MRO BUSINESS TODAY



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# Enroute to sustainable propulsion

Aircraft engines or aero engines as they are popularly known are the power component of an aircraft propulsion system. Most engines are either TurboJet, TurboFan, or Turboprop. Nowadays manufacturing engines that are fuel-efficient, making less noise, with less $CO_2$ and NOx emission is the need of the hour. The key is to preserve the environment and boost the engine performance all the while following the regulations.

In short sustainable engines leading to a cleaner, greener aviation is the top agenda of all aircraft engine manufacturers of the world and environmentally sustainable or green engines are the latest in engine technologies. This can be achieved by enhancing the efficiency of combustion engines and simultaneously exploring electric and hybrid propulsion systems.

Let us look at a few latest and most advanced engine technologies currently in use or being tested for future flight.

**The GE 9X**

The GE9X is the largest and most powerful commercial aircraft engine ever built, incorporating advanced technologies that enable more efficient, quieter, and cleaner travel. Designed specifically for the new twin-engine Boeing 777X family, the GE9X is the most fuel-

efficient engine in its class, delivering unmatched reliability and performance.

On receiving the FAA certification in 2020 John Slattery, President, and CEO, GE Aviation said, "It takes the world's best talent in jet propulsion to create a game-changing product like the GE9X engine. There is no substitute that can achieve the combination of size, power, and fuel efficiency of the GE9X. This engine will deliver unsurpassed value and reliability to our airline customers."

And true to his world the GE9X today holds the world record for the highest thrust, at 134,300 pounds. Made of Ceramic Matrix Composites (CMC) to provide greater durability it has reduced fan blade thickness that improves aerodynamic efficiency, while its lower fan radius ratio maximizes airflow and minimizes drag. Leveraging additive manufacturing, GE9X combined more than 300 engine parts into just seven 3D printed components, resulting in less weight. It produces half the NOx of any engine in its class at a level that is less than half of current requirements.

**The GENx**

Known as the fastest-selling widebody engine in GE Aviation history, there are more than 2,700+engines in service and on order. It is the world's first commercial engine with a carbon fiber composite front fan case and fan blades, It is lighter in weight, corrosion-resistant, and offers the customers less line maintenance and improved reliability with less noise. This engine powered the Qantas' Project Sunrise nonstop flight from New York to Sydney in a record-breaking 19 hours and 16 minutes. The historic flight covered 10,200 miles of land and sea and crossed 15 time zones

Key to GEnx engine's performance is its high-pressure compressor, lean-burning combustor, and lightweight durable composite materials. With the highest pressure ratio compressor in commercial service today, the GEnx has the best fuel efficiency in its thrust class, enabling it to power many of the longest routes. These leading-edge technologies and the engine's elegant architecture bring in high operational reliability, excellent utilization rate, and route flexibility for more flights per year and more revenue for airlines.

"We built the GEnx to allow our customers to be entirely flexible on whatever route they want to fly," said Jim Leister, GEnx-1B Executive Program Manager for GE Aviation. "From 30-minute flights to 20-hour flights, our technology is enabling new direct flights for the airlines."

**GE T700**

Combat proven in the world's harshest environments, the T700/CT7 is the engine of choice for the world's most demanding military and civilian applications.

Developed in response to the United States Army's requirement to deliver added power and improved field maintainability, 25,000 T700/CT7 engines have now surpassed 100 million flight hours in nearly four decades of service.

In addition to proving their mettle in the harshest military operating environments imaginable, T700/CT7 engines are the power of choice in 50 countries and 130 customers for transport, medical

evacuation, air rescue, special operations and marine patrol. A product of continuous innovation, the story of the T700 will continue to unfold as it incorporates advanced components and materials for increased power, reliability and fuel savings.

Recently GE began testing on the first T901-GE-900 that will power the U.S. Army's UH-60 Black Hawk, AH-64 Apache, and Future Attack Reconnaissance Aircraft (FARA) aircraft in the future.

**CFM LEAP Engine**

The CFM LEAP Engine is known to deliver world-class reliability and unparalleled performance with a 15% improvement in fuel consumption, compared to today's best CFM56 engines it maintains the same level of dispatch reliability and life-cycle maintenance costs. The LEAP engine is built for 99.98% dispatch reliability – which means more time in the air and less maintenance time. Besides it is 3D woven, i.e its fan blades are manufactured from 3D woven RTM (Resin Transfer Molding) carbon fiber composite, an industry first for CFM. This technology results in fan blades that are not only lightweight but so durable that each individual blade is strong enough to support the weight of a wide-body airplane like the Airbus A350 or Boeing 787. It is the first engine to use additive manufacturing to "grow" complex, fully dense yet lighter engines. Its fuel nozzles are 25% lighter than previous models and five times more durable than parts manufactured conventionally. The LEAP debris rejection system provides the best erosion protection, preventing sand, dirt, and other harmful items from reaching the core. As a result, the highly durable, more efficient LEAP engine stays newer for longer.

**Rolls Royce - UltraFan**

Rolls-Royce is building the world's largest aero-engine, UltraFan which will redefine sustainable air travel for decades to come. The engine is the basis for a potential new family of UltraFan engines able to power both narrowbody and widebody aircraft and deliver a 25% fuel efficiency improvement compared with the first generation of Trent engines.

Chris Cholerton, Rolls-Royce, President – Civil Aerospace, said: "This is an exciting moment for all of us at Rolls-Royce. Our first engine demonstrator, UF001, is now coming together and I'm really looking forward to seeing it built and ready for test. It is arriving at a time when the world is seeking ever more sustainable ways to travel in a post-COVID 19 world, and it makes me and all our team very proud to know we are part of the solution.

UltraFan is part of Rolls-Royce's IntelligentEngine vision – for example, each fan blade has a digital twin which stores real-life test data, allowing engineers to predict in-service performance. When on test at Rolls-Royce's new £90m Testbed 80 facility, data can be taken from more than 10,000 parameters, detecting the tiniest of vibrations at a rate of up to 200,000 samples per second. Data that helps us understand our engines and further improve them.

Key engineering features of the engine include:

- A new, proven, advanced 3 core architecture, combined with our ALECSys lean-burn combustion system, to deliver maximum fuel burn efficiency and low emissions.
- Carbon titanium fan blades and a composite casing that reduce weight by up to 1,500lb per aircraft.
- Advanced ceramic matrix composite (CMC) components that operate more effectively in high-pressure turbine temperatures.
- A geared design that delivers efficient power for the high-thrust, high bypass ratio engines of the future.

Just recently, the power gearbox (PGB) was dispatched from the company's site in Dahlewitz, Germany. The power gearbox has set a world aerospace power record on test, has been shipped to the UK where the first UltraFan engine demonstrator (UF001) is being assembled. The UltraFan will go on test in Derby, UK, this year and its first run will be on 100% Sustainable Aviation Fuel.

**Pearl 700**

The highly efficient Pearl 700 combines the Advance2 engine core, the most efficient core available across the business aviation sector, with a brand-new low-pressure system, resulting in an eight percent increase in take-off thrust at 18,250lb compared to the BR725 engine. The engine offers a five percent higher efficiency while maintaining its class-leading low noise and emissions performance.

It brings together innovative technologies derived from the Rolls-Royce Advance2 technology demonstrator program with experience from the Rolls-Royce BR700, today's leading engine family in business aviation. This includes a highly-efficient blisked fan, a high-pressure compressor with a market-leading pressure ratio of 24:1 and six blisked stages, an ultra-low emissions combustor, and a two-stage shroudless high-pressure turbine, and an enhanced four-stage low-pressure turbine that is one of the most efficient and compact in the industry.

**The TestBed 80**

Testbed 80 is the world's largest and smartest indoor aero-engine testbed. It

is used to collect data from more than 10,000 different parameters on an engine, using an intricate web of sensors that detect even the tiniest vibrations at a rate of up to 200,000 samples per second. And that data helps to understand the engines and improve them.

**Pratt & Whitney – GTF Engine**

Since entering service in early 2016, the GTF engine family has delivered on its promised ability to reduce fuel burn and carbon emissions by up to 20 percent, noise footprint by 75 percent and regulated emissions by 50 percent to the CAEP/6 regulatory standard. The engine's unique geared fan is the right architecture for the future with a long runway for further development. Pratt & Whitney is committed to continuing to invest in evolving propulsion systems to power the next generation of commercial aircraft.

In a milestone achievement by the Pratt and Whitney's GTF engines, the Chinese operators have saved more than 95 million gallons (nearly 360 million liters) of fuel and avoided more than 910,000 metric tonnes of carbon emissions, accumulating over 400,000 flights and over 1.73 million hours of experience in China. These engines power 11 airlines across the region on nearly 200 Airbus A320neo family aircraft, which have carried an estimated 57 million passengers since entry into service nearly five years ago. Furthermore, Chinese operators are benefiting from a mature dispatch reliability rate of 99.97 percent globally.

Pratt & Whitney successfully tested the GTF Advantage engine configuration with 100 percent sustainable fuel. The test took place in the West Palm Beach facility and marks a key step on the road toward 100 percent SAF operation of GTF-powered aircraft. The test is also a key element of an extensive development program to ready the GTF Advantage for entry into service in 2024, by validating the engine's performance on 100 percent SAF in thrust transients, starting, and operability

Graham Webb, chief sustainability officer at Pratt & Whitney said, "We're thrilled to have successfully tested the GTF Advantage engine on unblended SAF. The GTF Advantage represents the greenest, lowest emission engine in the industry, and it is now demonstrating full operational capability for the greenest aviation fuels of today and tomorrow. Operation on 100 percent SAF is a key component of the industry's commitment to net-zero carbon emissions by 2050 and the completion of these tests gets us closer to that goal."

Pratt & Whitney has been actively involved in testing SAFs for almost two decades and helped to establish the technical standards that allow today's engines to operate on SAF blends of up to 50 percent with standard kerosene.

**F135**

The world's most advanced fighter engine where power, innovation, and dependability are at its core. This engine powers all three variants of F-35 Lightning II fighter aircraft.

With more than 40,000 lbs. of thrust, unmatched low-observable signature, world-class thermal management, and the most advanced integrated engine control system ever created, the F135 engine is the heartbeat of the F-35.

Not only is the F135 the most powerful and most advanced fighter engine ever produced, it's also the most dependable – demonstrating a step-change in readiness and reliability over 4th generation fighter engines.

The F135 delivers unrivaled performance to the warfighter, enabling operations in the most advanced threat environments and redefining what's possible for our customers and their missions.

The above are a few engines currently in service that are technologically advanced, fuel-efficient, with low noise emission and low carbon footprint.

Looking at the progress in sustainable aviation technology in use by major engine manufacturers across the world, it can be said that we are on a path to achieving clean, green, and sustainable aviation in near future.

# AFI-KLM to acquire CFM's LEAP 1A engines for their latest Airbus fleet

*CFM International already provides engines to the AFI KLM for its Boeing 737 NG and Airbus A320ceo fleets.*


Air France-KLM has entered into an exclusive negotiation with CFM International for the acquisition of LEAP-1A engines to power its new fleet of Airbus A320neo and A321neo.

This decision follows the Group's order, announced last December, for 100 Airbus A320neo family aircraft – with purchase rights for 60 additional aircraft, to renew the fleets of KLM and Transavia Netherlands, and to renew and expand the fleet of Transavia France.

Benjamin Smith, CEO of Air France-KLM said, "We look forward to working with CFM International in the coming weeks through these exclusive negotiations. We are confident that our two groups will be able to continue a long-term relationship and build a sustainable future together."

Manufactured by CFM International – a 50/50 joint venture between GE Aviation and Safran Aircraft Engines – the LEAP-1A engine is a latest-generation engine, which contributes to the global performance and efficiency of the Airbus A320neo aircraft family.

CFM International already provides engines to the AFI KLM for its Boeing 737 NG (CFM56-7B) and Airbus A320ceo (CFM56-5B) fleets.

# Jet2 plc undergoes fleet renewal with CFM's advanced LEAP 1A engines for Airbus fleet

*The latest LEAP-1A engine will help Jet2 to optimize their operations and provide a more comfortable customer experience.*


Jet2 also plans to increase the use of Sustainable Aviation Fuels (SAF) with the LEAP engine to address their ambitious sustainable goals.

Jet2 plc recently selected CFM International's advanced LEAP-1A engines to power its order for up to 75 Airbus A321 NEO aircraft. The order includes spare engines and a long-term services support agreement. Jet2 plc has been a CFM customer since 2002 and has selected the LEAP engine as part of its fleet renewal strategy.

Philip Meeson, Executive Chairman of Jet2 plc said, "We are pleased to extend our long-standing relationship with CFM, who have been a key partner of our continuous growth since our creation. The LEAP engine has been demonstrating significant improvements in terms of CO2 and noise emissions that will help us optimize our operations and provide a more comfortable customer experience. We are also going to increase the use of Sustainable Aviation Fuels (SAF) with the LEAP engine to address our ambitious sustainable goals."

Gaël Meheust, president and CEO of CFM International said, "We are honored and excited to be part of Jet2's development strategy. Over the past four decades, CFM has developed leading-edge technologies that help our customers make operations both cost-efficient and sustainable. Jet2's trust is a great responsibility for us to provide the high-level CFM standards in terms of reliability and utilization."

CFM's advanced LEAP-1A engine continues to set new industry standards for fuel efficiency and asset utilization, logging more than 15 million engine flight hours in commercial operations. The fleet is providing 15 percent better fuel consumption and lower CO2 emissions, as well as a significant improvement in noise compared to previous generation engine.

# SR Technics expands MRO capabilities by joining Pratt & Whitney GTF MRO network

*With this agreement the SR Technics Zurich facility will serve PW1100G-JM engines for the A320neo with full disassembly, assembly, and test capabilities.*

SR Technics recently joined the Pratt & Whitney GTF MRO network that maintains the GTF engine powering the Airbus A320neo. With this agreement the SR Technics Zurich facility will serve PW1100G-JM engines for the A320neo with full disassembly, assembly, and test capabilities. It will also enable SR Technics to enhance its repair capability and overall competitiveness by securing and expanding its highly skilled workforce in Switzerland by up to 400 new jobs to be created by 2024 to meet the new capacity and related demand.

Jean-Marc Lenz, chief executive officer at SR Technics said, "We are very excited to join the esteemed Pratt & Whitney GTF MRO network. This is a major cornerstone in our company development in line with our SR Technics Strategy to extend our capabilities by providing maintenance, repair, and overhaul services for the GTF engine at our facilities in Zurich. By adding the PW1100G-JM engine we are not only broadening our product portfolio but also expanding our highly skilled workforce and footprint in Switzerland."

In addition, a high double-digit million Swiss francs will be invested in the facilities at the Zurich Airport site, such as special tools and dedicated maintenance equipment including a new test cell to accommodate the new maintenance work.

Marc Meredith, executive director of GTF Engine Aftermarket at Pratt & Whitney said, "The GTF engine and its latest GTF Advantage configuration serve as the most fuel-efficient and sustainable single-aisle aircraft engines in the aviation industry. With increasing engine orders, we continue to grow our MRO presence with capable, quality maintenance providers to ensure our proximity to customers. We are thrilled to welcome SR Technics to this distinguished network of shops."

The GTF MRO network is part of Pratt & Whitney EngineWise solutions, which provide engine operators with a variety of aftermarket services resulting in long-term, sustainable value.

# Rolls Royce to provide MRO support to Adour engine of Hawk jet trainer for UK armed forces

*The 11-year contract will enable Rolls-Royce to provide the maintenance, repair and overhaul to the two variants of the Adour engine in service in the UK.*

The Adour engine is a twin-spool, counter-rotating turbofan engine that delivers thrust in the range of 5,000 to 8,000 lb.

The UK Ministry of Defence has awarded Rolls Royce with a 105 million Euro contract for the support of Adour engine which powers the Hawk jet trainer aircraft along with the aircraft flown by the Royal Air Force Aerobatic Team – the Red Arrows.

The 11-year contract will enable Rolls-Royce to provide the maintenance, repair and overhaul to the two variants of the Adour engine in service in the UK with the work carried out at Rolls-Royce's UK Defence Headquarters in Bristol as well as representatives deployed at RAF Valley to provide on-site advice to operations.

Alex Zino, EVP of Business Development and Future Programmes at Rolls-Royce Defence said, "The agreement announced today will allow us to maximise the availability and supportability of the Adour engine for our customer. We have an established and valuable relationship with the UK Government and armed forces and we are proud to continue to support them into the next decade and beyond."

The Adour Mk951 engine powers the BAE Systems Hawk TMk2 Advanced Jet Trainer, the key platform in the Fast Jet Pilot stream within the UK Military Flying Training System (MFTS) and the Hawk TMk1 aircraft, operating in the Red Arrows which are powered by the Adour Mk151 variant.

