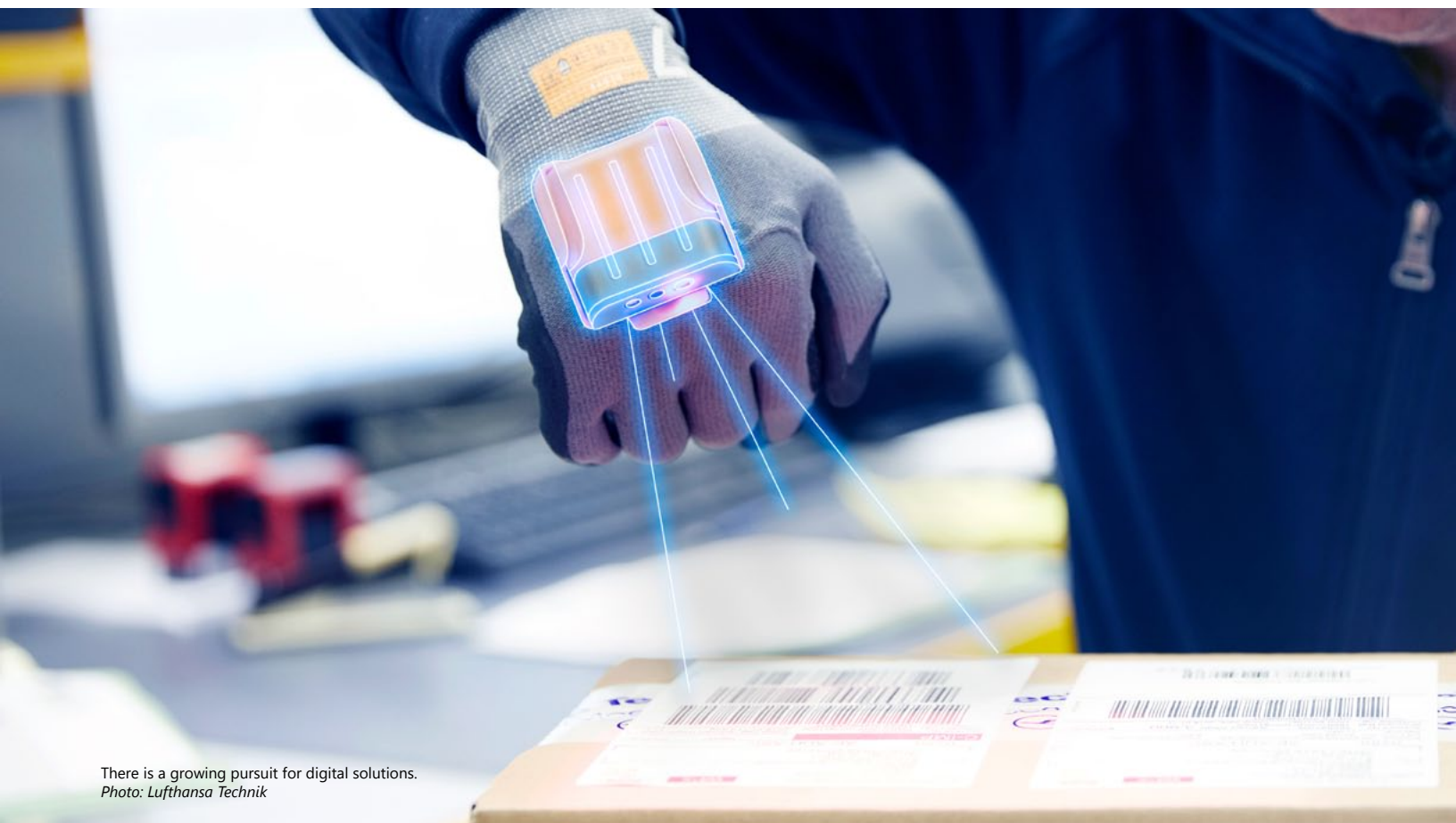
technology where there are great benefits for part traceability and aircraft maintenance records. Overall, we are now questioning any manual task or pain point and exploring if there is a solution via digital technology,” Skilton highlights.

When discussing the biggest challenges with the adoption rate for digital in MRO and parts trading, Skilton reminds that most of the parts trading and MRO is still conducted using email because that has been the standard practice for many years and the industry has become too comfortable with it. “However, we cannot see that still being considered normal in five years’ time, so between then and now we must demonstrate that there is a more efficient way, provide easy access and widespread awareness. Change is difficult, and it

takes time for new habits to form, it won’t be overnight but Digital Flight will be supporting that adoption process.”

Looking at technology and data strategies post the Covid crisis, its worth noting that the aviation sector has taken a large hit through the pandemic, with flying hours significantly reduced. The entire aftermarket supply chain has faced the same reductions in work inflow. Interesting, while in conversation with an industry executive recently, they noted that more aviation businesses are partnering or creating a separate digital innovation hub, a solution-driven incubator with the goal of scaling and monetising technology smartly for productivity, development, and sustainable growth.

In the meantime, back at Digital Flight, they seem all geared up for the journey ahead to promote and generate industry awareness about the wide range of technologies from one easily accessible location.



There is a growing pursuit for digital solutions.
Photo: Lufthansa Technik

Composite repairs: How are they shaping up?



MROs are investing in repair capabilities for heavily composite aircraft like the A350.
Photo: AFI KLM E&M

The demand for more fuel-efficiency, reduced operational costs and manufacturing have propelled the use of new composite materials and subsequently, improved repair processes as **Keith Mwanalushi** reports.

The aerospace industry has used composites for some time now on various applications especially heavily composite aircraft like the B787. A recent market study suggests revenue from aerospace composites topped U\$32 billion in 2020, prior to the pandemic and expected to reach a valuation of over U\$56 billion by 2031.

At GA Telesis MRO Services they have a fully capable composite repair facility and Ben Macre, Vice President, MRO Services – Composite says repair solutions range from small-scale tailored engineering repairs performed on-wing using heat blankets to large-scale repairs using an autoclave. Beyond physically touching the aircraft or component, GA Telesis supports operators with assistance in repair design and the fabrication of parts for ageing aircraft.



Ben Macre, Vice President,
MRO Services – Composite, GA Telesis

With the pandemic still in circulation, the GA Telesis leadership team quickly took action to minimise the impact of the pandemic to the businesses – “We reduced our costs by looking at every expense, even at the way we were buying coffee. We also worked with OEMs to place sizable orders of repair materials to ensure supply chain integrity and avoid delay issues for our customers. By taking these measures early, we were able to keep our customer's components on time while keeping our team fully employed through the pandemic and maintaining our profitability in 2020,” Macre reports.