Adour is a collaborative engine between Rolls-Royce and Safran. This engine is a twin-spool, counter-rotating turbofan engine that delivers thrust in the range of 5,000 to 8,000 lb.

# Airbus selects Avio Aero's engine 'Catalyst' to power the Eurodrone


The selection of the engine was based on a competitive tender process as well as an extensive technical analysis phase.

*The Catalyst was identified as the best solution based on superior performance, lower developmental risk, better in-service economics, and growth potential.*

Airbus has selected Avio Aero to power the Eurodrone unmanned aerial system with its engine and propeller solution, dubbed Catalyst. The Catalyst is an engine proven in flight, entirely developed and manufactured in Europe. This engine has been conceived as 100% ITAR-free (International Traffic in Arms Regulation), thus enabling independence on export chances and avoiding additional requirements before the export clearance.

Jean-Brice Dumont, Head of Military Aircraft at Airbus Defence and Space said, "This selection is a decisive step forward and will ensure that the Eurodrone programme can proceed on time, on cost and in line with the specifications laid out by our customers. The Catalyst was identified as the best solution based on superior performance, lower developmental risk, better in-service economics, and growth potential. In line with customer requirements, Catalyst will offer a truly European solution and will thus contribute to the overall role of Eurodrone as an enabler of strategic autonomy."

The selection was based on a competitive tender process as well as an extensive technical analysis phase. Key aspects in the selection of Eurodrone suppliers were competitiveness, performance, the ability to meet the demanding delivery schedule and the capacity to meet the in-service demand.

# “State of the art chemical cleaning lines for engine MRO”

Surface Finishing Engineering Ltd was selected to undertake a critical project for the world-leading provider of maintenance repair and overhaul of aviation jet and turboprop engines and components. The client required a semi-automatic chemical clean line due to an expansion program of their current cleaning bay. Chemical tanks were required to accommodate the cleaning of larger engine variant hardware which the current tanks could not do. SFE’s highly-skilled, collaborative team was able to provide the perfect, bespoke solution to encapsulate the customers’ requirements, within the specified time and budget.

A two-phase installation approach was selected for this project; minimal site disruption was paramount. Live MRO operations were continued during deconstruction and installation phases therefore thorough and detailed testing was conducted during an extensive Factory Acceptance Testing stage. The teams at SFE worked in unison to ensure that the plant build and assembly is as comprehensive as possible in the manufacturing shop; the client was then able to see the lines operational before disassembly in modular form and delivered for installation. This approach keept the costs low and onsite disruptions to a minimum.

The highly-skilled and specialized teams at SFE ensured that all activity is planned and coordinated. The client’s statement of requirements was taken as a basis to design the equipment with the highest levels of technical knowledge and best practice. Improvements and suggestions to initial requirements were discussed and agreed upon during early equipment workshops which are a key element for SFE with every client to ensure collaboration and understanding right from the conception stage.

Detailed plans of work wes agreed upon with the design, manufacturing, and project teams; the dedicated Project Manager oversaw every detail with the Site Co-Ordinator. Entire information was regularly given to the client thereby keeping the channels of communication open and clear at all times. Thorough health and safety procedures were regularly conducted as per the latest regulations set by the Health and Safety Executive apart from customer approval.

**The key features of the equipment included:**

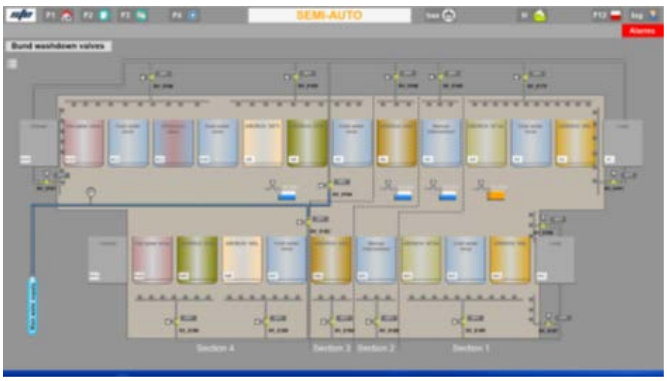
- New structural gantry
- 4 x 2-tonne hois ts on a single monorail – semi-automatic radio-controlled hoists
- Thermal Fluid heating system
- Stainless Steel walkways
- New tanks
- Control System & PLC
- Complete new LEV and fume abatement equipment

The extraction system installed was particularly impressive and a massive improvement from the existing provisions the client had. The system was meticulously calculated in line with regulations and the highest standards. All roller shutter lids on the tanks were interfaced with an industry-leading fume extraction system design. This massively boosted efficiency and was a huge cost saving for the client.

Equipment provided by SFE was expertly tailored to client and process requirements; all aspects were carefully considered and planned. Design was precise, manufacturing was of the highest quality. The chemical cleaning was constructed using high-grade stainless steel 316L throughout. Having heated stations hard piped to the thermal fluid heater, stainless steel heating coils were carefully used and planned, without compromising the aesthetic appeal of the plant. Cladding ensured that from the customer’s view, the plant was aesthetically pleasing whilst covering the lagging, double skinning, and bolted flanges, keep-

ing the equipment safe and efficient for use. All pipework was thoroughly tested and welded to Class A specification. Only the highest quality materials and workmanship were used on an SFE installation.

The high-spec control software and PLC operating a Scada system ensured the plant was easy to operate using the purpose-built HMI. Clear signaling ensured the whole plant could be observed in real-time; the filling and emptying of tanks, pumping, temperature levels and much more could all be controlled by the touch of a button. From a safety perspective, the control system warned and signalled if any aspect of the plant is not operating properly. This is crucial, especially in a facility such as this where a dedicated chemical store was built to be connected directly to the tanks for automatic chemical feed.




The impressive plant SFE has installed for this prestigious client had a massive capacity to process at least ten engines per week. The operators can load and unload from both ends of the plant making the end-user operation clean and efficient. The operator also had manual interaction with the intelligent hoist system and manual intervention systems.

The installation had been recognized by the internal client board and other customers in the industry as exceptional. The capability, the capacity, and the thorough, meticulous design combined with the visual aspect always in consideration make this installation particularly outstanding. It has continued and strengthened the existing relationship with the client and has proven that SFE truly is the world leader in the surface engineering and treatment sectors.

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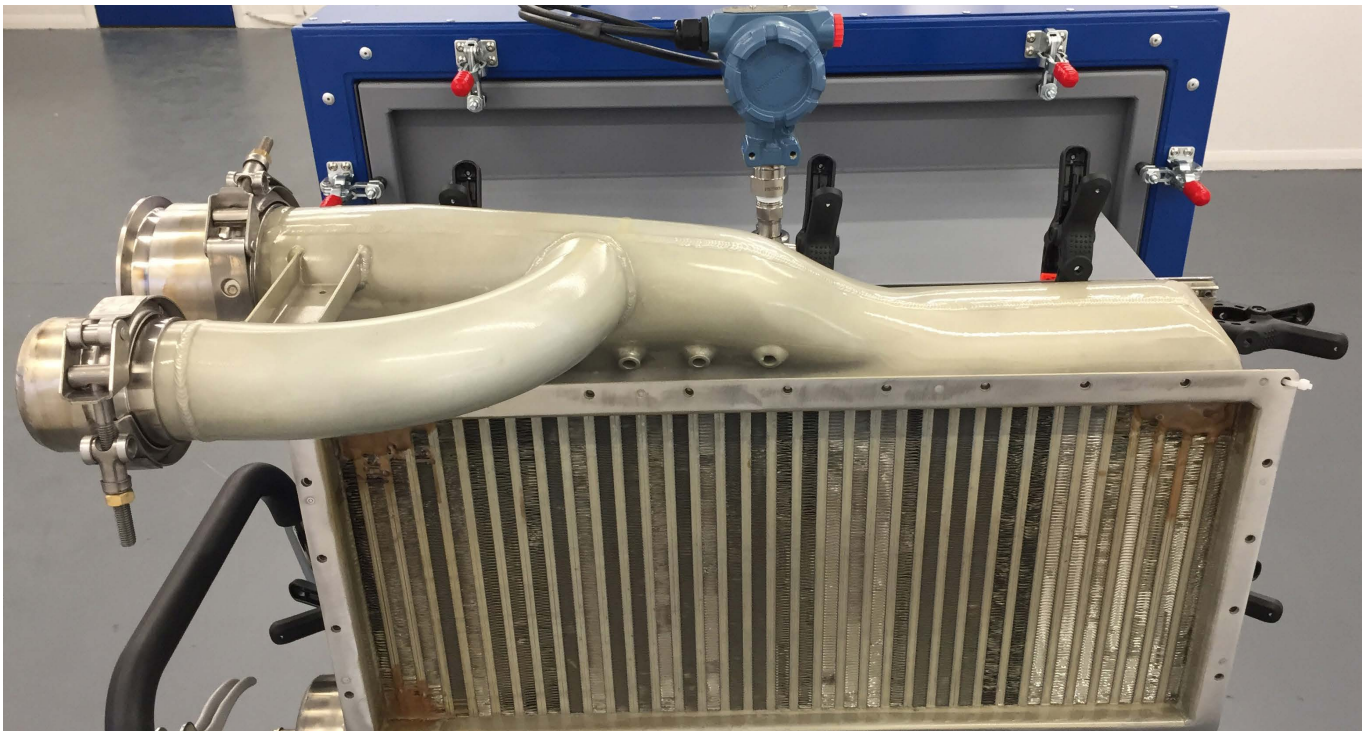
# AEM upgrades Ramsgate facility, adds heat exchanger to its capabilities

*With this upgrade AEM is able to offer clean flush, full in-house testing, minor repairs, and full overhaul.*



AEM has introduced a comprehen-siveheat exchanger flush and test capability to its Ramsgate facility. The introduction of the service, which is currently provided by AEM's sister brand, Drake Air, has necessitated an investment of approximately USD 200,000. This investment has gone to upgrades to the facility in addition to new test equipment. The introduction of the heat exchanger flush and test capability has required alterations to the facility's layout, including an upgrade to its power supply.

AME is a brand of AMETEK MRO which is Europe's leading independent overhaul and repair provider offering specialist services for aircraft windings, electrical power, hydraulic components, landing gear, and safety equipment.

Andy Wheeler, DVP and Managing Director of AEM said, "If a component is not currently on AEM's capability list but it presents a sound business opportunity, the capability development procedure is implemented. He confirms that this is a method utilized by AEM to remove any element of risk from the product as well as ensure that each product criteria is met and identified correctly. This process covers a complete market review comprised of customers, competitors, quality, technical/tooling, export control, and materials."

AEM's sister brand Drake Air provided virtual training for AEM using the latest Help Lightning smart glasses technology.

Wheeler continued, "The addition of the heat exchanger capability means that AEM is able to offer clean flush, full in-house testing, minor repairs, and full overhaul. We also hope to be able to add TIG welding to our capability portfolio in the near future. We will be offering this capability for Liebherr units on A320 family aircraft, as well as Honeywell units on B737. The advantage of establishing this capability by using state-of-the-art technology throughout the design is that it allows AEM to align itself with the most efficient processes focused on quality, turnaround time, and customer satisfaction. This has, of course, necessitated a significant investment. The facility underwent a reconsideration of layout, as well as the addition of specialist equipment such as an airflow test stand, drying oven, cleaning and degreasing machine, pressure test tank, crane, and hoist. The use of virtual reality training has been invaluable, especially during this period of travel disruption due to COVID-19. Being able to upskill our workforce on site has enabled us to deliver this capability on time with minimum disruption. This is definitely a tool we will use in the future."

AEM anticipates that the average turnaround time for testing will be around 10 days, with repair or overhaul expected to be completed within 14 – 28 days. Additionally, while AEM forecasts an average of 500 units will pass through the shop per year, it remains fully committed to sustainability. All water used during this process is fully recycled and reused, with ionized water avoiding contamination of natural impurities, such as limescale during the cleaning process. The Ramsgate facility will recycle 95% of all water used back to the drinking water standard.

MRO BUSINESS TODAY


# Brick by brick – The making of Singapore iHub @CollinsAero

Collins had to tap into unique markets for the differential skills and capitalize on their expertise to advance the mission of the iHub.

As with any airplane that is about to take off on a runway, the sky is the limit said **Raphael Carlo Domingo** while answering a question on his advice to young talent pursuing a career in aviation. Raphael is the **Project Management Lead, Singapore Innovation Hub at Collins Aerospace.** In an exclusive Interview with **Swaati.k,** Raphael discusses various ongoing projects at the Singapore Innovation hub, how sustainability is the key focus of Collins Aerospace, how the pandemic restrictions and limits impacted the work on-site and much more. Read On to find more about the ambitious Singapore iHub and its making.

**Q– What were the challenges in developing the most ambitious project of Collins Aerospace – The Singapore Innovations hub**

A– Collins Aerospace in Singapore has businesses in both the MRO and Manufacturing spaces. When the Singapore Innovation Hub (iHub) was being conceptualized together with the Singapore Economic Development Board (EDB), its primary thrust was to be the Enterprise's Centre of Excellence for Innovation on Production Processes for both spaces; and each group had their own legacy procedures which may be very divergent, so the integration of ideas was quite interesting. Furthermore, aerospace, per se, has always been a very conservative industry by its precise nature (on safety), so automating conventional manual methods which relies heavily on human interface proves to be a challenge when translating that to machine language, and this required, almost always, thinking out of the box.

**Q– Can you tell our readers the key focus areas of the Innovation hub?**

A– The iHub currently has 3 pillars of focus for Industry 4.0 and Smart Factory –Automation and Robotics, Digitalization, and Additive Design and Manufacturing.

**Q– What are some of the latest projects and technological developments underway in the facility which we will be**


**able to see as day-to-day applications in the aviation industry in the coming years?**

**A**– Aside from the earlier projects that were previously released such as the Automated Vision Inspection System, we have also started our development in Augmented Reality / Virtual Reality (AR/VR), which will very much benefit the industry in training future technicians, and also troubleshooting components at a remote setting.

We are also gaining headway in our developments for turnkey supply chain and logistic solutions, to integrate both the Automated Guided Vehicles (AGV) and RFID technologies for parts tracking, Store Light Pathfinder, and Receiving Shipping Visibility Automation (RSVA) to complement the needs of the fast-paced, high-volume business as the aerospace industry starts to pick-up again to pre-pandemic levels.

Lastly, our fully equipped additive manufacturing (AM) facility continues to advance its capabilities and is now qualifying different types of AM technologies and materials that will be used in future aerospace products for both OEM and Aftermarket applications. Collins AM capabilities in Singapore will include metal laser powder bed fusion, non-metallics, and Electron Beam Melting (EBAM) technologies.

**Q– How is the Innovation hub contributing to the talent pool and creating a skilled workforce for the future?**

**A**– As mentioned previously, the Aerospace Industry (and its available talent pool) is very conservative, especially to traditional forms of technology, so we had to tap into unique markets for its differential skills and capitalize on their expertise to advance the mission of the iHub. We have engineers who used be in banking, e-commerce, and other high-tech fields that have joined the team and contribute to our diverse mix. This synergy can be observed in the shared strategy on problem statements such as migrating bank ledgers from paper to digital with sound traceability and security, and applying these to the aerospace order workflow board, for example.

On top of these, we are currently working with Singapore's Institutes of Higher Learning to regularly take in interns and students doing industrial attachments to have them familiarized with the current needs of the aerospace industry. We are hoping that this will encourage the next generation of talent to come back and continue the vision we have for the future of Collins Aerospace.

**Q– Where do you see the future of the global aerospace industry in the coming decade?**

**A**– Sustainability is a hot topic for the global aerospace industry and a key priority for Collins Aerospace. We are uniquely positioned to lead impactful advancements in sustainable solutions and practices based on our breadth and depth of capabilities across the platform lifecycle value chain and global footprint in aerospace. Aside from the current research on hybrid-electric propulsion, some insight into the future that are currently underway would include:

• Alternative power sources – more electric aircraft systems to replace traditional hydraulic and pneumatic systems, thus reducing greenhouse gas emissions. The breadth of Collins' systems and technology across the aircraft also puts us in a unique position to collaborate with customers on hydrogen solutions.

• Connected Ecosystem – the use of real-time data and predictive technologies to optimize flight routes with less fuel consumption and developing artificial intelligence-based flight optimization and aircraft routing tools that leverage airspace information, atmospheric data, aircraft state and performance databases for dynamic route optimization. This will ultimately reduce the carbon footprint of air travel even further.

• Advanced structures – Creating lighter, more streamlined, and more fuel-efficient aerostructures by using technologies that include thin acoustic structures, low-drag liners, and environmentally friendly coatings to reduce drag.

For the iHub, digitalization has contributed a lot to this sustainability, not just by migrating the workflow and traceability from paper to digital, but by quickly identifying where bottlenecks or potential breakdowns are occurring in real-time and strategize the resources accordingly, thus contributing to improved efficiency and eliminating waste. In addition, iHub's Additive Facility is

also doing its impact to sustainability by doing research on new production strategies to minimize material waste and promote its reuse

**Q – This hub is Collins Aerospace 's first additive facility with titanium capability and features prototyping, development, tooling, and low-rate production of additive materials. Can you explain this in detail?**

A - Due to copyright and NDA restrictions, we are not at liberty to disclose these in detail. What we can share is that the Additive Facility of the iHub in Singapore will be one of 3 Centres of Excellence with production capabilities for the technology across the (Collins') global network, which includes metal laser powder bed fusion, non-metallics, and Electron Beam Melting (EBAM) technologies.

**Q – Latest technology in MRO like robotics, AI, and Additive manufacturing is the future, however, this technology is yet to reach certain developing countries, does Collins have a roadmap for the global reach of these technologies?**

A – Collins Aerospace has a very wide global reach, not just in the industrialized countries like Singapore or the US, but also in developing nations such as India, Indonesia, and the Philippines. One of the initiatives worth mentioning would be the one in the Philippines where they just completed their first batch of Technician Introductory Program (TIP) – small steps to help the community that can make a huge difference in the lives we touch, by providing an opportunity that can help people change their path. (https://www.linkedin.com/posts/rhea-villanueva-655b657_redefiningfutures-activity-6891620197418065920-RTVl?utm_source=linkedin_share&utm_medium=member_desktop_web) Coupled with the mandate of the iHub to deploy Industry 4.0 solutions for the manufacturing processes, not just in Singapore, but across all of Collins network, these initiatives will surely make an impact to ensure that the technology development is not just concentrated in a small, selected group, but rather spread out in all of Collins entities across the globe.

**Q – Did the pandemic impact the ongoing projects in the hub? How did you manage to cover up for the lost time?**

A – The pandemic definitely made an impact, especially on the restrictions and limits imposed for being on-site, or the supply chain and logistical challenges that resulted early-on when the borders were closed, and the global movement of goods were severely limited. The schedule of projects had to be continuously re-evaluated to focus on the ones that were more feasible to kick-off, while coming up with unique solutions to circumvent these challenges – for example, one of our teams had setup an array of WiFi cameras to observe the testing process off-site so the development can continue without being physically present at the facility.

**Q – What are your expansion plans going ahead?**

A - We have a continuous commitment to the EDB to complete at least 40 proof of concepts (POCs) and deploy at least 8 of these POCs in Singapore by 2024. Even with the external challenges cited above, the iHub is stlll on-track to meet these, while continuously helping the different Collins' business units around the globe who would want to embark on Industry 4.0 at different scales and scopes.
On top of these, there are firm plans to have the AM pillar to become one of the 3 Centres of Excellence with production capabilities for Additive Manufacturing as previously mentioned.

**Q – What advice would you give to the young talent wanting to pursue their career in aerospace MRO**

A - As with any airplane that is about to take off on a runway, the sky is the limit! Continue to strive onwards and upwards, always keep yourself up to the date with the latest trends and technologies to keep oneself relevant, and ultimately provide meaningful contributions to future of the industry.

# ITP's robust expansion plans in India take shape, opens new office in Hyderabad

*ITP is confident that the activity of the new centre is expected to grow significantly in the coming years together with an evolution towards more complex products.*

ITP Aero, a 100 percent subsidiary of Rolls-Royce has ambitious plans for India. Recently they opened their first office in India, in Hyderabad. Besides ITP has ambitious plans of increasing the capacity and doubling the headcount of its manufacturing facility. Currently employs 160 people in Hyderabad.

ITP Externals MD Jesus Catalina said, "The company is increasing its production capacity to cater to the constantly-growing demands of customers. We also have plans to further recruit skilled workforce. Our Hyderabad plant is dedicated exclusively to the production of end fittings and brackets for subsequent welding onto rigid tubes for aircraft engines. Its activity is expected to grow significantly in the coming years together with an evolution towards more complex products."

The new office at IDA Gandhinagar here was opened by the Telangana Government's Director of Aerospace and Defence Praveen PA. During the inauguration, he said, "Hyderabad has firmly established itself as the hub of the aviation industry. The Telangana government has laid the firm ground for the industry and we are sure companies like ITP Externals would lend the wings for the aviation sector to soar higher in Telangana."

The plant in Hyderabad is dedicated exclusively to the production of end-fittings and brackets for subsequent welding onto rigid tubes for aircraft engines.

This is the third foreign MRO trying to spread its roots on Indian soil over the course of the last few months. Just recently Safran announced the expansion of its facility in Bengaluru while Pratt & Whitney has ambitious plans of opening a world-class data center in India.

# Direct Maintenance follows ambitious expansion plans, reopens line maintenance at Coperhagen

*This line maintenance station will be a long-term station and serve airlines with wide range of services.*

Direct Maintenance recently re-opened its line maintenance station at Kaastrup Airport, Copenhagen as its next strategic step for expansion. This facility will provide line maintenance services for narrow-body aircraft such as ATR42/72, Embraer 170/190, B737NG/MAX and A320CEO and NEO. Soon thereafter, the station will be capable of starting handling widebodies as well, such as B777/B787/A330/A350.

Mandeep Rana, Head of Sales at Direct Maintenance said, "We are glad to come back to Denmark and restart our operations and support customers here. Copenhagen station will be a long-term station and will serve airlines in various segments with a wide range of services – and we believe we are the best choice for customers when selecting Direct Maintenance, a member of Magnetic Group, as a partner."

In the past few months, Direct Maintenance has been following its ambitious expansion plans and has announced the opening of several Line Maintenance stations in Germany, including stations in Frankfurt, Munich and Hannover airports.

Currently, Direct Maintenance covers over 70 aircraft combinations, including A320NEO, A350-900/1000, A380, B737 MAX, B747-8 and B787 in 27 different locations in Europe and Africa.

# FL ARI all set to strengthen roots as an emerging MRO in the Chinese aftermarket

*With Part-145 base maintenance approval for Boeing B737NG from the Civil Aviation Administration of China (CAAC) FL ARI will be able to carry C-check maintenance, modification, and other operations for B737NG.*

FL ARI recently received Part-145 base maintenance approval for Boeing B737NG from the Civil Aviation Administration of China (CAAC). With this new certification, FL ARI is approved to carry out C-check maintenance, modification, and other operations for B737NG family aircraft.

FL ARI is a joint venture between FL Technics, a leading global aircraft maintenance (MRO) service provider, and China Aviation Aftermarket Holdings (CAAM), a subsidiary of China Aircraft Leasing Group (CALC), established in 2018. Earlier last year, FL ARI had received base maintenance approval for Airbus A320 aircraft, and just recently completed the first A320 base maintenance project at its hangar at Harbin Taiping International Airport, China.

Donatas Dockus, CEO of FL ARI, shared his excitement, "For a while now FL ARI has been providing professional line maintenance services to a number of Chinese airlines. Adding base maintenance to our capabilities opens new prospects for our company and our clients. It has been an exciting time for us, as we have recently completed our first A320 base maintenance service and now the team has shown their expertise by receiving Part-145 base maintenance approval for the Boeing B737NG aircraft family. It is a valuable addition to our capabilities that will allow FL ARI to continue on the successful development path. I have no doubts that our clients will be delighted with the new services we can now offer and that base maintenance will become an important part of our business."

Mike Poon, CEO of CALC said, "The aftermarket business is the key business of the CALC group. After years of operation, all businesses of our Harbin base are advancing steadily. The new approval granted by CAAC is not only a great improvement of FL ARI's maintenance capabilities but also an important milestone in expanding our aircraft maintenance business."

FL ARI is the first independent MRO service provider in Northeast China to provide MRO services for domestic and Asian narrow-body aircraft. They focus on aircraft line and base maintenance, aircraft disassembly and recycling, and engineering service consulting. Based in Harbin Taiping International Airport, FL ARI serves the China market and the rest of Asia and Europe from its 15,000 m2 hangar.

With the newly added Part-145 base maintenance approval for Boeing 737, FL ARI is on the way to strengthening its position as an undeniably important Chinese MRO market player.

# C&L Aviation to seek STC approval for Saab 34B+ upgrade

*With the C&L team performing interior modifications to both the ERJ and Saab aircraft, it makes perfect sense that they would also make modifications and upgrades to the exterior.*

C&L Aviation Group, has developed and will be seeking STC approval for its upgrade of the Saab 340B+ with the replacement of its GE CT7-9B turboprop engines with the RR AE3007A1E Turbine Jet Engines. This upgrade will allow the Saab 340B + to change from a maximum cruising speed of 325 MPH to 518 MPH getting the 34 passengers to their destinations quicker than ever before imagined.

Chris Kilgour, CEO of C&L Aviation Group said, "We have been heavily invested in the long-term sustainability and success of the Saab 340 for many years, and upgrading the engines is just the next logical step. With our team performing interior modifications to both the ERJ and Saab aircraft, it makes perfect sense that we would also make modifications and upgrades to the exterior. We have had to make significant upgrades to the Saab airframe to handle the additional stresses generated by the significant increase in speed, but we feel we now have a 'best in class' aircraft."

C&L has been modifying and upgrading the interiors and systems on ERJs for several years and specializes in converting these aircraft into business-class and luxury jets. To add to that C&L performs cargo conversions for the Saab 340 Aircraft and a host of other modifications. C&L also provides on-site engineering, avionics support, aircraft exterior painting, and heavy maintenance services. The company also carries one of the world's largest inventories of ERJ and Saab parts in its warehouse, which helps to reduce maintenance times associated with these types of projects.

# Turkish Cargo ULS successfully completed A330 D check with EGYPTAIR MAINTENANCE & ENGINEERING

*ULS' technical representative appreciated the cooperation and praised the technical capabilities of EGYPTAIR MAINTENANCE & ENGINEERING staff.*

Turkish Cargo Airlines, ULS had sent its Airbus A330 to EgyptAir Maintenance and Engineering for D Check at their Cairo base for the first time. The Egyptian MRO technical team has already finalized the check and the aircraft recently left for Istanbul.

Engineer Yehia Zakaria, Chairman & CEO of EGYPTAIR MAINTENANCE & ENGINEERING said, "This is the first technical cooperation with the Turkish carrier and we are glad for their trust in our capabilities, we are looking forward to expanding cooperation in the future. The company is working on maintaining the customer base and gaining the trust of more customers at the regional and international levels."

ULS' technical representative appreciated the cooperation of the staff at EGYPTAIR MAINTENANCE & ENGINEERING and praised the technical capabilities, expressing his wishes for further cooperation soon.

ULS is a Turkish cargo airline headquartered in Istanbul with its main base in Istanbul Airport and operates international freight services.

# VD Gulf adds FAA certification of Boeing 747-8 maintenance to its list

*On March 24, 2022, the FAA granted VD Gulf additional approval on Boeing 747-8 aircraft for complete maintenance.*

In a milestone achievement, VD Gulf recently received the FAA certification to provide full scope base maintenance services on Boeing 747-8 aircraft.

On March 24, 2022, the FAA granted VD Gulf additional approval on Boeing 747-8 aircraft for complete maintenance; along with CFM56, CF6, GEnx, PW4000, and IAE V2500 series engine limited maintenance works.

Ayrat Gilmutdinov, VD Gulf's Director Commercial said, "VD Gulf has extensive experience in delivering high-quality, complex maintenance on the Boeing 747-8 aircraft, and we are delighted to now be able to offer these services to the operators and lessors of N-registered aircraft."

VD Gulf's maintenance facility is also certified by the EASA, Saudi GACA, UK CAA, and more than 15 other civil aviation authorities.

# De Havilland Aircraft launches DHC-515 Firefighter with upgrades and improved effectiveness

*Important upgrades are being made that will increase the functionality and effectiveness of this legendarily rugged firefighting aircraft.*

De Havilland Aircraft of Canada Limited recently launched the De Havilland DHC-515 Firefighter earlier known as the CL-515 program. This new program will build on the history of the iconic Canadair CL-215 and CL-415 aircraft which have been a critical part of European and North American aerial firefighting fleets for over 50 years. Important upgrades are being made that will increase the functionality and effectiveness of this legendarily rugged firefighting aircraft.

Brian Chafe, Chief Executive Officer of De Havilland Canada said, "After an extensive business and technical review, we are pleased to announce that we have launched the De Havilland DHC-515 Firefighter program, which will involve negotiating contracts with our European customers and ramping up for production."

The final assembly of the aircraft will take place in Calgary, Alberta where work on the CL-215 and CL- 415 aircraft currently takes place. It is anticipated that more than 500 people will need to be recruited over the coming years to successfully deliver this program.

Chafe further added, "To bring the DHC-515 into production is important for not only our company but countries around the world who rely on our aircraft to protect their people and forests. We understand the important role the previous aircraft have played in protecting people and property and as our climate continues to change and summers increase in both temperature and length, the DHC-515 will be an important tool for countries around the globe to use in putting out fires."

De Havilland Canada expects the first deliveries of the DHC-515 by the middle of the decade, with deliveries of aircraft 23 and beyond to begin at the end of the decade. The new DHC-515 Firefighter matches the other aircraft in the De Havilland fleet in terms of lifespan, ruggedness, and Canadian aerospace engineering quality.

# Levaero commits to environmental sustainability, announces carbon offset program

*Levaero has purchased carbon offsets for each hour flown for Pilatus PC-12 NGX and PC-24 Super Versatile Jet aircraft demonstrations in 2021.*

Levaero Aviation has become the first aviation OEM-dealer in Canada to announce a carbon offset program and promote a greener future.

Stan Kuliavas, Vice President of Sales & Business Development at Levaero Aviation said, "We are constantly evaluating ways in which to become a better corporate citizen, and this further commitment to environmental sustainability is one we are excited to undertake. Our goals will be made possible through our partnership with Less Emission Inc., a Canadian green energy provider. Levaero is committed to environmental sustainability, and we hope to play a part in motivating others in our industry to make similar priorities."

By design, Pilatus aircraft are already some of the most modern and fuel-efficient aircraft in service. Additionally, Levaero has purchased carbon offsets for each hour flown for Pilatus PC-12 NGX and PC-24 Super Versatile Jet aircraft demonstrations in 2021, and will continue to do so moving forward. These offsets have a direct Canadian impact, supporting a gas capture project near Windsor, Ontario.

The project enables the reduction of greenhouse gas emissions by collecting methane gas from decomposing organic waste in landfills, and destroying it through combustion turbines at the site, reducing harmful emissions.

# Magnetic Engineering expands CAMO service portfolio with approval from Estonian Transport Administration

*Magnetic Engineering can now serve various aircraft types, including B737 MAX B747-400, Saab 340, Saab 2000, and Embraer 190.*

Magnetic MRO recently received the increased capability of their continuing airworthiness management organization certification from the Estonian Transport Administration. This comes in the wake of their ongoing growth and expansion plan.

With the extended CAMO service portfolio, Magnetic Engineering can now serve various aircraft types, including B737 MAX B747-400, Saab 340, Saab 2000, and Embraer 190. They can now provide direct and subcontracted CAMO support including ARC reviews.

Tõnno Toompuu, Head of Magnetic Engineering, member of Magnetic Group said, "The recent approval allows us to serve the most aircraft types as ever – and since our team has been receiving several customers' requests for CAMO services, we are glad to be able to accommodate the customer's needs and provide top-notch quality CAMO services for most of the common aircraft types. The joint effort by CAMO team members, including expertise growth and additional valuable training, has made it possible. Proud of every team member and Quality department being involved in the process."

Magnetic Group operates in the aviation business and is the master brand under which a host of sub-brands all live – each one sharing the same values but offering unique and complementary products and services.

# From in-house base maintenance of Estonia Air to hi-tech independent MRO -Magnetic's journey to the top

*The first C-check was conducted in March 2002, at the Tallinn International Airport.*

Magnetic MRO recently celebrated the 20th Anniversary of its base maintenance hangar at Tallinn, Estonia. The first C-check was conducted in March 2002, at the Tallinn International Airport and since then the Magnetic MRO team never looked back. Two decades back, Magnetic MRO started as the in-house Maintenance department of Estonia Air and Maersk Air. Today they are an independent and innovative business with 20 195 sqm of modern MRO and painting facilities in Tallinn, and almost 60 customers from all across Europe, including SAS, Austrian Airlines, and Volotea.

Sergei Shkolnik, the Head of Magnetic Group's Base Maintenance said, "The main achievements are not about quantity, but quality. I'm extremely proud of the team that evolved together with the market (and sometimes even ahead of it). It always was and still is vital for us to constantly develop both our professional skills and mindset – to not hold on to the past but reach for the future. Today, we have a team of 200+ solid, experienced professionals who not just complete set tasks, but solve problems."