Meanwhile, at Vallair they provide composite repair solutions referenced in the OEMs structure repair manuals, and Steve Pike, Aerostructures and MRO Services Sales Manager says



they also work closely with a DOA when creating repair solutions outside the scope of the SRM, thus in some cases, they can conduct repairs where the component would otherwise be



Scott Butler, Chief Commercial Officer,
Ascent Aviation Services

scrapped. "We successfully extend the life of composite components providing cost effective solutions and high-quality repairs," he says. Vallair's capability listing covers a range of composite components and panels including nacelles, thrust reversers, engine inlet cowls, radomes and flight control surfaces for Airbus, Boeing and ATR aircraft.

Pike explains that Vallair also carries a range of serviceable and overhauled components on the shelf at its Chateauroux based composite repair facility and therefore offers alternative loan, leasing and exchange solutions alongside the specialist repair and overhaul capabilities currently on offer.

Speaking on the pandemic Pike indicates that the outbreak has severely impacted the entire aviation industry and those operators that are able to survive are without doubt seeking cost effective repair and overhaul solutions extending the life of their composite components,



Steve Pike, Aerostructures and MRO
Services Sales Manager at Vallair.

more than ever before. "The market is expected to grow through the increase in the use of composite technologies and as operators and leasing companies start to put their aircraft back in the skies. The pandemic has wreaked havoc amongst the industry and resulted in the demise of many operators, but we now see evidence of new start-ups evolving and filling the gaps left by those unable to survive."

Scott Butler the Chief Commercial Officer at Ascent Aviation Services also sees a general slowdown for composite and component repair during the crisis. However, he says this is picking up in 2021 with several clients in the leasing

“The increased use of composite materials in the newest aircraft designs will necessitate new inspection techniques and, ultimately, new repair techniques.”

Ben Macre, GA Telesis

sector trying to get all the needed repairs done now while the aircraft are on the ground.

Evolving technologies and composite repair processes

Butler reckons the costs are a high barrier to entry, but they have begun by adding next-gen composite aircraft to their OPSPEC at Ascent. “We plan on serving both B787 and A350 at Ascent Marana and Ascent Roswell soon. We definitely acknowledge that composite is the future of aircraft, and we need to position ourselves to serve this growing market.”

Macre has seen changes to both the number of composites and the types of composites used on aircraft over the years, he gives a good example being the evolution from fiberglass toward carbon fibre – “The increased use of composite materials in the newest aircraft designs will necessitate new inspection techniques and, ultimately, new repair techniques,” says Macre.

Obviously, repairing composite components requires specialist knowledge, skills, and capabilities and at Vallair they work closely with OEMs, operators and airworthiness authorities when creating repairs and repair methodology in line with modern materials in use today. Pike states: “Repairability is something that the OEM considers during their initial design



Revenue from aerospace composites topped US\$2 billion in 2020.
Photo: Vallair

phase and one major issue is time and labour costs given manual repairs are time consuming and expensive. Investment in automated repair technologies will be required in the future to reduce costs as well as the risk of human error.”

Investing in new generation aircraft services

Macre reports that GA Telesis continues to make significant investments in all its businesses, specifically with composites, to ensure they remain competitive. “We have most recently added a larger autoclave to accommodate the composite structures installed on the latest generation of aircraft, including the B787 and A350. We have just completed the build-out of our transmissivity test booth as well. We are also working with tooling

equipment manufacturers to evaluate new technology non-destructive testing equipment such as phased array, ultrasonic delamination tools, and 3D laser scanners,” he states.

And over at Ascent Aviation Services, Butler indicates that they are expanding the component services offering as well at all locations. “Our increasing share of leasing customers are continually looking for one-stop-shops and we want to keep as much work on the field as possible, to reduce lead times and transportation costs.”

Certainly, the aerospace industry has universally adopted composites and new repair techniques and the evolution in the manufacturing technology of such composite parts will continue to drive their use in aerospace applications.

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A sweet Spot for conversion

The new A321-200PCF is now in full operation with SmartLynx.
Photo: SmartLynx

The Covid crisis and the boom in e-commerce have triggered strong demand for all-cargo aircraft capacity. **Keith Mwanalushi** speaks to the key players in the market about the driving forces behind recent conversions.

Since the peak of the Covid crisis in May last year, more than 200 aircraft have joined the global freighter fleet with newly converted Boeing 737-800s and A321s making up a significant chunk of recent passenger-to-freighter (P2F) conversions. Certainly, the demand to convert aircraft from passenger to cargo use has grown significantly putting the air cargo sector at the forefront of market recovery.

GA Telesis has been ramping up its cargo related business over the last several months and now has a commitment for six 737-800SF freighters under the Aeronautical Engineers Inc (AEI) conversion STC. "Our first aircraft was delivered to Ethiopian Airlines earlier this year," informs Marc Cho, Chief Investment Officer and President of L.I.F.T. (Leasing, Investments, Finance & Trading) at GA Telesis. He says a second aircraft has recently been delivered to Compass Cargo Airlines, a wholly owned subsidiary of ACT Airlines, both on long-term lease. Cho indicates that the other

conversion slots run through Q1 2022, and they are in active discussions with prospective operators for each of those positions. "We are also evaluating other



Marc Cho, Chief Investment Officer and President of L.I.F.T. at GA Telesis

freighter conversion STCs as we develop additional product lines in our freighter strategy," Cho hints.

At AEI they are currently offering five narrowbody conversion products to the global freighter market. These are: B737-800SF, B737-400SF, B737-300SF, MD80SF and the CRJ200 SF. "We currently have at least one of each type presently in conversion with the majority of our backlog comprised of B737-800SF's and B737-400SF's," says Bob Convey, AEI Senior Vice President of Sales and Marketing.

"We have seen a steady reduction in passenger aircraft pricing over the past 12 months which is having an effect on freighter values and lease rates," Convey observes. He adds that in recent months the downward trend of aircraft pricing has begun to level off and AEI are now seeing a pricing plateau take affect which will stabilise freighter pricing.

Conversion specialists IAI have been busy too lately with their P2F conversions for Boeing platforms – currently, it



IAI is making new progress with its BIG TWIN B777-300 conversion programme.
Photo: IAI

provides P2F conversions for B737-300/400/700/800, B767-200/300, and B747-400 with over 250 aircraft having been converted. In July, IAI announced a new partnership for a B737-700/-800



Bob Convey, AEI Senior Vice President of Sales & Marketing

P2F conversion site in Italy, which will serve as the first such facility in Europe and by August IAI begun the structural modification phase in the conversion of the first B777-300ERSF in partnership GECAS.

"The Boeing platforms have proved to be very successful for cargo conversions – just as much as their aircraft performance and maintenance programme from the passenger configuration," says Rafi Matalon, IAI Aviation Group VP Marketing. He also says IAI uses market trends to create the right solutions for operators and adjusts accordingly.