The evolution into an independent heavy maintenance provider required the transformation not only in the team's approach to the job but also in technological processes.

"We started performing base maintenance tasks with aircraft manuals in hard copies and microfilms. Yes, imagine that – microfilms. There hardly were more than four or five computers and maybe, two printers for the whole unit. But today, we are using cloud solutions, smartphones, tablets, and other hardware and software – to some extent, today's aircraft engineers and technicians are also IT specialists. Thanks to new technologies, including those in the Non-Destructive Testing area, we can perform things that we couldn't even dream of 20 years ago," shared Sergei Shkolnik.

At the end of 2021, Magnetic Group's Base Maintenance hit its 700th C-Check. In the upcoming five years, the team plans to further expand its operations by 4 new bays and create at least 100 new jobs within Base Maintenance as well as additional workplaces for professionals in Logistics, Facilities, and Tooling.

# Bamboo Airways opts REVIMA for A320 & A321 landing gear MRO

*The MRO work will be provided by Revima's new state-of-the-art facility located in Chonburi, Thailand.*

Revima, a leading independent APU and landing gear MRO specialist, has been selected by Bamboo Airways for its A320 & A320 landing gear overhauls to be performed in its new Thailand facility. Revima will provide leased shipsets to support Bamboo Airways, under this agreement.

Olivier Legrand, President & CEO of Revima Group said "We are delighted to have reached agreement with Bamboo Airways, a highly successful and ambitious young Airline, and our first customer in Vietnam. For the past two years we have worked hard to get our new Facility in Thailand in operation with the same level of expertise and quality than our legacy site in France. We look forward to supporting Bamboo Airways and thank its leadership for their confidence".

"With Revima Asia Pacific's strong expertise for the maintenance of landing gears, we have no doubt that this collaboration will further reinforce our aircraft operation, thereby contributing to Bamboo Airways' network expansion. This is a testament that our regional market can grow stronger to ensure profitable operations. We are sincerely pleased to collaborate with Revima and look forward to the future development of our partnership" said Dang Tat Thang, CEO of Bamboo Airways.

The brand new 11,000 square meter facility has full in-house repair capabilities, including very large plating and machining installations, it is strategically located in Southeast Asia, and is currently staffed by over 90 experienced technicians and engineers, benefitting from Revima's over 60 years Landing gear MRO experience.

The Thailand operations also houses a world-class dedicated customer service center.

# JAL Engineering selects IFS solution for aircraft fleet maintenance

*JAL Engineering Co., Ltd. to deploy IFS aviation maintenance solution in the cloud to modernize long range maintenance planning for its nearly 200 aircraft fleet.*

IFS, the global cloud enterprise software company, recently announced the Japan Airlines maintenance and engineering subsidiary, JAL Engineering Co., Ltd., has selected IFS to support fleet-wide long range maintenance planning. The IFS solution, to be deployed in the cloud, will provide long range planners with the unified information insights they need to quickly develop and share regulatory-compliant fleet maintenance plans that best support aircraft availability, task yield, and hangar utilization for nearly 200 aircraft.

The IFS fleet planning solution replaces a JAL Engineering Co., Ltd. legacy fleet maintenance planning process that required extensive manual intervention. The IFS solution will allow the engineering team to manage more aircraft with reduced human intervention due to an efficient user experience, reduction in manual processes, real-time alerts, and automated processes.

Deployed in the cloud, IFS's planning and maintenance solution will improve visibility across the organization by providing real time planning updates. JAL Engineering Co., Ltd. staff will now be able to effectively examine the impact of key strategic decisions in the organization such as modifying aircraft induction/retirement, adjusting resource levels or changing utilization levels while also comparing key performance indicators.

Ryo Tamura, President, JAL Engineering Co., Ltd said "After an extensive market review, JAL Engineering Co., Ltd. selected IFS for its experience in the industry, strong existing reference customers and its complementary fit with our long-term MRO strategy. With IFS fleet maintenance planning software JAL Engineering Co., Ltd. can automate processes that were previously manual and labor intensive, improve team collaboration by allowing planners to work on a single plan simultaneously, and ultimately decrease aircraft downtime and maximize task yield."

"This latest selection affirms the fact that IFS is trusted by some of the world's leading airlines and MRO providers to support fleet-wide maintenance planning and operations. We look forward to working with JAL Engineering Co., Ltd. to better manage its long-range fleet maintenance plans now and into the future" added Gerry Fosnick, President, IFS Japan.

IFS continues to grow its footprint in the Asia-Pacific commercial aviation and maintenance, repair and overhaul (MRO) market, adding JAL Engineering Co., Ltd. alongside China Airlines, Qantas, TAE Aerospace and more.



# Smarter, Faster, Stronger – SkyTower dives into silver jubilee with hopes, dreams, and more...

*SkyTower team prides itself on providing airlines around the world with large scale capability and support while maintaining dynamic personalized customer service that is unmatched by any competition*

SkyTower Aviation recently celebrated its 25th anniversary. Smarter, Faster, Stronger, fly with the Best! SkyTower has a singular focus – to provide the very best comprehensive support solutions to the worlds leading commercial airlines. Since the entry into service in 1997, Airlines around the world have trusted Skytower to provide support and solutions and they haven't looked back since, On the occasion of their silver jubilee we had a chance to speak to Brad Young, the CEO and Managing Director of SkyTower Aviation, our MRO of the Month.

**A team that never quits**

Brad attributes this success wholly to the people, the customers, the team members, their supporting network, and even the competitors. At this emotional moment of achieving an incredible milestone, Brad remembers the highs and lows of being in business, "25 years in business comes with lots of highs and lows, triumphs, and challenges. I think what I am most proud of is our ability to not only face but overcome the adversity we have seen over the years. Growth, opportunity, and success are all good... but there is something special about a team that never quits. More than anything our mentality and our grit is what has allowed us to operate successfully for all these years. Much respect and gratitude for all those who have paved the way." Brad's trust and vote of confidence in his team have made SkyTower one of the leading suppliers of comprehensive aviation fleet support services including maintenance project management, aircraft material support, and fleet management solutions for the commercial and cargo segments of the airline industry.

Going ahead, he remembers how his father, Dennis Young, started Skytower in 1997 with a massive leap of faith loaded with risk. "It's from him I received my ambitious cowboy spirit," he recollects. "I'd also like to acknowledge our Director of Operations Ms. Jena Forrest

who has been with Skytower since 2012. Our VP of Sales Ken Meissner - also a tenured Skytower veteran, our Director of Finance Mr. Rahmeen Seyyedy, and our Sales Team members Saurabh Tripathi, Regional Director, Middle East, and Asia, and Gurinder Rai, Regional Director Sales, Asia Pacific," he further adds

**A burning desire to succeed at all costs**

Recalling his early days, Brad's source of inspiration for entering the aviation field is his father. He had never planned a career in aviation but circumstances and necessity led him to dive headfirst into the aviation industry. With a heavy heart, Brad recollects the early tough days, "At the young age of 20 I was facing some very challenging life situations. My father introduced me to aviation, and I was immediately exposed to some extreme adversity within my first 2 years in the industry. I felt obligated and passionate about being there for the people who were always there for me," The burning desire to succeed at all costs drove him headfirst into growth mode and allowed him to operate with a mentality that would not allow me to ever quit. He further adds, "As my success in the industry continued to shape my life for the positive, I simultaneously was struck with a love and passion for aviation. I was able to see deep down past the surface level of part numbers and financial figures, and see just how special this industry truly is."

**Embracing competition, a cut above the rest!**

At the core, SkyTower is a service-oriented solution provider based on building deep trust-based relationships with clients. They are fully integrated into their client's supply chain and operate on the core values of reliability, agility, and operational excellence. Led by passionate, goal-aligned individuals and driven by an unyielding commitment to our customers along with a strong determination to succeed sets SkyTower apart from its competitors. Speaking about market competition Brad's face lit up with delight, "Aha! I embrace the competition as I am extremely competitive by nature. Right now, there is a lot of good competition. Competition is something we talk about often and openly within our company. With that said, I know in my heart the most important thing is that we play our game. We are great at what we do, and our service speaks for itself." Brad's unyielding trust in his work and team speaks for itself with SKyTower's products and services. SkyTower team prides itself on providing airlines around the world with large-scale capability and support while maintaining dynamic personalized customer service that is unmatched by any competition. They provide not just high quality, low cost, expedited material in support of airline fleets around the world but also understand that each clients' operational strategy varies and thus go to great lengths to understand, integrate and support each customers' operational objectives into our partnerships.

**Client feedback**

SkyTower's clients are full of praises for them. The Director of Engineering, Commercial Airline in Asia said, "If it wasn't for the project team at Skytower, our aircraft would have never left at the maintenance facility." The Maintenance Project Supervisor of a U.S. Based Cargo Airline said, "When I am in a tight spot, I know I can look to Skytower. They deliver on time and budget, and always do what it takes to get the job done for us."

**Accreditations**

Skytower Aviation is an ASA-100/ FAA-0056 Accredited company that operates strictly within the guidelines set forth by the Airline Suppliers Association. Their procedures are strictly regulated through quarterly self-audits and a continuous management review program.

Skytower manages secured, certified, and insured facilities which are under 24-hour surveillance. All material is segregated and managed by ASA-100/ FAA-0056 storage requirements. To ensure compliance with these standards they perform regular stock audits - and also provide customers with the ability to perform physical audits upon written request.

**Pandemic and SkyTower Aviation**

The Pandemic that shook the entire aviation had a deep impact on SkyTower too. Recalling the dreaded day of March 13 2020 Brad says, "We dealt with this crisis the same way we dealt with 9/11, the same way we dealt with the Recession of 2008, the same way we dealt with internal struggles from 2008-2014. We recognized the threat, we committed to the mission, and we swore to fight with everything we had. Here in the U.S. Covid hit like a lightning storm. The lockdowns hit very quickly starting on a Friday, March 13, 2020. The whole

world, the whole industry was in turmoil. Friends, colleagues, and respected competitors were melting down and everyone was in panic mode.

Monday, March 16, we called a meeting. We called it War Time meeting. I created a presentation about what we were facing, what the challenges would be, and how we would respond to them. As always the Skytower team didn't flinch. When every fiber of our being said to roll over, we found a way to stand and deliver. As it turns out, we not only survived during the pandemic but we found a way to thrive."

**Turning adversary into victory**

However, SkyTower turned this adversary into a challenge and came out victorious. They found a way to leverage the buyers' market. "We invested in assets and inventory that bolstered our sales and put us in a position to add value to our efforts to support customer fleets and global fleet trends. We've been more aggressive than ever with purchasing, investing in repairs, and placing inventory on the shelf. Also finding ways to mitigate supply chain issues," Brad continues. "The pandemic didn't come without challenges for us. We have faced severe delays with repair vendors, piece parts from OEMs, inflation, and all other market challenges people are talking about."

Brad further continues, "We determined early on that as an Airline supplier we were deemed an essential business. With the commitment and cooperation Of our team members, we were able to stay open and operate out of our headquarters and our Arizona facility throughout the pandemic. Big thanks to the Aviation Suppliers Association for standing up for companies like us, and providing us with crucial information in real-time as the pandemic unfolded. Our commitment and hard work ultimately allowed us to support our cargo customers who flew personal protective equipment, hospital supplies, and eventually the vaccines. In a small way, I'd like to think we did our part to fight the pandemic."

**Workforce Shortage**

Now that the pandemic is behind us, the biggest problem that looms before the aviation industry is that of workforce shortage. Commenting on this problem, Brad says, "I think people need to be inspired again. We need to get back to having a sense of community and people taking pride in contributing to that community." Giving his word of advice to the youngsters who were eager to pursue a career in the aerospace industry before the pandemic but now are shying away due to an uncertain future, Brad advises, "Aviation is here to stay. The world is becoming more accessible with low-cost carriers,

E-Commerce is booming, we are seeing lots of pent-up travel demand. All industries were affected by the pandemic, aviation has always been able to rally around the crisis, and we will do so again. I believe 2022-2030 will see the most opportunity for companies and individuals that we have ever seen. This industry is not for the faint of heart. If you are looking for a challenge and a career you are passionate about, dive in!" he concludes.

**Aftermarket recovery**

Speaking about the aftermarket recovery post-pandemic Brad feels that the aftermarket will thrive. He further goes on to explain the situation, "Initially most people thought there would be a massive influx of teardown aircraft. We have seen some of this, but a lot of these aircraft are being put back in the air. This means less available Spares from teardown, and more demand for aircraft going through the return to service," He continues, "OEMs are delayed driving the demand, and the aftermarket is chaotic. I think component values will soar and airlines will rely more than ever on trusted aftermarket suppliers. As the airlines lean on their aftermarket supplier base, I think they will realize an even greater value in the services we provide outside of just parts support. I think the future is bright."

**Expansion plans - 'Conquering the present'**

For the past few years, even mid pandemic, Skytower has realized tremendous growth. SkyTower focuses to build the foundation that will put them in a position to realize the growth we seek in a structured and efficient manner. Systems, processes, procedures, and workflow solutions. When asked about the expansion plans down the decade, Brad believes firmly in vision and strategic planning. "I also believe in focusing on the now and putting one foot in front of the other. Trusting instincts. Right now, I'm focused on a successful April 2022, and a successful Q2 2022. To conquer the future, we must first conquer the present!" he exclaimed.

Attributing the success once again to his team Brad says, "We have an amazing team in place and we believe in our motto. Sales and acquisitions come naturally to us. Without our team members, both past and present, we wouldn't be where we are today. Skytower is now and has been in the past, blessed with some of the hardest working, intelligent, and committed people on the planet. Words cannot express the amount of respect and gratitude I have for the people that walk through these doors every day," he signs off.

# FEAM Aero robust expansion plans, soon to open second hangar at CVG airport

*This facility is a USD 40.2 million investment cementing its presence at the global e-commerce hub creating nearly 200 additional high-paying aircraft mechanic jobs.*

FEAM Aero is all set to open a state-of-art three-bay second hangar at Cincinnati/Northern Kentucky International Airport (CVG). This widebody hangar will be constructed from the ground up and will encompass 150,000 square feet of hangar, back-shop, and storeroom space, in addition to 5,000 square feet of administrative offices. This facility will have the ability to accommodate aircraft types up to 767 fully enclosed and will include three wide-body parking spots in the adjacent ramp space. The construction work will be completed by the end of 2023.

This facility is a USD 40.2 million investment cementing its presence at the global e-commerce hub creating nearly 200 additional high-paying aircraft mechanic jobs. FEAM will launch a nationwide recruitment campaign to fill these high-income earning roles, furthering economic development in the local and surrounding communities.

Fred Murphy, Chief Executive Officer, FEAM AERO said, "It is an incredible accomplishment to continue to expand FEAM's presence at CVG, an organization that is truly innovating in the e-commerce space. This new operation will provide ample aircraft maintenance capacity and resources for CVG's growing cargo operations. Our initial success with our first hangar, and immediate demand for expansion, confirm that we are in the right place, at the right time, with the right partners. I commend our dedicated and relentless team of professionals that embody the core values of our company every day; it is because of them that we can maintain our high standard of quality and service as we grow and enter new markets."

Candace McGraw, chief executive officer, CVG Airport said, "We congratulate FEAM on their success and business growth. They have been a terrific partner with which we share a vision to further develop needed infrastructure and services to support the continued growth of cargo carriers at CVG. The airport's current strategic plan outlines the transformational impact we can make for our region, and this project does just that through job creation and capacity building to grow and diversify cargo operations."

FEAM's existing hangar at CVG spans over 100,000-square-feet of state-of-the-art workspace and is currently employing 300 technicians. FEAM has robust expansion plans in Europe along with creating a resilient and robust workforce in major US markets.


The widebody hangar will be constructed from the ground up and will encompass 150,000 square feet of hangar, back-shop, and storeroom space.

# Duncan Aviation expands existing hangar space to meet customer demands

*The new hangars will be the largest Duncan Aviation has built to date with an investment of USD 66 million.*

Due to increasing demand, Duncan Aviation will be building additional hangar space at its existing MRO locations in Battle Creek, Michigan (BTL), and Lincoln, Nebraska (LNK). The company is working with long-time partner Tectonic Management Group and is using the latest in green construction technologies to build at both locations a 46,000-square-foot hangar with 32-foot-high hangar doors and an additional 62,000-square-foot, two-floor wing for storage and back shops. The total expected investment for both LNK and BTL is approximately USD 66 million.

Jeff Lake, President of Duncan Aviation said, "The demand for the safety and flexibility that business aviation travel provides has continued to increase, as has the average size of business aircraft. This results in increased demand for the hangar space required to complete requested airframe, engine, interior, paint and avionics modifications for the business aircraft fleet. Looking to the future, we know that in order to meet current customer requests and needs, Duncan Aviation will need more hangar facilities. Duncan Aviation has consistently reinvested at least 80 percent of its profits back into the company and its team members in the form of facility expansions and capital improvements."

Sustainability features for the new hangars and buildings include light-harvesting, radiant floor heating with energy-efficient boilers, LED lighting fixtures with sensors and automatic dimming, and more. Frank Jacobsen, Vice President with Tectonic, says the buildings and systems will perform more than 25 percent better than standard energy codes.

Mike Minchow, Chief Operating Officer of Duncan Aviation's Lincoln location said, "The new hangars will be the largest Duncan Aviation has built to date. We are excited not only to be building additional hangars to give us more room and greater flexibility in the near term but to continue to grow with where the market is headed both in aircraft size and the number of inspections expected in the future. In addition, we are excited to create up to 75 career opportunities for new team members in Lincoln and Battle Creek, and we have already started to recruit team members to fill the additional positions."

Andy Richards, Chief Operating Officer of Duncan Aviation's Battle Creek location, said, "The expansion is a direct result of the excellent service and support operators have received. Over the past 66 years, Duncan Aviation has grown an increasingly loyal and diverse customer base that depends on the quality service and friendly customer experience provided by our teams. The expansion will increase our ability to attract even more customers to the Duncan Aviation family."

Site preparation will be started this spring in both Battle Creek and Lincoln with completion in Michigan expected in the summer of 2023 and in Nebraska in the fall of 2023, just a few months later.

When construction is complete, Duncan Aviation will have 769,000 square feet of hangar space and shop, office, and storage areas in Lincoln. The Battle Creek location will have 443,000 square feet of hangar, office, shop, and storage space.

# ‘Demand will come back faster than supply chain can handle’ – Jeff Lund, CEO, Kellstrom

*The key is early investment in inventory that is expected to be in demand to support the recovery.*

AOG situations are part of everyday life for an MRO, the key is to avoid an AOG situation by having the correct part on the self at any given time. When this situation does arise, you must have a team that can locate that part anywhere in the world says **Jeff Lund, CEO, Kellstrom Aerospace Group** when asked about how Kellstrom deals with everyday AOG challenges. He went on to further explain how the pandemic has led to bigger problems in the supply chain domain and the market is soon to recover with the demand coming back faster than the supply chain to handle. He further explained the details of Inventory Management and Planning and how Kellstrom has aced it all, in an Exclusive Interview with **Swati. k**

**Q– How are you dealing with post-pandemic recovery? For aftermarket Used-Serviceable Materials (USM) what changes in strategy did you make inorder to serve the changing market conditions.**

A- The largest challenge coming out of the pandemic is the supply chain. It has been clear to me over the last 18 months that demand will come back faster than the supply chain can handle. This is where Kellstrom has been performing analysis for USM and OEM distribution along with our Vortex engine shops. We have been preparing to support the demand by making sure our inventory and spare modules are ready as the demand comes back. This includes tearing down assets earlier in the process and ensuring all parts are through the repair process. We recognized early that the repair shops including OEM Turn Around Times (TATs) would be longer than was customary prior to the pandemic due to a lag in recruiting skilled labor to fill roles vacated during the pandemic, late delivery of raw materials and cold start parts to the shops. We have invested early in key inventory that will be demanded to support the recovery knowing that many elements of the supply chain continues to struggle.

**Q- Was there any drastic change in the working policy pre- and post-pandemic?**

A- In 2019, with oil prices around 30 dollars a barrel and the heavy demand for lift, it was high demand that drove the working policy for operators more than cost savings. Fast forward to the post pandemic recovery in 2022, the model has clearly shifted to a cost savings focus and an appetite for fuel efficient platforms that drive synergies and lower cost. The bailout funds have been depleted, oil prices are well over 100 dollars a barrel, interest rates are rising, and supply chain challenges and rising inflation are forcing higher wages. These are the key issues confronting operators in the post pandemic environment. Over the last 24 months during the pandemic, Kellstrom has built two new facilities, one in the US

and one in Dublin, Ireland, remodelled our 168,000 square foot logistical centre of excellence in  in Chicago, IL, launched a new cloud-based ERP system, launched a new e-commerce web site, started building our artificial intelligence (AI) commercial platform along with launching our new Kellstrom Technical Services Group which includes The Aircraft Group, Vortex Aviation and Kellstrom Aerospace Technical services (KATS) working in concert to provide a total nose to tail solution for operators and lessors. These platforms have synergies to provide millions of dollars of direct and indirect cost savings to operators. Already, we are witnessing customer demand in our Vortex organization for engine operators and asset owners looking to minimize workscopes, consume USM, reduce TAT and avoid large shop visits and keep these assets flying.

**Q– The Chinese MRO market has almost reached the pre-pandemic levels. What is your prediction of the global MRO aftermarket recovery?**

**A**- The Chinese aftermarket is very different based on the new regulations being implemented by the CAAC. There still is clarification needed for tearing down assets, tagging components off those assets along with taxation and ongoing values. These changes will result in USM being used within China and bringing components out of China to be consumed by other countries. We will see more partnerships between China and other business outside of China to create teardown and aftermarket facilities that will be successful within China. Given the current political, logistical/ customs and taxation issues still going on, it will take some time.

**Q–In Inventory management how do you tackle the problem of uncertain demand, around 80% of aircraft spare parts, where planners can't predict what part will need to be replaced, where, or when?**

**A**- Again, this is a supply chain issue. It's working with the operators to help manage the inventory levels both on the USM and the distribution side of the supply chain. Kellstrom has done a great job working with our customers and suppliers to deal with this problem and we believe we have the right inventory on the shop and/or in the repair process to meet the expected growing demand. We are also working with our Artificial Intelligence (AI) development to analyze and plan inventories and repair management to help the operators.


**Q– Nowadays every other day a new aircraft is introduced with the latest features and advanced technology, how do you manage/plan inventory of different and constantly updated fleet and different aircraft configurations?**

A- This is an issue we deal with every day through our Total Technical Solutions and our new OEM distribution partners. There are several situations including service bulletins, AD's, engineering mods, conversions and part configurations that are consistently being reviewed by the operators. We have several programs through our Total Technical Solutions that can track, analyse, and manage these cases. The Kellstrom people are what enables these solutions to be beneficial for our customers. We work hard at retaining and attracting technical and commercial experts that understand the genealogy of an airframe, an engine and a component. Although aviation products change over time, only a few technological step changes have happened that have dramatically changed an application. Generally, changes happen over time and the new version is often a derivative of a previous version, which the Kellstrom technical personnel stay on top of to differentiate our value proposition.

**Q– Have you ever faced a challenging situation wherein a critical part was not available during an AOG situation? What are the financial and operational consequences of such a situation? How do you plan to tackle such challenges going ahead?**

A- The key is to avoid an AOG situation by having the correct part on the self at any given time. When this situation does arise, you must have a team that can locate that part anywhere in the world. Kellstrom has people all over the world including people on-site within the operator or MRO. In those MROs and operators, we are managing surplus inventories and in other cases Kellstrom is managing active inventories as well. The biggest issue is whether the new OEM's have the parts; again, it's the supply chain issues that we will need to deal with for some time.

**Q– There is a general observation that MROs end up buying surplus spare parts leading to excess spending and surplus inventory, leading to tied-up capital in inventory. Despite this many times, the target service levels are not achieved. Is there a way to reduce the inventory investment while improving service levels?**

A- The key is to understand the timing of the inventory, cost of the inventory relative to turn times, scrap rates and repair management. If this is not managed correctly then you will continue to tieup capital in inventory cost. Kellstrom has several programs, including engine management services where we review the tabletop inspection of a given engine to manage the USM outcome for the build, manage the build time through repair management and inventory exchanges to a void heavy repair cost and excessive lead times. We also have inventory management programs where we can provide consignments for the needed inventory we manage and an outlet to monetize existing inventories to generate capital for new inventory.

# Airline of the Week – VISTARA Enhancing safety standards along the way

*We have selected Vistara as our Airline of the week as a special appreciation of their efforts at safety.*


In an effort to maintain the highest safety standards Vistara deployed the RFIDAeroCheck technology on its entire Boeing and Airbus fleet. This technology will track the presence and expiration of emergency equipment on the aircraft. Vistara partnered with Aerospace Software Development (ASD) and launched this technology across its fleet becoming the first airline to deploy this RFIDAeroCheck technology in India. We have selected Vistara as our Airline of the week as a special appreciation of their efforts at safety.

**About Vistara**

Vistara is one of India's finest full-service airlines operating in India with a 51:49 joint venture between Tata Sons Private Limited and Singapore Airlines Limited. Vistara is often lauded for its cabin cleanliness and safety standards. Just recently Vistara won three prestigious awards at the Wings India 2022 event. The awards were for Best Domestic Airline, Aviation Sustainability & Environment, and Covid Champions presented by the Civil Aviation Minister of India, Mr. Jyotiraditya Scindia.

On receiving the award, Vinod Kannan, Chief Executive Officer, Vistara said, "We are delighted to have received these coveted awards at Wings India 2022. They are a testament to the relentless efforts of all our staff, who ensured a seamless and comfortable travel experience for our customers, despite a challenging operating environment in the last two years. We would like to express our heartfelt gratitude to our customers for placing their trust in us and the jury of Wings India 2022 for recognizing our efforts."

Vistara brings together Tata's and SIA's legendary hospitality and renowned service excellence to offer the finest full-service flying experience in India.

**Vistara @RFIDAeroCheck**

In yet another industry-first by Vistara, the RFIDAeroCheck technology enables efficient management of all life-limited components, ensuring their presence on the aircraft as well as tracking expiry dates. This is done by storing information related to tracked components within a server-wide application database including information on defined equipment types, aircraft locations, and configurations as well as information on various parts. Using the latest ATA Spec2000 and GS1 standards, RFIDAeroCheck is fully compliant with industry standards.

Mr. SK Dash, Senior Vice President – Engineering, Vistara, said "Ensuring the safety of our customers and employees is the topmost priority at Vistara and we are committed to investing in technologies that aid our growth plans and enhance our safety framework. We are pleased to partner with Aerospace Software Development (ASD) for the deployment of RFIDAeroCheck which provides a quick and accurate integration of our maintenance processes, giving us the required commercial and operational flexibility across our fleet. We are also proud to be the first Indian airline to introduce this cutting-edge technology to the Indian aviation sector – another step in our digital transformation journey."

Mr. Dave Browne, Managing Director, Aerospace Software Development, said "We are delighted that Vistara selected ASD as their RFID partner and we are very proud to have Vistara as our first airline customer in India. Working in partnership with Vistara, we have implemented the RFIDAeroCheck

solution on time and on budget. The successful implementation of RFIDAero-Check at Vistara will lead to tracking of all emergency equipment on aircraft in a fraction of the time currently required and with significant financial savings."

With the RFIDAeroCheck, aircraft scans can be completed within minutes, ensuring accurate data and timely information regarding upcoming requirements. For instance, an RFID maintenance scan on a Boeing 787 aircraft (with 288 life vests on board) can be completed in less than a minute by simply walking down the aisle. An O2 Generator presence and expiry check which takes 4 man-hours on an average (usually 2 mechanics spending 2 hours each) can be completed in 30 seconds.

**The youngest fleet in Asia**

Vistara has a strong commitment to reducing the impact on the environment which has led to strategic investments in advanced engineering systems and a modern fleet that has also been recognized as one of the youngest in Asia. They have a fleet of 49 aircraft, including 38 Airbus A320, four Airbus A321neo, five Boeing 737-800NG, and two Boeing 787-9 Dreamliner aircraft, and have flown more than 30 million customers since starting operations on January 9, 2015. Vistara started flying with an aim to set new standards in the aviation industry in India and never looked back. Their world-class travel experience and safety standards have been widely appreciated by customers since its inception.

**Vistara and pandemic**

Vistara also took several initiatives to ensure it made an impact across multiple stakeholder groups including employees, customers, and communities in its efforts against COVID-19. In line with government guidelines, the airline altered many processes, introduced various technology interventions to maintain the highest safety and hygiene standards across all touchpoints in the customer journey. Vistara also introduced two award-winning campaigns, #FlyingFeelsSafeAgain and #FlyerCODE, that were devised to generate awareness and influence positive behavioral changes in travelers, for a comfortable and safer air travel experience.

During the devastating second wave of the pandemic, Vistara activated its 'National Relief Program' and offered complimentary air logistics for transportation of medical equipment across the network. It also welcomed health workers from government organizations to travel free of cost on its domestic network, when traveling on COVID-19 duty. Vistara extended all-around support to its employees to ensure their well-being throughout the pandemic. Besides offering medical support, the airline took systematic steps and managed to get almost all its employees fully vaccinated against the virus. It is also the first Indian airline to have operated flights with fully vaccinated cabin crew and pilots. Under its signature CSR project 'Vistara Wellness Initiative', the airline donated over 200,000 wellness essentials (nutritious food and hygiene items) to communities impacting the lives of nearly 34,000 individuals across the country.

They also recently resumed certain services that were halted temporarily due to the pandemic. Since the start of the pandemic, Vistara had taken several measures including altering several processes, truncating many inflight services, intensifying sanitization efforts, etc. to maintain the highest safety and hygiene standards. The airline also, through consistent efforts, managed to get almost 100% of its staff fully vaccinated against COVID-19.

Now they plan not only to restore pre-COVID standards of customer experience but to exceed in the coming months.

Mr. Deepak Rajawat, Chief Commercial Officer, Vistara, said, "Safety of our customers and staff has been our topmost priority, and takes precedence over all other considerations. As the world inches closer to normalcy now, we are delighted to bring back some of the services that were discontinued in view of customer safety. Vistara is committed to providing a world-class flying experience, backed by the continued support of our parent companies, Tata group and Singapore Airlines. While we are restoring our services progressively and systematically, we will also be introducing new enhancements at various customer touchpoints."

**Seven years and counting**

Vistara recently celebrated its seventh anniversary on 9th January 2022 and announced key milestones of having flown 30 million passengers since inception and 50 aircraft-strong fleet.

**Growth story**

Even as Vistara navigated the aviation industry's worst-ever crisis, COVID-19, it continued to grow in a measured way towards its vision and long-term plans. The airline registered a growth of 3.3 percentage points in market share, since July 2020, having grown from 4.2% (in July 2020) to 7.5% (in November 2021). Vistara expanded its fleet by over 25% since April 2020, to have 51 aircraft in its fleet as on date, and has significantly grown its global network to include seven new destinations across Asia, Europe, and the Middle East. The airline also ensured that all 4000+ jobs at Vistara remained protected from the impact of the pandemic.

**Some of the awards and accolades won by Vistara**

- Best Airline in India & Southern Asia by World Airline Awards by Skytrax 2021
- Best Airline Staff in India & Southern Asia by World Airline Awards by Skytrax 2021
- Best Cabin Crew in India & Southern Asia by World Airline Awards by Skytrax 2021
- Highest rank in India for Cabin Cleanliness by World Airline Awards by Skytrax 2021
- Favourite Domestic Airline by Conde Nast Traveller Readers' Travel Awards 2020 & 2021
- Best Domestic Airline (India) by Travel + Leisure India's Best Awards 2020 & 2021
- Five Star Major Airlines in the World by APEX Official Airlines Ratings 2020
- Best Airline – India by Tripadvisor Travellers' Choice Awards 2020
- Travellers Choice Regional Airline, Asia by Tripadvisor Travellers' Choice® Awards 2020

Vistara is India's highest-rated airline on operator rating websites like Skytrax and Tripadvisor.

# Ethiopian expands fleet with two new Dash 8-400 leased by TrueNood

*The increased capacity will enable Ethiopian to boost services domestically and broaden the choice of routes across neighbouring East African countries.*


The Dash 8-400 model is an ideal aircraft to serve Ethiopian's large domestic and regional network.

Ethiopian has signed an eight-year sale and leaseback agreement with TrueNoord for two new Dash 8-400 aircraft. The new Dash 8-400 aircraft will be integrated into the fleet for immediate operation.

Maarten Grift, TrueNoord's Sales Manager for Africa, Middle East, and CIS observes that Ethiopian Airlines' growing portfolio will further underpin its strong reputation for quality services and innovation. "TrueNoord is pleased to be chosen to support their regional connectivity with the versatile and economical Dash 8-400 aircraft. The increased capacity will enable Ethiopian to boost services domestically and broaden the choice of routes across neighboring East African countries."