Clearly, transforming ageing passenger aircraft into cost-effective 21st century cargo platforms, and ensuring dependable freighter performance is a complex task. Matalon highlights two specific programmes as examples: The B737-700 has a maximum structure payload of 45,000 lbs and a maximum volume of 4,872 ft³, while the B737-800 has a maximum structure payload



Rafi Matalon, IAI Aviation Group VP Marketing

of 53,000 lbs and a maximum volume of 6,543 ft³. "These conversions are fit for domestic operation for general cargo and e-commerce and furthermore, all the aircraft receive FAA and EASA supplemental type certificates and other civil aviation authorities' validations from around the world."

Observingly, Matalon comments on the B737 Classics that are still operating in Europe saying they will need to be replaced by newer converted B737-700/800 aircraft, which is why IAI's B737



Scott Butler Chief Commercial Officer,
Ascent Aviation Services

platform conversions are fitted to the market requirements – “IAI’s new MRO conversion site in Italy will be a go-to for new European customers, providing the comforts of proximity and excellent service,” he suggests.

Scott Butler, Chief Commercial Officer at Ascent Aviation Services sees that most of the activity currently is related to lease and operator transitions for aircraft coming out of passenger operators and transitioning to the new lessor or cargo operator. Additionally, Ascent is partnering with Sine Draco in conversion of A321 aircraft and we will begin the conversion process in Q4 2021.

Due to the increase in available aircraft for conversion Butler is observing fluctuations in demand for services to the freighter market – “Absolutely. While previously an anomaly, there are many aircraft coming through our lease transition process and are leaving to go to freighter conversion.” And in terms of innovation in the sector he believes the temporary zero-pax, cargo-only solutions have been a very innovative way to utilise a down-cycle in larger long-haul aircraft.

Another platform gaining traction for conversion is the Airbus A321. In June, cargo conversion specialist Vallair delivered a second A321 freighter conversion and this was the first ever

A321F to be operated by a European based carrier. MSN 891 had been prepared for delivery at Vallair’s specialist MRO and painting facility in Montpellier, France immediately following its conversion in the USA.

And remaining in the USA, Precision Aircraft Solutions have two narrowbody conversion products- the A321-200PCF and 757-200PCF. In addition to this, Zach Young, Director of Sales and Marketing tells that they also offer turn-key engineering and manufacturing solutions.

Speaking to AviTrader MRO about freighter values and lease rates in the current environment Young says the values pre-conversion versus post-conversion are inversely related. “Certainly, lower acquisition costs can mean lower on-ramp costs, but as long as freighters are in short supply and high in demand the higher market values of converted freighters will be supported.”



Zach Young, Director of Sales and
Marketing, Precision Aircraft Solutions

Young points out that the bottleneck in the freighter supply chain currently is the availability of conversion slots with various providers. “As long as freighters remain in high demand, the freighter values and lease rates should not decrease. It is a possibility that we have a future surplus of freighters, especially the 737NG, which could eventually cause values and lease rates to soften.”



Daniel Kirk, VP, Global Leasing and Cargo,
Pratt & Whitney

Aftermarket gears up for support

Pratt & Whitney (P&W) recognises the unique aftermarket offerings required to meet the demands of the cargo conversion market and has developed creative and agile solutions to effectively support cargo customers, Daniel Kirk VP, Global Leasing and Cargo explains. “We offer engine swaps for custom built engines, purchases of engines already overhauled to fit cargo operators needs and overhauls for cost effective cargo-specific maintenance.” He says P&W also provides entry into service support, new and used material solutions, line maintenance services, engine health monitoring, and more. “Our solutions are tailored to make the ownership, operation and maintenance of Pratt & Whitney engines cost effective, efficient, and preferred for the cargo market,” Kirk highlights.

Kirk calls attention to several factors contributing to activity around cargo conversions. Firstly, he says P&W powered 767’s and V2500 powered A320 and A321’s are starting to enter the sweet spot for conversion, with the right vintages becoming available. “That sweet spot balances the acquisition costs and the remaining life in the aircraft and enables the value proposition to work

out for conversion. The second element is the increased interest in cargo we are seeing because of Covid, with belly capacity down dedicated freighters have been in high demand." Kirk, like others in the industry sees that while some of the pandemic induced freighter demand is temporary, traffic across the board is recovering and belly capacity will come back and the trend towards e-commerce is ensuring that freighter growth is a long-term trend.

In terms of engine values, P&W have seen values hold up well. Kirk says while they had initially expected higher pandemic-induced retirements, that has not been realised and in fact, in 2020 they saw V2500 retirements below trends. "Airlines have been holding on to aircraft and engines to remain flexible for the recovery, and they are being proven right as recovery is now projected to happen faster than initially anticipated. We see that bearing out particularly in the US, and increasingly elsewhere with encouraging indicators on vaccine rollout and resulting traffic recovery." Kirk adds that the majority of V2500 engines were delivered later in the programme, because of Airbus' A320ceo production ramp up – "so we are looking at a young fleet that still has many years of life left."

The Aircraft Group provides a wide scope of services in support of cargo conversions, from start to finish. James Palacios, Vice President and General

Manager says booming narrowbody freighter demand is a function of cost-effective feedstock becoming more readily available. That is fuelling demand and enquiries to The Aircraft Group for technical support surrounding the entire conversion process. "We are actively engaged with multiple A321 conversions and enquiries to support additional conversions is continuous. A key component of that aftermarket support relates to engine support, the ability to manage engine builds that meet the cost targets through reduced life cycle requirement of freighters i.e., shorter stub life or fewer remaining cycles required."

The Aircraft Group has also seen a resurgence of interest even in the remaining 757 airframes, and interest in other platforms including B777 for new door STC's and conversion activity even with smaller aircraft like ATR conversions.