Currently celebrating 75 years of excellence, Ethiopian Airlines has become the Continent's leading carrier. Operating at the forefront of aviation technology, the airline is also one of Ethiopia's major industries and a respected institution in Africa. A dominant force across the Pan-African network, it currently serves 127 international and 22 domestic destinations operating the newest and youngest fleet in the region.

Mr Mesfin Tasew, Group CEO of Ethiopian Airlines said, "The airline is expanding with an important remit to explore new technologies alongside environmental matters and economic solutions. The organization is committed to a sustainable future for regional aviation and being prepared to meet new demands. Our growing relationship with TrueNoord is founded upon their ability to provide practical and timely lease options that support our evolving business model. We have continued to use the Dash 8-400 model because it is the ideal aircraft to serve our large domestic and regional network."

Philippe Poutissou, Vice President, Sales and Marketing, De Havilland Canada said, "We are pleased that TrueNoord is investing in the Dash 8-400 aircraft for its portfolio – reinforcing De Havilland Canada's reputation for building aircraft with long-term value retention for both operators and owners. Sale and leaseback transactions, such as the one announced today between TrueNoord and Ethiopian Airlines, are providing increasingly valuable support to our operators as they work to deliver efficient air transport around the world."

Anne-Bart Tieleman, CEO – TrueNoord said, "As we work together in an industry that is coping with sudden change and disruption, it is essential for TrueNoord to support our lessees globally. We were delighted that Ethiopian Airlines was our first lessee in Africa and that our portfolio of Dash 8-400 aircraft has grown to three in six months.This latest sale and leaseback agreement is evidence of their strong credit rating and global reputation, this makes them the perfect airline partner and our relationship is open to future growth."

Sustained delivery of commercially viable direct flights between domestic African destinations will help to spearhead economic progress across the continent and as the leading operator, Ethiopian Airlines is at the forefront of such activity.

# CDB Aviation deepens its ongoing collaboration with Volaris for 5 Airbus fleet

*The fleet of Airbus A320neo and A321 neo will aid Volaris to bolster their leadership position in Mexican domestic market.*

CDB Aviation entered into a new sale and leaseback agreement with Volaris for a fleet of five Airbus (two A320neos and three A321neos). CDB Aviation is a wholly-owned Irish subsidiary of China Development Bank Financial Leasing Co., Ltd.

Luís da Silva, CDB Aviation Head of Commercial, Americas said, "We are thrilled to be deepening our ongoing collaboration with the Volaris team in support of efforts to bolster their leadership position in the Mexican domestic market and execute on an aggressive strategy of growth and strong operational performance."

Enrique Beltranena, Volaris' President and Chief Executive Officer said, "With one of the youngest, most fuel-efficient fleets in America, and alongside partners at CDB Aviation, we reinforce our ESG strategy to ensure sustainable growth in the long term. These deliveries will also bring our clients the best flying experience in the most modern technology aircraft."


CDB Aviation is well-positioned to provide airlines with access to an established fleet of varied new and used aircraft types.

Peter Goodman, CDB Aviation's Chief Marketing Officer, concluded, "CDB Aviation is well-positioned to provide airlines with access to an established fleet of varied new and used aircraft types as well as wide-ranging and innovative financing solutions, anchored with the platform's robust ability to expediently secure aircraft placements through SLB and PDP transactions."

The new agreement brings the number of CDB Aviation aircraft on lease to Volaris to a total of thirteen aircraft, which were secured through the lessor's order book with Airbus, as well as Sale and Leaseback transactions with and without Pre-Delivery Payments. Four of the aircraft were already delivered and the further nine will be delivered by the fourth quarter of 2024.

# Airline of the week – Welcome aboard clean and green flight with British Airways

*This batch of SAF delivery is an important milestone to decarbonize and achieve net-zero emission by 2050.*

British Airways, the flag carrier of the United Kingdom for over a century now and the second-largest in the UK has achieved a significant milestone by becoming the first airline in the world to use sustainable aviation fuel produced on a commercial scale. This week we have selected British Airways as our Airline of the week to appreciate their efforts at sustainable aviation. By putting sustainability at the heart of their business, British Airways has created a great place for people to work by reducing emissions and waste and contributing to the communities to build a thriving, resilient, responsible business.

**British Airways @sustainability**

This is a significant move as the entire aerospace industry is inching towards sustainable aviation. British Airways has signed a multi-year contract with Philips 66 Limited. Both Philips 66 and British Airways are committed to a low carbon future. This batch of SAF delivery is an important milestone to decarbonize and achieve net-zero emission by 2050. In order to prevent the worst climate damages, global net human-caused emissions of carbon dioxide ($CO_2$) need to fall by about 45 percent from 2010 levels by 2030, reaching net zero around 2050.

The sustainable aviation fuel bought by BA will be enough to reduce lifecycle $CO_2$ emissions by almost 100,000 tonnes, enough to power 700 net-zero $CO_2$ emissions flights between London and New York on its fuel-efficient Boeing 787 aircraft.

Sean Doyle, British Airways Chairman, and Chief Executive said, "Being the first airline to source sustainable aviation fuel produced at a commercial scale in the UK is another breakthrough moment for us and the airline industry. Our supplies of SAF from Phillips 66 Limited will allow us to progress with our ambitious roadmap to reach net-zero carbon emissions by 2050 or sooner and will play a role in our commitment, as part of International Airlines Group (IAG), to

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power 10% of flights with SAF by 2030."

The International Air Transport Association (IATA) 77th Annual General Meeting approved a resolution for the global air transport industry to achieve net-zero carbon emissions by 2050. This commitment will align with the Paris Agreement goal for global warming not to exceed 1.5°C.

**Sustainable future with people, planet, and responsible business**

BA also published its 2021 Sustainability Report looking at the progress and milestones achieved last year and following the launch of its BA Better World program. Launching BA Better World in September 2021, British Airways made a commitment to creating a better, more sustainable future with a focus on people, the planet, and responsible business. They recently published its latest sustainability report looking back at the milestones and achievements of the last year and has also launched its new sustainability docuseries, explaining how sustainable aviation fuel is produced and how it delivers emissions benefits, with the first video being all about SAF.

Sean Doyle further added, "Progressing the development and commercial scale-up of sustainable aviation fuel will be a game-changer and crucial to reducing the aviation sector's reliance on fossil fuels and improving the UK's energy supply resilience. I'm confident that Britain can take a leading role on the global stage in this space, creating green jobs and export opportunities, if industry, developers, and Government continue to collaborate and make it a key focus area."

**Sustainable Goals**

British Airways is committed to achieving net-zero carbon emissions through a series of short, medium- and long-term initiatives. In the short-term this includes improving operational efficiency, introducing new fuel-efficient aircraft, funding carbon offset and removal projects to mitigate emissions on UK domestic flights, and progressively introducing sustainable aviation fuels using waste feedstocks, while in the medium to longer-term this includes continuing to invest in the development and scale-up of sustainable aviation fuel and looking at accelerating the growth of new technologies such as zero-emissions hydrogen-powered aircraft and carbon capture technology.

**Offsetting Carbon emissions**

Since January 2020 British Airways has been offsetting carbon emissions on the flights within the UK, making all British Airways domestic flights carbon neutral. They have partnered with the non-profit organization Pure Leapfrog to calculate and offset your carbon emissions if traveling outside of the UK, making the flight carbon neutral.

Customers can now also join British Airways on its journey to reach net-zero by 2050 through its onboard Speedbird Café menu app. A new category can be found on the BA Better World tab labelled 'Contribute to Carbon Offsets', where customers on short-haul European flights can help fund carbon reduction projects around the world. The £2.50 contribution represents the carbon compensation of an average British Airways European return flight per customer, and the funds are invested in verified $CO_2$ emissions reduction and avoidance projects.

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**Philips 66 and SAF**

The Phillips 66 Humber Refinery near Immingham is producing thousands of tonnes of SAF that will now help power a number of British Airways flights. SAF is produced from sustainable sources such as waste gases, crop and forestry residues, household and commercial waste, and used cooking oil, and can reduce lifecycle $CO_2$ emissions by over 80% compared to traditional jet fuel.

This SAF produced from sustainable waste feedstock at the refinery will be added by British Airways to the existing pipeline infrastructure that directly feeds several UK airports including London Heathrow.

Darren Cunningham, Lead Executive UK, and General Manager Humber Refinery said: "Phillips 66 Humber Refinery is proud to supply British Airways with sustainable aviation fuel. We were the first in the UK to co-process waste oils to produce renewable fuels and now we will be the first to produce SAF at scale. We're currently refining almost half a million liters of sustainable waste feedstocks a day, and this is just a start. The strategic collaboration and supply agreement confirm each companies' commitment to a lower-carbon future. The production of SAF is just one of a number of decarbonization projects we are currently progressing, and we are excited by the role that we play in supplying the UK with the fuels it needs, both now and in the future."

Sustainable aviation fuel (SAF) is produced from sustainable feedstocks and is similar in chemistry to traditional fossil jet fuel. Using SAF results in a reduction in carbon emissions compared to the traditional jet fuel it replaces over the lifecycle of the fuel and can drop straight into existing fuel supply infrastructure and aircraft. It has the potential to provide a lifecycle carbon reduction of more than 80% compared to the traditional jet fuel it replaces.

**British Airways and UK Government's joint efforts at sustainability**

British Airways continues to work with Government on ways to provide certainty for investors to help the UK be a leader in SAF production. International Airlines Group (IAG), the airline's parent company, is investing USD 400 million over the next 20 years into the development of SAF and British Airways has existing partnerships with several companies to develop plants and purchase sustainable fuel.

Transport Secretary Grant Shapps said: "It's great to see British Airways is the first airline in the world that started using sustainable aviation fuel produced at scale in the UK – an important milestone towards our ambitious Jet Zero targets. The fact it's being produced here in the UK is a perfect demonstration of how Britain continues to be a pioneer in developing green aviation technology and the Government will meet its 2050 net-zero target. We can create thousands of green jobs while reducing the impact that flying has on the environment, so we can continue to connect and travel in a greener way."

British Airways and Philips 66 both support Government plans for a future SAF mandate and a business model for investing in advanced waste to jet fuel projects through participation in the Department for Transport's Jet Zero Council Delivery Group.

**Sustainable partnerships**

British Airways have partnered with Velocys to build a plant in Humberside that will convert household and commercial waste into SAF. Their partnership with LanzaJet will provide SAF from a plant in the USA, which is expected to be available to power a number of our flights by the end of 2022.

Over the next 20 years, BA's parent company IAG will invest USD 400 million in the development of sustainable aviation fuel and in April 2021, became the first European airline group to commit to powering 10 percent of all flights with sustainable aviation fuel by 2030.

British Airways has also invested in ZeroAvia, a leading innovator in decarbonizing commercial aviation. It is aiming to accelerate the development of 50+ seater aircraft capable of running on zero-emissions hydrogen-electric power. In September 2020, ZeroAvia completed the world's first hydrogen-electric fuel cell-powered flight of a commercial-grade aircraft.

**Post-pandemic flight**

British Airways powered their first Transatlantic flight following the lifting of restrictions with a 35 percent blend of sustainable aviation fuel. The British Airways A350 flight took off after two years on November 2021 with SAF provided by bp and made from used cooking oil. It is believed to be the first commercial transatlantic flight ever to be operated with such a significant level of the fuel blended with traditional jet fuel.

Their newest and most fuel-efficient long-haul A350 aircraft are up to 40 percent more efficient than the Boeing 747-400 Jumbo Jet aircraft that used to operate between London and New York. Combining this modern aircraft efficiency with today's blend of SAF means the flight's overall $CO_2$ emissions are more than 50 percent less than those emitted by the now-retired 747 aircraft that previously operated on this route.

In September, British Airways announced a collaboration with bp to source sustainable aviation fuel in respect of all flights between London, Glasgow, and Edinburgh during the UK COP26 conference

**About**

British Airways flies to destinations in more than 65 countries. Its principal place of business is in London, with its main home at Heathrow Terminal 5. British Airways is a founding member of the airline alliance Oneworld, which serves around 1,000 destinations across the globe. They operate one of the largest and the most modern fleets of any airline in the world.

In 2021, the airline won six Business Traveller Awards including Best Short-Haul Carrier, Best Airport Lounge, Best Frequent Flyer Programme, Best Travel App, and Best New Seat.

British Airways have signed Emma Raducanu as the newest British Airways Global Ambassador. In September 2021, at age 18, Emma became the first British woman to win the US Open women's singles since 1977, catapulting Emma to currently be ranked British number 1 and world number 19. British Airways will continue to support her by flying her around the world for training and tournaments.

# The iconic A380 leads on testing newer technologies inching towards zero-emission

Airbus, aiming to pioneer sustainable aerospace for a safe and united world has always has been at the forefront of innovating new technologies, with a pioneering spirit that has redefined the aerospace industry. Their next challenge is to lead the way in making zero-emission commercial aircraft a reality. In their mission to bring zero-emission aviation to reality, they launched the eZero program and tested the use of hydrogen combustion technology will work on the A380 test platform.

The A380 MSN1 test aircraft are earmarked for a new role: to take the lead on testing the technologies that will be vital to bringing the world's first zero-emission aircraft to market by 2035.

**The Jumbo A380**

The Airbus A380 aircraft, one of the most iconic aircraft ever made, the world's largest and most spacious passenger jet is in limelight again, and this time for the most unconventional reason. Last time, Airbus used this aircraft as a testbed for hydrogen combustion technology and this time Airbus conducted a successful test flight of the A380 using 100 per cent SAF, a milestone in itself. The size of this aircraft makes it ideally suited to the role of a test platform. This is the third Airbus aircraft after A350 and A319neo to test unblended sustainable aviation fuel over the course of 12 months; the first was an Airbus A350 in March 2021 followed by an A319neo single-aisle aircraft in October 2021.

Launched in December 2000, the iconic A380 has flown over 800,000 flights carrying more than 300 million passengers since its entry into service. Even as its production comes to a close, the A380 will keep flying for decades to come, and Airbus is continuing to fully support A380 operators and their fleets.

The A380 introduces passengers to superior standards of in-flight comfort, from first class to economy. As the world's largest and most spacious passenger aircraft, its cabin allows travellers to stretch out in a calm and relaxing environment. With the freedom it gives passengers to move about the aircraft, it's no surprise that the A380 is a favourite in all cabin classes.

It has two full-length decks with widebody dimensions. With more seats than any other aircraft, the A380 offers a solution for traffic growth and airport congestion as we emerge from the pandemic.

**An industry-wide decarbonisation initiative**

The Airbus A380 MSN1 took off at 08h43 from Toulouse's Blagnac Airport on 25 March 2022 with one out of four engines operating on 100 per cent SAF. The flight lasted about three hours, operating one Rolls-Royce Trent 900 engine on 100 per cent SAF. 27 tonnes of unblended SAF were provided by TotalEnergies for this flight.

This marked the first flight test campaign to use 100 per cent SAF on all flight phases, from take-off and climb to cruise and landing.

While the first flight test phase focused on outboard engine behaviour of 100% SAF and APU testing, the forthcoming second flight test phase will test this fuel type on the inboard engine and its impact on fuel gauging. On 29 March, the A380 will take off from Toulouse, head towards Nice and return to Toulouse in order to increase engine exposure to 100% SAF.


Airbus conducted a successful test flight of the A380 using 100 per cent SAF.


The A380 aircraft used during the test is the same aircraft recently revealed as Airbus' ZEROe Demonstrator – a flying testbed for future technologies instrumental to bringing the world's first zero-emission aircraft to market by 2035.

Wolfgang Absmeier, Airbus Test Pilot said, "This is the first time that unblended SAF has been used on an A380 flight test platform. The flight test met all of our requirements, which will enable us to carry out the next phase of the project consisting of specific engine manoeuvres."

With this feat, A380 officially joins a group of select aircraft that have performed this type of in-flight test – one that includes the A350 and the A319neo. Apart from this the A380 as also raised the bar for environmental standards thanks to exceptional fuel efficiency and low noise levels. In fact, the latest Airbus programmes continue to benefit from the many innovations developed for the A380.

François Pfindel, Airbus Head of A380 MAP said, "This is another great example of the aviation industry coming together to work towards achieving certification of 100% SAF by 2030. Together, we've clearly demonstrated that an aircraft as large as the A380 can successfully operate on unblended SAF."

"Due to the A380's engine and fuel system configuration, analysing engine and fuel system behaviours with 100% SAF needs to be managed over multiple flights," François explains. "In doing so, we'll generate a wealth of data that will help us to complement the research programmes currently underway."

**Partners**

The flight test campaign is supported by a variety of partners. Rolls-Royce is conducting compatibility studies related to the engine adaptation for the Trent 900. Pratt & Whitney is providing support for the auxiliary power unit (APU). And TotalEnergies is supplying the unblended SAF.