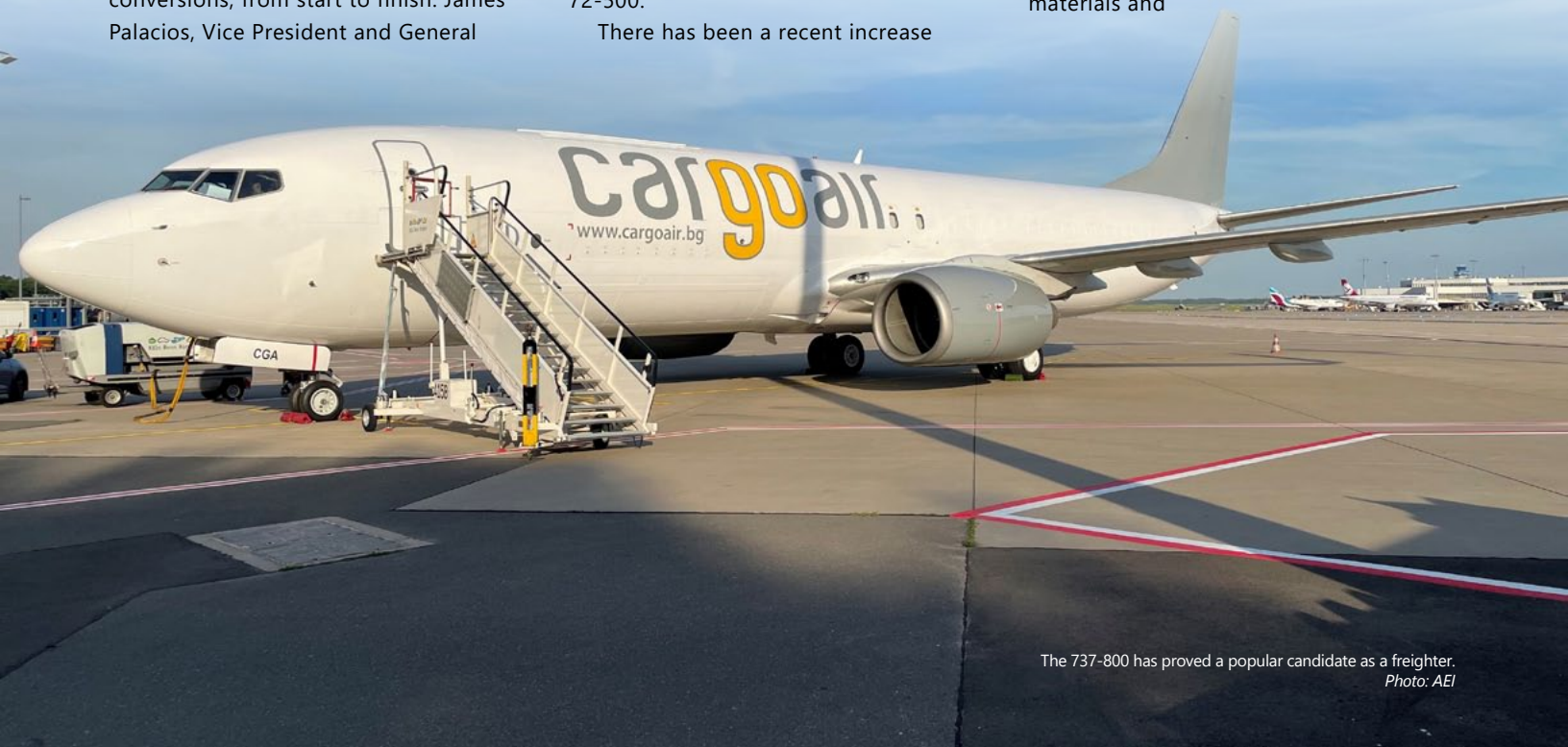
And speaking of ATRs, Skyways Technics offers to convert any passenger ATR aircraft into cargo configuration. This is done with the renowned AKKA STC, which is the fastest way to convert passenger aircraft to cargo, according to Mogens A Nielsen, the Production Director at Skyways. "From start to finish the aircraft can be converted in just five weeks," Nielsen reports. So far, he says the conversions are carried out on following types: ATR 42-300, 72-202 and 72-500.

There has been a recent increase



James Palacios, VP and General Manager at The Aircraft Group

in the level of interest for software to manage freighter conversions, confirms Kirk Baugher, Executive Vice President, Business Development at Pentagon 2000 Software. However, Baugher points out that the available supply of lower cost aircraft by itself does not justify the business case for conversions. "A recent increase in air freight due to the pandemic has created additional demand, but an offsetting increase in costs for materials and



The 737-800 has proved a popular candidate as a freighter.
Photo: AEI



Kirk Baugher, EVP Business Development at
Pentagon 2000 Software

labour required to perform a conversion have dampened some of the enthusiasm," he stresses.

The Pentagon 2000SQL system incorporates the full set of operations software required to perform cargo conversions and includes integrated accounting and financials as an option to tie it all together into a complete end-to-end solution.

Narrowbody cash converters

Industry players have been ramping up P2F capabilities with noticeable opportunities as a wave of narrowbodies enter the freighter market, especially for the B757, B737 and A321 platforms.

Given the established base of operators for the 737 Classic freighter

and AEI's position in that market, GA Telesis is focused on the 737-800 and the AEI conversion STC to launch their expansion into freighter aircraft leasing.

Data given by GA Telesis shows that aside from improved fuel burn lower operating cost and reduced maintenance cost because of longer maintenance intervals, the 737-800 converted freighter also has increased cargo capacity both in the upper hold and the lower hold. As a result, Marc Cho says this aircraft will provide a compelling option for both established cargo operators and new entrants to the market looking to grow into the 'express' or e-commerce cargo space where next day delivery is becoming an essential requirement.

Convey from AEI reckons the 737-800 is the ideal freighter conversion candidate for several reasons, built in large quantities with just under 5,000 units in the zone of conversion meaning the oldest units are just over 20 years old. He says these and other attributes combined will make the 737-800 the most popular freighter in history with an estimated 2,000 units potential being converted.

Following IAI's collaboration with Atitech in Italy for a new conversion facility Rafi Matalon explains that the new partnership will allow B737NG aircraft conversions on multiple lines and will expand the capacity to carry out such conversions, including potential expansions in other types of conversions down the road. "Currently, the B737NG is beginning to phase out from the passenger world – at the same time, the 737MAX is gaining an entrance into

service." Similarly, IAI see around 5000 potential aircraft of this model and high market demand make the 737NG an ideal candidate for conversion – "The establishment of the centre [in Italy] is a testament to IAI's growing impact around the world," Matalon notes.

At Precision Aircraft Solutions they have developed their expertise especially around the A321-200PCF and Zach Young points to several merits for conversion of the type compared to similar aircraft on the market including additional full main deck positions, significant volume and payload advantages and additional containerised volume. Young stresses that the A321-200PCF has the lowest operating empty weight with the highest standard payload among competing A321 programmes.

With 59% of A321's being powered by the V2500, there is no doubt that the V2500 is the preferred engine on the A321. From an A321 freighter perspective, naturally that means there is a larger pool of V2500 powered engines that can be tapped into for conversion and it's easier to build a uniform A321 freighter fleet around the V2500.

Kirk from P&W feels the V2500 fleet is very much in the prime of its life and has a long future ahead, both in passenger and freighter service, as well as in military service on Embraer's C-390 Millennium – "That perhaps is one of the best testimonies to the V2500's staying power, we will remain in production for many years to come, not only ensuring the story of the V2500 continues but also our commitment and support to our customers," Kirk ends.



IAI announced a new partnership for a B737NG P2F conversion site in Italy.
Photo: IAI

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Volga-Dnepr Group is ready to review MC-21 freighter version

During MAKS 2021, International Aviation and Space Salon held in Zhukovsky (Russia), Volga-Dnepr Group delegation headed by Chairman of the Board, Alexey Isaykin, visited MC-21-300 – the new generation Russian passenger plane which is going to be manufactured in several modifications from 150 up to 211 seats.

During the visit, the companies discussed the possibility of the production of a freighter version. Amid the capacity constraints, emerging demand for freighters and increase of cargo volumes worldwide Irkut Corporation believes it is in a favourable position to commence the freighter programme. Volga-Dnepr Group might become the possible launch customer of the MC-21-200 freighter version.

Compass Cargo Airlines takes delivery of second B737-800SF freighter conversion

GA Telesis, LLC ("GAT") announced the delivery of its second B737-800SF (MSN 28826) passenger-to-freighter ("P2F") conversion to Compass Cargo Airlines, Bulgaria. The aircraft was delivered from Aeronautical Engineers, Inc. ("AEI") authorized Conversion Center, Commercial Jet, in Miami. This follows the delivery of the first B737-800SF freighter to Ethiopian Airlines in March 2021.



Compass has received the second B737-800SF

Photo: Compass Cargo

GA Telesis' Leasing, Investment, Financing & Trading ("LIFT") Group has achieved great success since announcing their expansion in the air cargo market, leading LIFT to commit to four additional firm orders for P2F conversions with AEI.

"We are delighted to partner with Compass Cargo Airlines to provide their first B737-800SF. Compass Cargo Airlines is a new, rapidly growing operator in the narrow body freighter space, and we are very pleased to be able to support their B737-800SF needs to facilitate their successful expansion," commented Marc Cho, President of LIFT.

"We are ecstatic with the delivery of our first B737-800SF. The B737-800SF will allow us to offer our customers the most advanced narrow-body freighter technology with high fuel efficiency and increased capacities. GA Telesis is the ideal partner, supporting us to grow our fleet in accordance with the increasing demand for this aircraft," said Pentcho Pentchev, Managing Director, Compass Cargo Airlines, Bulgaria.

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C&L Aviation completes first Saab 340B+ cargo conversion

C&L Aviation Services has completed a cargo conversion on a Saab 340B+ at the company's Maine-based MRO facility. This is the first B+ model in the world that has been converted for cargo operations. The operator, which has taken possession of this aircraft, has signed an agreement with C&L to complete an additional 5 conversions in 2021 and 2022.

For the conversion, C&L utilized an EASA- and FAA-approved conversion kit provided by Sweden-based Täby Air Maintenance (TAM's), C&L's partner in conversions since the two companies signed an agreement in 2018.

"We have been pleased with the way this first B+ model project has come together", said C&L CEO Chris Kilgour. The Saab 340B+ models are aircraft with production serial numbers from 340-360 to 340-459. With low acquisition costs, and a maximum cargo volume of 1,280 cu ft, and a maximum payload of 9,325 lbs., the Saab 340B+ is an ideal aircraft for cargo operation.



C&L plans to convert 5 other B+ models in 2021 and 2022

Photo: C&L Aviation Group

ATSG accelerates A321 strategy for conversion and lease



ATSG sees huge potential in the A321 P2F

Photo: Keith Mwanalushi

Air Transport Services Group, Inc. (ATSG), announced that its Cargo Aircraft Management (CAM) leasing business has committed to purchase its first two Airbus A321-200 passenger aircraft, one this year and a second in the first quarter of 2022.

Freighter conversion of the first aircraft will begin in the fourth quarter of 2021 with its redelivery to a CAM dry lease customer projected to occur in the second quarter of 2022. The second aircraft will begin freighter conversion in the second quarter of 2022 with redelivery projected during the fourth quarter of 2022.

Both aircraft will undergo passenger-to-freighter conversion at ATSG's PEMCO Conversions facilities in Tampa, Fla. Recently, PEMCO Conversions inducted its first A321-200 for conversion. The engineering design for passenger-to-freighter conversion was approved by the FAA in April and is owned by 321 Precision Conversions, a joint venture of ATSG and Precision Aircraft Solutions.

AviAM Leasing adds 737-800BCF to fleet

In July, AviAM Leasing welcomed its first 737-800BCF to the fleet. The P2F conversion project was the first of its kind for the company. Having acquired the aircraft in March 2021, AviAM Leasing used the opportunity to begin strengthening its position in the freighter aircraft market. With a commitment to having ten 737-800 converted freighters by mid-2022, the completed conversion on the company's first Boeing 737-800 aircraft is a major step forward for the aircraft lessor.

The 737-800 Boeing Converted Freighter (BCF) underwent the P2F conversion works at the Taikoo (Shandong) Aircraft Engineering Company Limited (STAECO) facility in Jinan (TNA), China. AviAM Leasing also reports that the second 737-800BCF has already begun undergoing P2F conversion work at GAMECO, Guangzhou Aircraft Maintenance Engineering, and after successful completion of the conversion process will be delivered to its ultimate tenant in the later stages of 2021.

BBAM orders new A321P2F freighter conversions from EFW



BBAM is now the largest aircraft lessor for the A320-A321P2F programme. Photo: EFW

BBAM Limited Partnership (BBAM) and Elbe Flugzeugwerke (EFW), a joint venture of ST Engineering and Airbus, announced an agreement for Airbus A320/A321 Passenger-to-Freighter (P2F) orders including options. The new orders by BBAM bring the total number of its A320/A321P2F to no less than 20, with the conversions to be carried out by EFW through 2025. The agreement comes with the option to add new conversion slots every year starting in 2026.

"With this latest order, BBAM is now the largest aircraft lessor for the A320/A321P2F programme, and one of the top P2F customers of EFW," said Andreas Sperl, Chief Executive Officer of EFW. "The order volume by BBAM translates into a full conversion line with a minimum of five slots per year, with many of the conversions to be carried out at the airframe facility of our parent company, ST Engineering, in the U.S. When combined with top-notch conversion standards, our A321P2F solution offers unique benefits for air freight activities, including best-in-class economics, reduced noise, lower carbon footprint, real-time health monitoring and the highest level in reliability."

"Our commitment to the P2F programme demonstrates our confidence in the ability of EFW and ST Engineering to deliver long-term value enhancement for the A320s and A321s in our fleet," said Steve Zissis, President and Chief Executive Officer of BBAM. "We have committed to the A320/A321P2F programme well into the future – beyond 2026 – because we see it as a greener and highly innovative solution for our airline customers, and an excellent way to drive value for our investors."

In January this year, BBAM announced the delivery of the world's first Airbus A321P2F on lease to Titan Airways.

IAI and GECAS begin first 777-300ERSF conversion

Israel Aerospace Industries (IAI) has begun the structural modification phase in the conversion of the first Boeing 777-300ERSF, in partnership with GE Capital Aviation Services (GECAS). The beginning of the conversion marks the end of the development process and the start of the structural and systems modification phase. The conversion process will take approximately 130 days, at the end of which the passenger aircraft will be turned into a freighter aircraft.