**Used Cooking oil**

Indeed, the 100 per cent SAF is made from hydro-processed esters and fatty acids (HEFA), which generally consists of used cooking oil and other waste fats. What sets this SAF apart is that it is not mixed with any fossil fuels. Approximately 27 tonnes of SAF will be used for the flight test campaign and is produced in Normandy close to Le Havre, France.

Increasing the use of SAF remains a key pathway to achieving the industry's ambition of net-zero carbon emissions by 2050. Key statistics outlined in the Waypoint 2050 report indicate that SAF could contribute between 53 per cent and 71 per cent of required carbon reductions. All Airbus aircraft are currently certified to fly with up to a 50 per cent blend of SAF mixed with kerosene. The aim is to achieve certification of 100 per cent SAF by the end of this decade.

Following this 100 per cent SAF flight test campaign spanning two weeks, the A380 MSN1 will be renovated to restore its aircraft testing capability and subsequently transformed into the ZEROe demonstrator to test hydrogen combustion technology in the years to come.

Current research programmes – ECLIF3 and VOLCAN – will continue their test campaigns throughout 2022 and 2023 with the A350 and the A319neo. Because the A380 MSN1 has a very limited test window available, the test campaign's focus is to gather as much data across the aircraft as possible over a two-week period.

Now, this incredible feat of engineering is set to further enhance its legacy by playing a vital role in helping to achieve certification of 100 per cent SAF by 2030.

Total Orders and Deliveries – Out of the 251 net orders, 249 A380s have been delivered to 14 customers.

A380 operators: Asiana, British Airways, China Southern, Emirates, Etihad, Korean Air, Lufthansa, Malaysia Airlines, Qantas, Qatar Airways, Singapore Airlines, Thai Airways, and ANA.

**In-Service status**

- The A380 is operated in 70+ destinations
- Over 400 airports worldwide are A380 compatible
- Since its entry into service, the A380 has carried over 300 million passengers
- Total cycles: above 800 000
- Total flight hours: more than 7 300 000
- Over 50 per cent of A380 capacity is from/to/within the Asia-Pacific region, of which around 15% is on regional flights within Asia (OAG 2017)
- Operational reliability 99+ per cent

The A380 is and remains the best solution for growth, especially where airport capacity is limited and when traffic growth is doubling every 15 years. The A380 noise footprint is half the noise of previous-generation aircraft. Lower emissions, significantly below international guidelines and 33 per cent better fuel burn and $CO_2$ emissions compared to previous generation aircraft.

**Interesting facts about A380**

- Each A380 consists of around 4 million individual components with 2.5-million-part numbers produced by 1500 companies from 30 countries around the world.
- The aircraft is certified to a max seating capacity of 853
- The aircraft has 220 windows and 16 doors.

# The AJW journey – Matching inventory to forecasted future demand

*"For AJW Group and Montreal facility AJW Technique, we were extremely busy throughout the pandemic due to our major contracts"*

The USM market like any other is based on pure demand and supply, the challenge, however, is, to predict the need for particular spares and store the inventory, this effective inventory management is followed to the T by AJW Aviation. Even during the pandemic, AJW believed in expansion, signed new contracts, undertook a variety of aircraft for teardown to stock the spare, and offered cost-effective solutions to customers. Due to this astute precision AJW, today stands a cut above the rest. **Conrad Vandersluis, SVP Strategic Material, and Asset Management** speak openly about the current teardown market, the challenges faced, and how AJW handled them along with some robust expansion plans going ahead, in a candid chat with **Swati. k**

**Q- Many airlines are retiring their aircraft earlier than anticipated due to pandemic woes and reduced passenger traffic. Do you think it has affected the teardown market and how?**

A - Since the onset of the pandemic the number of aircraft considered 'end of life' assets has increased. Significant numbers of aircraft and engines are coming to the sale for both narrow and wide-body which has flooded the teardown market and in turn, increased availability for USM. Except for aircraft that are eligible and economical for the passenger to freighter conversion and narrowbodies, mainly Boeing 737-800 and A321 aircraft along with widebody aircraft which include both A330 and Boeing 777-300ER, but we are still seeing aircraft of this type going for teardown depending on the price offered on sale/purchase.

**Q- Going ahead, in the post-pandemic market recovery for aircraft teardown and USM what are the risks and challenges involved?**

A - The USM market is based on demand and aircraft application, the increase in aircraft available for teardown will depress the valuation of USM, the challenge is to match inventory to forecasted future demand.

**Q- How do you plan to tackle the above challenges?**

A - The need to be reactive, adaptable, and flexible to meet our customers changing needs will remain for the foreseeable future as well as offering cost-effective solutions to help operators keep their costs under control as they manage their pandemic-induced debts. Utilizing our extensive analytics for applicability and demand profiles we have, and will continue to, invest significantly in both high demand and current production components which allows us to offer the cost-effective support our customer base requires.

**Q- Just last month you signed a deal with Honeywell for the global sale of ADIRU, for all Boeing 737 MAX aircraft. Can you throw some more light on this deal?**

A - Last month we signed a sole distributorship agreement with Honeywell for the Boeing 737 MAX ADIRU, this is in addition to agreements signed last year for the A320NEO ADIRU and a suite of Boeing 787 components. We saw the opportunity to invest and support the products covered by offering the availability to operators of Factory New stock for both Initial Provisioning demands and stock increase requirements. In addition, we offer support with items available on exchange and loan and our 24/7/365 AOG service for all airlines and integrated support providers. It has also allowed us to increasingly develop our in-house MRO capabilities at our state-of-the-art MRO facility, AJW Technique in Montreal, on the repair cycle. The Honeywell product lines are current production aircraft types that are being delivered with a significant backlog of deliveries going forward which will require the support that the AJW Group can offer.

**Q- Even during and early post-pandemic time, AJW continued to buy engines for teardown to expand the inventory, the latest was the purchase of a CFM56-5B engine. Did you predict that with the re-opening of the market the demand for spares will rise?**

A - The CFM56-5B engine will be in operation for the foreseeable future along with the CFM56-7B, which we also have and are invested heavily in and will continue to do so as opportunities arise. We expect an increase in shop visits for these engines as green time assets dwindle and a continuation of demand for the required LLPs and core engine material.

**Q- From your point-of-view how does the immediate future of MRO aftermarket look like?**

A - With the changes in fleet, the predicted gradual growth, and the elevated number of aircraft being returned to service we believe that we are going to enter a period of MRO growth that will directly impact the component maintenance market as a whole. It is now forecast that by 2024 MRO demand should reach pre-pandemic levels but at varying rates around the world, for instance in China, the MRO demand has already surpassed pre-pandemic figures where Western Europe is not expected to see a full recovery until 2025.
For AJW Group and our MRO facilities in Montreal, AJW Technique, MRO has been and continues to be, extremely busy throughout the pandemic due to our major contracts as even when aircraft weren't flying there was still significant shop visits due to maintenance checks and calendar life components.
Last year, in response to the demands of our local European customers we expanded our global MRO footprint with the opening of AJW Technique Europe, which operates as a Centre of Excellence for aircraft batteries and will expand into a series of other capabilities to complement the repair services offered at AJW Technique in Canada. We also added AJW Technique Interiors products lines to our capability list, helping airlines who need to refit cabins, replace seat covering and carpets by reducing costs and supplying a superior alternative.

**Q- What can you say about the narrowbody aircraft gaining popularity in the post-pandemic recovery? Due to their improved range capability and attractive seat mile efficiency making the narrowbodies choice of aircraft for LCCs. How will it impact the teardown market?**

A - Industry data cites that domestic air travel and the associated narrowbody aircraft fleets are expected to reach pre-pandemic levels this year, as more aircraft come out of storage or are delivered new by the manufacturers, however, the slow business and international travel recovery will have an impact on growth and profitability of airlines and the demand for widebody aircraft.
Some of the older narrowbody assets may transfer into this demand but a high proportion of aircraft being inducted will be newer assets or new build NG and MAX aircraft.

**Q- In the COVID-19 recovery, USM is going to play a huge part in helping operators manage their cash flow more effectively. Your comments**

A - Airlines are laser-focused on lower material costs. AJW offers USM for sale as well as exchange or loan negating the need for airlines to increase or invest in additional inventory. As a result, USM has become an increasingly acceptable lower-cost alternative to new OEM parts.

India continues to develop as one of the world's largest civil aviation markets as it ramps up its capabilities and capacity in infrastructure and services.

# Alarming passenger growth in Indian aviation, A boost for airport modernization

Air Travel has made a vigorous comeback to India, it is as though people were just waiting with their bags packed for the air travel to resume back to normalcy, and as soon as the international routes were opened and restrictions were eased from 27th March 2022, tourists, bag packers, families, businessmen all made a mad dash for the airports. This raised an alarming question about the chaotic situation of India's major airports as the traffic swells in years to come. Are India's major metro airports fully equipped to handle the passenger traffic as years pass by?

**Bulging passenger traffic.**

The post-pandemic chaos answered this question for the authorities. Indian domestic air traffic which was at 3.9 million passengers per day fell to 1.16 million during the third wave under the Omicron variant of COVID-19. However, the numbers bounced back to 3.83 million as of now close to the pre-COVID number of 4.1 million passengers per day. The Ministry of Civil Aviation (MoCA), has expressed confidence that within the next year, India will surpass the number of pre-COVID of 4.1 million passengers and create a new historic record. Airbus has also predicted that India will hit the pre-Covid level in terms of passenger traffic by mid-2022, while the rest of the world will take close to 2023 end to reach pre-Covid numbers.

The number of international passengers which was close to 60 million in 2018-19 fell to almost 10 million after COVID restrictions. Now with the lifting of restrictions by 2024-25, India will witness 410 million flying passengers.

The Indira Gandhi International Airport, Delhi stands at number #16 on international charts with over 22 million passengers in 2021 alone. These numbers will only multiply going ahead.

**Fleet requirement**

India is looking at tremendous expansion in terms of domestic and international air travel. Expansion in the area of airlines, expansion in the area of airports. And therefore, fleet augmentation is also important. Airbus expects that India will need over 2,200 airplanes in the next two decades. India had a fleet

of mere 400 aircraft in 2013-14 which rapidly bulged over to 710 in the last seven years with an addition of almost 310 aircraft. The MoCA is confident of adding at least 110 to 120 aircraft per year going ahead.

South Asia's air travel sector is dominated by the Indian market, which accounts for about 90% of the region's passenger traffic. India's continued economic growth and its expanding middle class will fuel demand across South Asia for 2,400 new commercial jets valued at nearly USD 375 billion during the 20-year forecast period, according to Boeing.

"We project robust demand for air travel in South Asia with carriers increasing services, and passengers feeling confident about travel to see family and friends and do business, as well as from air cargo," said Dave Schulte, managing director, regional marketing, Boeing Commercial Airplanes. "Key elements that will promote continued growth in the region will be the competitive domestic market and opportunities in international routes, both backed by government policies to reduce airline costs and taxes," added Schulte.

Salil Gupte, president, Boeing India, said, "India continues to develop as one of the world's largest civil aviation markets as it ramps up its capabilities and capacity in infrastructure and services. At Boeing, we are committed to supporting this growth through our Make in India supplier partnerships, next-generation products, solutions, technologies, and services, to advance the future of commercial aviation".

Even Airbus predicts that the Indian aviation market will grow faster than the global market. According to Airbus, the Indian aviation market will grow at 6.2 percent over the next 20 years. It similarly expects the global aviation market to grow by 3.9 percent.

Before Covid-19 hit the business of aviation, the Indian market was growing consistently at double digits with traffic more than doubling from around 61 million in 2013-14 to around 137 million in 2019-20, registering a growth of over 14 percent per annum.

"The 6.2 percent growth will largely be pushed by domestic traffic and nearby countries, the widebody fleet in India has remained almost stagnant. However, we believe that the next phase of growth will come from widebodies," said Airbus India President Remi Maillard.

Even the ministry is pushing the Indian operators for adding more widebody planes to their fleet and increase international destinations as foreign carriers dominate international traffic and the country sees little investment in long-haul aircraft.

About 60 foreign airlines from 40 countries have been approved to operate 1,783 weekly international flights from India. Indian airlines have been allowed to operate up to 1,466 weekly international departures during the summer

**Investments in Airports**

Looking at the above figures, it is evident that the expanding domestic aviation market in India would require robust infrastructure. The MoCA, therefore, plans to build around 220 new airports in a span of the next 3 years.

Through the UDAN initiative, the Indian government intends to build infrastructure and a culture of air travel for people in tier 2 and 3 cities by making flying cheaper and more accessible.

India's Minister of Civil Aviation, Mr. Jyotiraditya Scindia said, "Earlier only big cities had airports. Today that has changed completely. This is the reason why the civil aviation industry has become a key element of India's economy. The amount of employment generated in the industry is massive."

India's Ministry of Civil Aviation is all set to invest Rs 1 lakh crore in green and brownfield airports in the country in the next 2-3 years by both AAI and the private sector. Apart from this, to increase the profitability of the Airport Authority of India, the government will move to lease out certain airports to private entities.

**Air Traffic Management & Airport Modernization**

Airports Authority of India (AAI) has agreed with Defence PSU Bharat Electronics Limited (BEL) for the joint indigenous development of systems for air traffic management and surface movement of aircraft at airports in the country which were being imported till now. The agreement was signed by AAI's B K Sarkar and BEL's M V Raja Sekhar.

Riding on the wave of the Singapore Innovation Centre, the Bengaluru International Airport and Amazon Web Services (AWS) will develop a Joint Innovation Centre (JIC) at the airport that will drive the development and adoption of digital solutions in aviation. The first of its kind center in the country will drive innovation and the latest technology all the while enhancing the passenger experience. For this, the center will use a combination of technologies, including cloud computing, blockchain, internet of things (IoT), analytics, machine learning (ML), artificial intelligence (AI), robotics, and augmented and virtual reality (AR/VR).

The Indian government is actively promoting the use of green energy at domestic and international airports in the country to make them more sustainable. It is also engaging with private airport operators and the Airports Authority of India (AAI) to install green energy-generation equipment to fulfil all their energy requirements via renewable sources. a total of 55 airports in various Indian states and Union Territories have dedicated solar plants installed. in 2015, Cochin International Airport in the southern state of Kerala became the first in the world to use solar energy for all its energy needs raising praises from the UN. It still holds the title of the world's first solar-powered, power-positive airport.

The Hyderabad Rajiv Gandhi international airport will get a kind, state-of-art 264 meters, and 368-meter ramp tunnel built below the runway, and this new move will save time for the passengers, and food caterers, and vehicles and save the fuel consumption of the vehicles passing by. The main objective behind the move is to lessen the traffic and increase the passenger handling capacity to 3.4 crores.

Apart from the above Boeing has worked closely with the Directorate General of Civil Aviation (DGCA), the airlines operating in India, airport operators, and other airspace stakeholders to develop a comprehensive 10-year roadmap for the Centre-run Airports Authority of India (AAI). This will help to improve airspace utilization and maintain safe and efficient aircraft operations.

Looking at the above developments, the time is just right and ripe to invest in the Indian aviation sector.

# Alliance Air takes delivery of highly versatile multi-purpose Dornier 228 from HAL

*Dornier 228 is a twin-turboprop short take-off and landing utility aircraft manufactured by Hindustan Aeronautics Limited (HAL).*


Alliance Air recently took delivery of the first Made in India Dornier 228 aircraft. This aircraft can carry up to 17 passengers and has an AC cabin that is capable of day and night operations. The light aircraft will facilitate connectivity in the northeastern states of India. Hindustan Aeronautics Limited (HAL) had signed a lease agreement with Alliance Air for the supply of 2 Dornier 228 Aircraft in September 2021.

Dornier 228 is a twin-turboprop short take-off and landing utility aircraft which is manufactured by Hindustan Aeronautics Limited (HAL) for the Indian Coast Guard, Indian Air Force, and Indian Navy.

The Dornier 228 is a highly versatile multi-purpose light transport aircraft developed to meet requirements like utility and commuter transport, third-level services and air-taxi operations, coast guard duties, and maritime surveillance.

The aircraft can also be utilized for pollution prevention, troop transport, aerial survey, search and rescue, commuter transport, remote sensing applications, casualty evacuation, and cargo and logistics support.

Its cockpit is designed to accommodate two crew members and is fitted with duplicate controls and the cabin can accommodate 17 passengers. The aircraft has a wingspan of 16.97 m, an overall length of 16.56 m, and an overall height of 4.86 m.

# Ultra-Air selects Airbus Flight Hour Service to ensure fleet airworthiness and efficiency

*Airbus' FHS material service is the best solution to have cost-efficient access to components required to maintain the airworthiness of the fleet.*

Ultra Air has selected Airbus Flight Hour Services for its A320 fleet. Airbus will provide parts pooling, on-site stock at the airline's main base in Medellin, components maintenance as well as engineering services.