The development process is complicated and highlights IAI engineers' extensive experience in aviation, with their envisioned goal of creating a cargo conversion aircraft that will have the high quality and capabilities providing clients with the optimal solution. The passenger-to-freighter conversion includes changing the structure, which involves installing a new cargo door, replacing and strengthening the aircraft floor, installing reinforcements near the cargo opening, and modifying electrical systems to enable safe and convenient operation. In addition, the process will include receiving certification for the converted aircraft by the Civil Aviation Authority of Israel (CAAI), the Federal Aviation Administration (FAA), among others.

Executive VP of the Aviation Group at IAI, Yossi Melamed said: "Two years ago, we took our first steps on the courageous journey of the cooperation agreement to convert the B777-300ERSF aircraft. Over the course of these past two years, we have invested thousands of hours coupled with engineering and logistical efforts, in order to reach this moment in accordance with the original schedule. Now, we are beginning the structural modification phase of the conversion. The demand for converting the B777 aircraft is high, and I expect that the open spots for conversions will be quickly filled. Since IAI does not have wide competition in the field of passenger to freighter conversions, we expect to receive over 50 aircraft that will undergo conversion. I would like to thank GECAS for believing in IAI's abilities and vision, and to our suppliers for their support and assistance during this process."

Over the past few years, there has been an increased demand for cargo jets due to a rise in e-commerce, which has peaked during the COVID-19 pandemic, specifically for the B767 model. As of today, all the slots for converting the B767 are filled until 2022. IAI is the leading conversion center for cargo jets, and among its customers are market leaders including as Amazon, DHL, UPS and others.



Executive VP of the Aviation Group at IAI, Yossi Melamed

Photo: IAI

AEI to provide Aviation Holdings III with three additional B737-800SF freighter conversions

Aeronautical Engineers, Inc. (AEI) announced a follow-on contract to provide Aviation Holdings III Investments, LLC (Aviation Holdings), with three additional AEI B737-800SF freighter conversions. In March of this year, AEI announced Aviation Holdings would be adding three AEI B737-800SF freighter conversions.

Upon completion of this order, Aviation Holdings will own a total of 11 AEI B737-800SF freighters. The first aircraft of this order will commence modification in May 2022 and will be modified by the authorized AEI Conversion Center, Commercial Jet, in Dothan, Alabama. Commercial Jet will also modify the second aircraft, commencing in August 2022. The final aircraft of this order will also commence modification in August 2022, which will be performed by KF Aerospace, based in Canada.

The AEI converted B737-800SF freighter offers a main deck payload of up to 52,700 lbs. (23,904 kg) and incorporates eleven full height 88" x 125" container positions, plus an additional position for an AEP/AEH. The conversion also incorporates new floor beams aft of the wing box, a large 86" x 137" main cargo door with a single vent door system. AEI's forward-thinking design allows for containers to be loaded into the aircraft a full 16.5" aft of the forward door jamb, ensuring ground operators have sufficient manoeuvring room which minimizes potential door and aircraft strikes. Additionally, the AEI B737-800SF includes a flexible Ancra Cargo Loading System, a rigid 9g barrier, five supernumerary seats as standard, a galley, and full lavatory. When combined with proven reliability, the AEI converted B737-800SF will allow Aviation Holdings to keep their aircraft in the air, generating revenue.

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Leasing, Investments, Finance & Trading (LIFT) is GA Telesis' multi-strategy aviation financial platform specializing in aircraft and engine leasing and trading, asset-based finance, structured credit, investment management, and asset management and remarketing.

GA Telesis Engines Services (GATES), an engine MRO based in Helsinki, Finland, specializes in the overhaul of CFM56-5B, CFM56-7B, and CF6-80C2 engine models. It also provides targeted engine maintenance through its Special Procedures Aeroengine Hospitals (SPAH) that will have two operational locations in 2021 with planned global expansion.

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Since 1958, Aeronautical Engineers, Inc. (AEI) has provided advanced engineering solutions to aircraft owners and operators. Today, AEI is a global leader in passenger-to-freighter conversions for a wide array of narrowbody aircraft, helping customers extend the life of the aircraft and increase the value of their asset.

AEI has developed over 130 Supplemental Type Certificates (STCs) - over 520 aircraft have been modified with AEI STCs - more than any other conversion provider. In addition, we have built a network of authorized AEI Conversion Centers, located around the world, to ensure the highest quality conversion, delivered consistently, in a timely manner, and at a competitive price.

AEI's conversion solutions involve the complete transformation of a passenger aircraft into a freighter, including installation of main cargo door, class E cargo compartment, smoke detection system, rigid 9g barrier, cargo handling system and many other features. Our cargo doors are known to be the most robust and reliable in the industry, and the entire package is designed to maximize the aircraft's operating efficiency and long-term value.

AEI, in partnership with its network of authorized AEI Conversion Centers, offers a comprehensive package of conversion services that includes engineering, manufacturing, installation, maintenance, and support. This coordinated approach provides AEI customers with accelerated project schedules, improved quality, and a single-source solution.

We manufacture our freighter conversion components in our North American facilities, providing AEI with complete control of product quality and the supply chain. AEI continues to enhance individual components and sub-assemblies to reduce weight, while shortening the installation time to accelerate the return of the aircraft to revenue service.

AEI currently offers passenger-to-freighter conversions for the Boeing 737-800, 737-400, 737-300, MD-80 series, and CRJ200 aircraft, and hold various regulatory approvals on its products, including FAA, EASA, and CAAC.





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IAI delivers large turnkey projects acting in a prime contracting role or as a subcontractor on dozens of large programs for aerospace, land, sea, and cyber domains and across multi-domains. Our vast portfolio spans strategic air and missile defense, precision strike, air, land, and undersea unmanned systems (UXS), along with sensors and C5I solutions.

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The Precision Aircraft Solutions B757-200PCF set "The Standard" and dominates the market for B757-200 Freighters. By 1Q 2022, Precision is on track to have redelivered its 150th 757 freighter conversion. In 2017, a joint venture was established between Precision Aircraft Solutions and Air Transport Services Group (ATSG), creating 321 Precision Conversions. The FAA STC was issued in April 2021 and the first aircraft is currently in service with SmartLynx (Latvia) and flying on behalf of DHL. The new A321-200PCF is on track to lead its market sector as the most efficient, reliable, and profitable A321 freighter conversion available today. In 2022, Precision will be converting the A321-200PCF across five conversion lines, and the B757-200PCF across four conversion lines.

Precision Aircraft Solutions is constantly researching and developing new products and innovations for the next generation of aircraft conversions. Backed by years of experience, we understand the technical challenges, the global regulatory requirements, and — most importantly — the customer's desire for maximum utility at affordable, on-ramp pricing.

We are committed to providing the best solutions for all parties; owners, investors, end users, crews and mission managers and continue to lead the industry in mission conversions, extending aircraft economic life and incorporation of new systems technology for more cost-effective operations.

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This is our mission, and a challenge to which we rise every day. It's about more than transporting people and cargo reliably to their destinations. It's about more than providing the care and intelligence to service aircraft engines expertly. It's about innovating and engineering a new and exciting future for aviation – one in which the full potential of human progress can be unleashed.

This is how we at Pratt & Whitney approach our work, and this is why we are inspired to go beyond.

Ascent Aviation Services

Ascent Aviation Services is one of the largest aircraft maintenance operations in the world providing fully integrated aviation maintenance, repair and overhaul (MRO), heavy maintenance, storage, reclamation, paint and interior services to owners, operators and lessors of wide body, narrow body, and regional aircraft.

Ascent Aviation Services currently operates two maintenance facilities that span more than 1,250 acres and houses five hangars in southern Arizona. Ascent Aviation Services is a Class IV 14 CFR Part 145 certified Repair Station and maintains approvals and certifications from regulatory authorities globally, including FAA, EASA, BDA/AMO, TCCA, NCAA, and 2-REG. Experts in comprehensive full life aircraft care, providing solutions for a wide array of commercial aircraft in an ideal Arizona climate.

Additional services include component repair and overhaul, NDT and composite, structures, avionics, modifications, transitions, FBO, fuelling, and on-call maintenance.

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COMPANY SPOTLIGHT



Kjetil Galta, Contract and Engine Leasing
Manager at Aero Norway
© Siv Sivertsen

Aero Norway gears up for **engine** MRO community

Ahead of the Aero Engines Europe event hosted by Aero Norway in Stavanger in December, **Kjetil Galta**, Contract and Engine Leasing Manager tells us what to expect as the industry prepares to connect in the Norwegian oil capital.

For all of us at Aero Norway, the Aero Engines Europe event has been long awaited as initially the plan had been for us to host the 2020 event which was postponed due to COVID. We are proud of our people, region and facility and are very much looking forward to the opportunity being able to showcase them all.

The Sola region has a long association with aviation going back to 1914 when Trygve Gran was the first to fly across the North Sea from Cruden Bay in Scotland, to Revtangen, Norway – 20km from where we are now based. Shortly after, King Haakon VII opened Stavanger Airport and in 1952 Ludvig G. Braathen founded Braathen's SAFE on the site of our current facility. There has been an

engine MRO based here ever since. In 1990 Braathen's established a CFM56-3 repair station, and the CFM56 engine series remains our focus to this day. Aero Norway as we know it now know it is an amalgamation of the many faces of engine MRO that have occupied this facility from 1952 onwards.

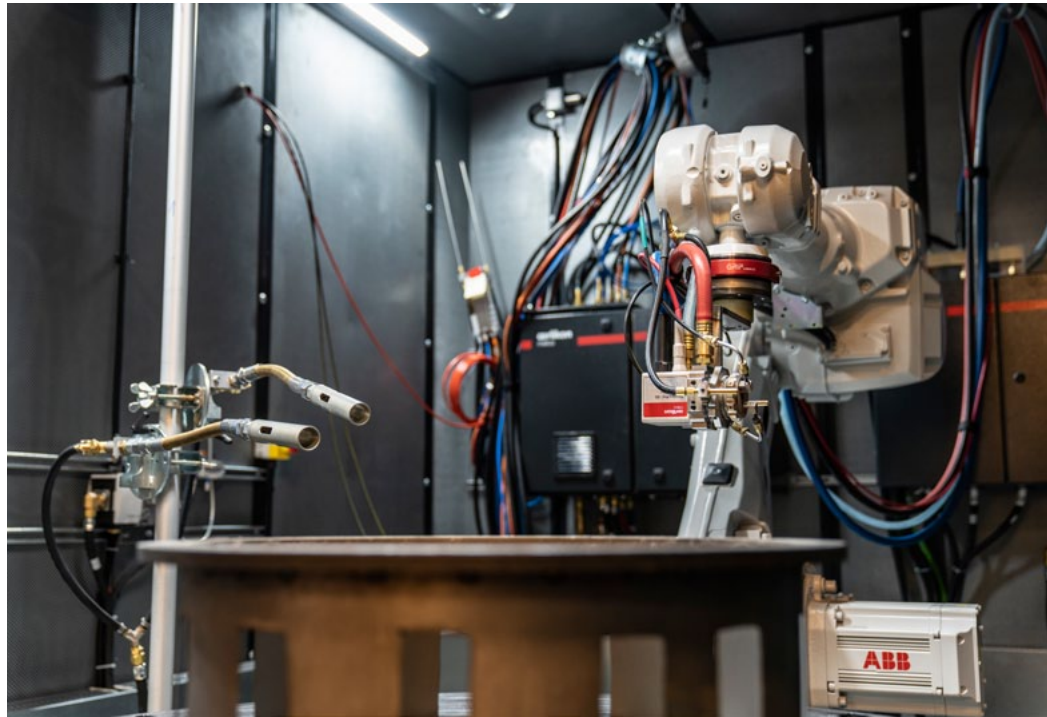
Aero Norway's engine shop is streamlined for maximum workflow efficiency and lean processes. Our knowledgeable engineers and highly skilled technicians pursue quality and precision with a single-minded ambition – to be the best, and the most competitive. We are renowned throughout the industry for the consistent delivery of exceptional EGT

margins. During the course of the last eighteen months, we have taken the opportunity to upgrade the facility and have replaced and upgraded our plasma spraying machine which offers increased efficiency as well as multiple thermal spray processes in one system including plasma spray and HVOF (High Velocity Oxygen Fuel). In addition, we look forward to showcasing all of our inhouse capabilities such as NDT (Non-destructive testing), borescope blending and inspection, machining, welding and CMM measuring. We are also particularly proud of our state-of-the-art high-speed grinder. This involved an investment of \$1.5 million and it allows us to grind the rotor blade tips whilst they are being

spun at high speed. This presents the blades to the grinding wheel as they would be if they were in operation. We pride ourselves on being at the forefront of engine MRO and the purchase of this machine ensures that we can offer the highest degree of accuracy possible with current technologies on blade tip grinding.

Although our tooling enables us to have a greater level of efficiency and therefore reduced turn-around-times, the beating heart behind the success of our facility has, and always will be, our people. We are immensely proud of our teams who are the unsung heroes of our endeavours; without their dedication, loyalty and support, Aero Norway would not be what it is today. The Aero Engines event will allow people who would normally be behind the scenes to be the face of the Company.

During the event we will be hosting a hospitality event on a boat which will take the delegates on a tour of the spectacular Norwegian Fjords. There are more than 1000 fjords in Norway and this excursion will give a glimpse of the true rugged beauty of this country as well as indulging in our famous Norwegian hospitality. For many, this will be the first physical event in over a year, and we are looking forward to welcoming everyone to Stavanger.



Aero Norway replaced and upgraded its plasma spraying machine which offers increased efficiency.
Photo: Aero Norway



Aero Norway's engine shop is streamlined for maximum workflow efficiency.
Photo: Aero Norway

Q & A

INDUSTRY INTERVIEW

In the
hot seat...

Norbert Marx
General Manager,
GAMECO



Norbert Marx, General Manager, GAMECO.
All photos: GAMECO

What attracted you to this industry?

Firstly, I enjoy working with people in a global context and secondly, I'm fascinated by the beauty and the technology of aircraft. This industry is very international and it gave me the opportunity to live and work for many years in Europe, North America and China. The challenges running an MRO company are very similar, no matter where you are. It's always about quality and safety, on time delivery, downtime and cost. I also like that MRO's are usually located at big international cities, so when I step outside the hangar, I can get involved and become part of the local cultures.

What does a typical day involve as GM?

At a company like GAMECO the days are never boring! We are a 50/50 joint venture with currently over 6.300 employees and as the GM I'm also the CEO of the company. For the day to day business, I work closely together with my Chinese counterpart and Deputy GM Mr. Li. He'll take care of the domestic side of our operation, while I cover the business with international customers, authorities, suppliers and OEMs. We invest a lot of time in business development, building new capabilities, growing our capacity and improve efficiency. Of course we are also the interface to our shareholders China Southern Airlines and CKHH.



What impact has the pandemic had on the business?

Even the impact to GAMECO is very serious, it is probably not as hard as in other regions of the world, mainly because the domestic air travel in China recovered well after several months. We were able to shift our business and acquire more heavy maintenance work from domestic airlines and cargo airlines. Our business is also standing on several strong legs and some of them - e.g., our landing gear shop - was doing better than 2019. But in total due to big reductions in line maintenance and component maintenance, our top line in 2020 was still about 17% below 2019. With strict management of all costs and a reduction in pay, we could manage this situation without laying off employees. We kept our team intact and we also moved forward with our strategic projects. Overall the pandemic made us leaner, more digital and in a way more united as a team.

How significant is freighter conversion work?

It's share of our total sales is still relatively small, but I'm very happy about the freighter conversion work. On one side we are in the process of growing it. To the existing two B737 BCF lines, we are adding another B737 BCF line in January 2022 and two B767 BCF lines in Q1/Q2 2022. So the volume will increase significantly and this will be a nice compensation over the next coming years for a depressed MRO market. This work is more repetitive and scalable – a wonderful continuous improvement opportunity. We are implementing a dedicated organisation following a tested workflow, which will improve efficiency greatly. Another benefit is that the freighter conversions always come with some other work, like a heavy check or bridge-in check, painting or component repairs like thrust reversers etc.

What are the strategic projects you were talking about?

We have several major infrastructure projects in process, which all will be ready and go into operation at the end

The top line in 2020 was still about 17% below 2019.



Domestic air travel in China recovered well after several months.

of this year: "Phase 3" is the name of our new supersize hangar facility with over 1 million sq ft of construction area. It can take in up to six wide body and five narrow body lines simultaneously for maintenance. This will bring the number of total heavy lines to over 30 in Guangzhou alone and it allows us to increase the freighter conversion business so quickly. Beside the airside Phase 3, we are building a new maintenance campus with 6 buildings outside the Baiyun Airport, which will include our new component business centre for classic and new generation aircraft components and a composite repair centre with clean room and autoclave. Other major projects are related to digitalisation and innovation.

What is the pace of recovery for MRO in China and the region?

China and the APAC region will recover faster than the rest of the world. China has still an underlying trend of growing demand for air travel and air cargo. More than 200 airports are planned to be built over the next 15 years and more than 40 are under construction or major extension right now. The expansion plans

of the airlines and the MROs are progressing accordingly. Today's big question marks besides coping with the pandemic are related to negative constraints imposed from international politics and restrictions for control of carbon dioxide emissions.

Which areas do you see the greatest opportunities as markets recover?

When the market recovers, there will be many opportunities, but it will be very important to be flexible and react to the airline's needs quickly. For a transition period we will see aircraft coming out of storage, delayed maintenance, adaptations of cabins, all kinds of lease transactions, cargo modifications, paintings and so on. New players like aggressive contenders of LLC's will enter the market, while other airlines and MROs will struggle to perform, because their workforce was reduced or their financials are strapped. Besides that I believe that business aviation will be strong because a growing number of UHNWI is meeting a smaller supply of first / business class flight options and the military sector will benefit from political uncertainty and government spending. But GAMECO is not active in both of these segments.



For a transition period we will see aircraft coming out of storage.

»»»»→ *on the move*



Donald Wright

of the airline's mainline Boeing and Airbus fleet. Wright is joining the company after recently retiring from United Airlines, where he served as Vice President of Maintenance Operations, responsible for more than 6,500-line maintenance employees at 45 stations as well as third-party aircraft maintenance vendors globally.

Alaska Airlines' board of directors has elected aviation veteran **Donald Wright** Vice President of Maintenance and Engineering, effective August 23, 2021. Wright will assume the role formerly held by **Constance von Muehlen** who was appointed Chief Operating Officer on April 3. In his new role, Wright will lead 1,346 employees, including the technical operations team, and oversee the safety, compliance and operational performance



Adrian Dharsan

Genesis's customers in the region. He joins Genesis from SMBC where he held the position of Senior Vice President of Airline

Genesis, the Dublin-based aircraft leasing company, has announced the appointment of **Adrian Dharsan** to the position of Senior Vice President of the commercial team. The appointment of Dharsan marks the company's first hire in Singapore where it is establishing a regional office. Dharsan brings more than 21 years' experience in aircraft leasing to the team and will be responsible for leading engagement with

Marketing since 2008. In 2021 he was elected to the Board of the International Society of Transport Aircraft Trading (ISTAT).

TrueAero welcomed **Nicolas Silva** to the company's leadership team on August 3, as Senior Vice President of Marketing. As a 25-year veteran of aviation he has excelled both as a lawyer and as a marketing executive. Silva started his career representing the interests of the Export-Import Bank of the United States on the first Chilean export finance for Boeing 767-300s for LAN Chile. Prior to joining TrueAero, he successfully originated valuable deals for both AerCap and BOC Aviation. He has been involved in innovative aircraft lease transactions in Spain, Brazil, Chile, Kazakhstan, and Russia, and has a successful record in managing business relationships in times of crisis.



John McKirdy

role, while at Chromalloy Gas Turbine, McKirdy served as Vice President of Global Aftermarket and General Manager of the San Diego Engine FAA Repair Station. Previously, McKirdy was with Air Canada in a variety of leadership roles, including P&L responsibility for the Engine Maintenance Center and Eastern Operations for Airframe Maintenance.

Kellstrom Aerospace Group, a leader in aviation life-cycle cost management solutions, has appointed **John McKirdy** as Senior Vice President. McKirdy has been involved in broad aviation aftermarket services for over 30 years with a focus on experience in executive management, operational excellence, and strategic sales. His most recent role was Chief Commercial Officer at Wencor Group. Prior to that



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