Juan Fernando Arango, Maintenance & Engineering Director of Ultra Air said, "Airbus' FHS material service is the best solution to have cost-efficient access to components required to maintain the airworthiness of our fleet and guarantee safety, reliability, and availability of our aircraft in order to provide a great service for our customers."

Yohan Closs, Airbus Head of Customer Services Latin America and the Caribbean said, "We are proud that Ultra Air has selected our FHS material services. The airline will benefit from guaranteed parts availability and be well-positioned to secure its operations as they continue to ramp up with the incorporation of additional A320s to their fleet."

Airbus FHS is now covering over 1100 aircraft across the globe with over 200 only in Latin America. It offers material and maintenance services that help advance the operational reliability and performance of airlines' fleets while maximizing flying hours.

Ultra-Air has a fleet of five A320ceo aircraft flying domestic routes in Colombia. The airline plans to expand its A320 fleet to open new routes in the years to come.

# Strengthening relationships – Liebherr and HAL

*The MoU was signed by Arup Chatterjee of HAL and Nicolas Bonleux of Liebherr.*

Hindustan Aeronautics Limited (HAL) and Liebherr signed a Memorandum of Understanding that lays the basis for future strategic cooperation in the field of on-board systems for HAL's current and future aircraft programs. The MoU was signed by Arup Chatterjee, Board Member and Director Engineering and R&D of HAL, and Nicolas Bonleux, Managing Director and Chief Commercial Officer of Liebherr-Aerospace & Transportation SAS.

Within the frame of the agreement, Indian aircraft manufacturer HAL and OEM Liebherr-Aerospace will cooperate to identify and define the best solutions for HAL's fixed-wing and rotary-wing aircraft in landing gears, actuation, air management, and power conversion systems.

This Memorandum of Understanding is a great additional step in the collaboration between HAL and Liebherr that dates back several decades. Together with the strengthening of Liebherr-Aerospace's presence in India, the signature of the contract will enable the acceleration of additional joint projects between HAL and Liebherr.

# flyExclusive places huge order of CJ3+ Jets with Textron, becomes largest Citation operator

*flyExclusive currently operate a fleet of Cessna Citation jets including Citation X, Citation Sovereign, Citation Excel/ XLS, Citation CJ3, and Citation Encore.*

Textron Aviation has entered into a purchase agreement with Exclusive Jets for up to 30 Cessna Citation CJ3+ jets. flyExclusive, a leading provider of premium private jet charter experiences, expects to take delivery of five aircraft in 2023, with the option to purchase additional aircraft for deliveries through 2025. Cessna Citation jets are designed and manufactured by Textron Aviation.

Ron Draper, President and CEO, Textron Aviation said, "This order brings the efficiency and comfort of the Citation CJ3+ to a new audience of customers through flyExclusive's programs. We appreciate customers like flyExclusive, who see the value in operating a broad range of jets from the Citation family. The operating economics of Citations, combined with the global network of service and support available through Textron Aviation, ensures continued productivity and enjoyment throughout the ownership experience."

With this order, flyExclusive has become one of the largest operators of Citations in the world. They currently operate a fleet of Cessna Citation jets including Citation X, Citation Sovereign, Citation Excel/ XLS, Citation CJ3, and Citation Encore aircraft models.


flyExclusive plans to redefine the private flying experience for passengers by providing a full suite of products via CJ3+ jets.

Jim Segrave, Chairman, and Founder, flyExclusive said, "This expansion launches flyExclusive into the fractional space. We are committed to redefining the private flying experience, providing the full suite of products for our customers, all delivering consistent, reliable, and world-class service. We are proud to continue our relationship with Textron Aviation as we bring the CJ3+ into our esteemed fleet. The addition of these new CJ3+ aircraft will allow us to expand our capabilities to support our continuing growth as one of the largest private jet charter operators in the industry."

flyExclusive is also the third-largest Part 135 charter operator in the U.S. The latest order of Citation jets is expected to support their JetClub, Partners, and new fractional programs along with a huge surge in passenger demands.

# Eurowings takes delivery of state-of-art Airbus A320neo with Airspace cabin

*The Airbus Airspace cabin brings the award-winning widebody passenger experience to the single-aisle market, elevating comfort, ambiance, and services to the next level.*

Eurowings has taken delivery of its first Airbus A320neo aircraft featuring the new Airspace cabin design.

Eurowings is a long-standing all-Airbus operator with 75 Airbus A320 Family Aircraft on its European network. The Airbus Airspace cabin brings the award-winning widebody passenger experience to the single-aisle market, elevating comfort, ambiance, and services to the next level. Unique and customizable lighting sets the right ambiance throughout all phases of flight, optimizing passenger relaxation in the quietest cabin in its class. Airspace XL bins for 60 percent more bags, redesigned sidewall panels maximize personal space. Airspace also offers hygienic space and antimicrobial surfaces in all lavatories.

The A320neo Family is the most successful aircraft family ever with an operational reliability of 99,7 percent. The A320neo provides operators with a 20 percent reduction in fuel consumption and $CO_2$ emissions, thanks to the latest technologies such as new generation engines and Sharklet wing-tip devices. The Airbus' A320neo Family offers unmatched comfort in all classes and Airbus' 18-inch-wide seats in economy as standard.

At the end of February 2022, the A320neo Family had received nearly 7,900 orders from over 125 customers worldwide.

# ALC undergoes fleet expansion with 32 additional 737 jets from Boeing

*The economic and operating advantages of 737 MAX will favor the operators as well as the customers.*

Air Lease Corp is expanding its airplane portfolio with an order for 32 additional 737-8 and 737-9 jets from Boeing. As the travel market recovers, ALC is increasing its 737 MAX family offering to meet airline demand for modern, fuel-efficient, and sustainable operations. In February ALC added 18 new 737MAX to its portfolio. Now with this new order ALC has 130 737 MAXs in its backlog.

John L. Plueger, Chief Executive Officer and President of Air Lease Corporation said, "Following our memorandum of understanding with Boeing in February for these 32 737 MAX aircraft, we are pleased to announce the signing of this definitive purchase agreement. We believe that the economic and operating advantages of the 737 MAX will serve our airline customers well as they favor


modern, fuel-efficient aircraft."

Ihssane Mounir, Boeing senior vice president of Commercial Sales & Marketing said, "The 737 MAX family has already proved its value within ALC's narrowbody portfolio, providing operators with excellent fuel efficiency and flexibility across different networks. The addition of more 737 MAXs, including 737-8s and 737-9s, will enable ALC to respond to accelerating market demand as air travel continues to recover."

With commonality and improved fuel efficiency, the 737 MAX family enables airlines to optimize their fleets across a broad range of missions while reducing fuel use and carbon emissions by at least 20 percent compared to the airplanes they replace. With the 737 MAX, ALC customers can choose airplanes that are optimized to suit multiple markets based on range and size while offering commonality for pilots and crew. The versatility of the 737 MAX family allows airlines to offer new and more direct routes for passengers and makes these airplanes highly popular among leasing and airline customers around the world.

# Lufthansa Technik to conduct repair and overhaul of Asiana's CF6-80 engines on Boeing fleet

*This extension will strengthen Lufthansa Technik's business in the Asian market, one of the strongest growing regions.*


Lufthansa Technik also provides component maintenance for the Asiana Boeing 777-200ER fleet and an integrated Total Component Support for their Airbus A320F and A350 fleet.

South Korea's Asiana Airlines have extended their contract with Lufthansa Technik for the repair and overhaul of Asiana's CF6-80 engines powering the airline's Boeing 747 and 767 fleets. The 5-year non-exclusive contract is covering a total of 17 B767-300 and B747-400 aircraft.

This extension will strengthen Lufthansa Technik's business in the Asian market, one of the strongest growing regions, and generate a stable workload for the CF6 product line over the next years.

Hoon Bae, General Manager of Aircraft & Supplies Purchasing at Asiana Airlines said, "There were numerous good reasons to choose Lufthansa Technik as our preferred MRO partner again. With the seamless support and services that have been delivered, we are very confident that Lufthansa Technik will always do their very best to keep us flying."

Kijung Shin, Corporate Key Account Manager at Lufthansa Technik said, "We are very proud that Asiana Airlines has decided to extend our trustful cooperation. We look forward to further supporting them with our know-how and engine service capabilities."

Lufthansa Technik and Asiana Airlines have been working together for more than 25 years already. Lufthansa Technik also provides component maintenance for the Asiana Boeing 777-200ER fleet, an integrated Total Component Support for the airline's Airbus A320F and A350 fleets, and CF6 engine support and heavy maintenance for the carrier's Airbus A380 fleet.

# Triumph to provide equipment for Sikorsky CH-53K helicopter production

*This contract reflects Triumph Group' sengineering expertise in the development of complex systems and detailed components.*


Triumph Group's Actuation Products & Services operating company has secured a multi-year contract with Sikorsky, a Lockheed Martin Company, to produce equipment for the Sikorsky CH-53K helicopter. Triumph will provide all equipment for the Main Rotor Blade Folding System, Main Rotor Lag Damper System, and Main Rotor Brake System.

William Kircher, Executive Vice President, Triumph Systems & Support said, "This new contract reflects Triumph's systems and engineering expertise, which were critical in the development of these complex systems and detailed components. Sikorsky is a valued, long-term customer and we're pleased to extend our partnership into the next phases of production. Triumph's substantial shipset content on the CH-53K reflects the trust that Sikorsky places in us to deliver quality hardware on time."

This strategic follow-on contract will contribute significant work for Triumph's Seattle location, their focal point for innovation. Sikorsky is ramping production to deliver 200 aircraft under the CH-53K program of record. With this multi-year contract, Triumph will provide continuous and increasing equipment deliveries through the production ramp-up.

# ASL Aviation expands partnership with Boeing on 737-800 converted freighters

*737-800BCF offers lower fuel burn and reduces the aircraft's environmental footprint.*

ASL Aviation Holdings recently ordered 20 additional 737-800 Boeing Converted Freighters. The agreement is for 10 firm orders and 10 purchase rights.

Dave Andrew, Chief Executive, ASL Aviation Holdings said, "This new order is an important element of our fleet renewal program, and we are delighted to expand our partnership with Boeing on the 737-800BC. The 737-800BCF offers increased reliability and performance, and equally, its lower fuel burn reduces our environmental footprint. This is very important to ASL as an aviation group committed to environmental sustainability in aviation."

This is ASL's second order for the 737-800BCF and including options, will bring their total 737-800BCF orders and commitments with Boeing to 40 aircraft. The aircraft will be converted by Boeing at approved MRO sites including STAECO in Jinan, China, and at Boeing's London Gatwick MRO facility in the United Kingdom.

Jens Steinhagen, director of Boeing Converted Freighters said, "We are honored to play a crucial role in the fleet renewal underway across ASL Aviation Holdings' operation. Boeing Converted Freighters support progress towards sustainability goals by providing operators like those under the ASL Group umbrella an economical way to replace less efficient, older-generation freighters."

The 737-800BCF carries more payload – up to 23.9 tonnes (52,800 lbs.) – and flies farther – 2,025 nautical miles (3,750 km) compared to 737 Classic freighters.


# Willis Lease signs TAG airline to the ConstantThrust program

*Under the agreement, program maintenance and care for the engines is overseen by Willis Lease, including providing spare engines when the need arises.*

Willis Lease Financial Corporation entered into a lease agreement with Transportes Aéreos Guatemaltecos or TAG airlines for four ATR 72-500 aircraft for five years. The deal includes fitting the aircraft with new Pratt & Whitney Canada PW127M engines along with overhaul and refurbishment.

Austin C. Willis, Willis Lease Chief Executive Officer said, "Over the past two years, our regional and specialty assets group has focused on growth through opportunistic procurement rather than traditional sale and leasebacks. This has enabled us to provide quality aircraft and engines at attractive rates to our customers. We purchased these aircraft in late 2021, and we are delighted to have signed these leases with TAG."

The ATR 72-500 aircraft is known to be one of the most efficient and environmentally friendly aircraft in the world. The aircraft can hold up to 74 passengers in a spacious two-by-two seating configuration.

Willis continued, "This is the first time we have signed a regional airline to our ConstantThrust program. To date, we have provided ConstantThrust to our large-fan engine customers. With the signing of TAG, we are breaking new ground, improving the levels of service for regional carriers and providing them the same kind of superior service, dispatch reliability, and support that major international air carriers enjoy." Aircraft deliveries are expected to begin in the first half of 2022.

Julio Gamero, TAG Chief Executive Officer said, "These four aircraft represent our flight into the future. We've been working with Willis Lease as a team to bring the aircraft to Guatemala in 'new condition. The interiors are new, the engines are new, the airframes have been completely overhauled, stripped to bare metal then painted in our new TAG livery. We are excited to offer these aircraft to our customers in Guatemala and throughout our network."

In addition to the aircraft leases, TAG will be included in Willis Lease's ConstantThrust program. Under the agreement, program maintenance and care for the engines is overseen by Willis Lease, including providing spare engines when the need arises.

# ITA Airways expands network with 12 leased A320 and A330neo from AerCap

*These aircraft will enable ITA Airways to expand its network, whilst advancing its commitment to maintaining an environmentally friendly, fuel-efficient fleet.*

AerCap has signed lease agreements for ten new Airbus A320neo aircraft and two new Airbus A330neo aircraft with ITA Airways.

Peter Anderson, Chief Commercial Officer of AerCap, said, "We are very pleased to expand our relationship with ITA Airways through the lease of these twelve advanced-technology Airbus A320neo and A330neo aircraft. These aircraft will enable ITA Airways to expand its network, whilst advancing its commitment to maintaining an environmentally friendly, fuel-efficient fleet. We thank the team at ITA Airways for the confidence they have placed in AerCap, and we look forward to building the partnership for many years to come."

Francesco Presicce, Chief Technology Officer of ITA Airways, said, "The integration of these new aircraft is perfectly in line with the Company's fleet plan. This agreement represents a further step in our strategy of building a new environmental-friendly fleet with leading-edge technologies which will optimize efficiency, and quality of service and significantly reduce the environmental impact. ITA Airways places the best customer service at the center of its strategy with a strong focus on sustainability. The collaboration with AerCap allows us to improve cost efficiencies across our fleet. I wish to thank the AerCap team for their cooperation."

The aircraft are scheduled to deliver beginning in 2023 through 2024. The integration of these new aircraft is in line with their fleet plan.

# HAL and IAI to convert civil B767 into Multi-Mission Tanker for IAF

*The conversion solution will be made available in India under a MoU which was signed between state owned Hindustan Aeronautics Limited (HAL) and Israel Aerospace Industries (IAI).*

Hindustan Aeronautics (HAL) and Israel Aerospace Industries (IAI) recently signed an MoU to convert the B767 into a refueling aircraft with cargo and transport capabilities for the Indian Air Force (IAF). The contract was signed in New Delhi under the Make in India initiative to convert a civil aircraft into a Multi-Mission Tanker Transport or MMTT aircraft which will help create capabilities in the Indian defence ecosystem.

HAL CMD R Madhavan said, "This venture of MMTT conversion business which is one of the strategic diversification avenues identified by HAL."

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*Cont page 51*

This MoU will facilitate HAL and IAI's expertise in producing, manufacturing, and developing major military platforms and it also covers "passenger to freighter aircraft" conversion along with MMTT conversions.

The MMTT plays a critical role in helping to achieve strategic goals and in boosting the force's capabilities during various operations. During combat situations, they help in enhancing not only the impact but effectiveness too. These Boeing aircraft have the lowest operating cost per trip of any wide body airplane, can be configured as per the operator's requirements like refueling, VIP passengers, cargo movement, and ISR systems. It has special cargo doors and built-in pallet capabilities along with passenger seats that can be removed or installed as per the requirement during operations. IAI has been converting the B767 into aerial tankers for different military missions, and air-to-air refueling capabilities.

## DEFENCE

# Curtis Wright Laser Peening process on F-35 fighter jet receives successful verification

*The verification marks FRCE as the first facility in the world capable of conducting on-site laser peening modification on an F-35 aircraft.*

Curtiss-Wright Corporation announced the successful verification of the Curtiss-Wright Laser Peening process on the airframe components of the fifth-generation F-35 fighter jet. The verification was implemented by the Fleet Readiness Center East (FRCE) at the Marine Corps Air Station Cherry Point, NC and the first F-35B to undergo the treatment has been successfully returned to the fleet. Curtiss-Wright has been selected to help extend the life expectancy of the F-35B, the short takeoff-vertical landing (STOVL) variant flown by the U.S. Marine Corps and other allied nations around the world, by utilizing its critical Laser Peening process.

Lynn M. Bamford, President and CEO of Curtiss-Wright Corporation said, "Curtiss-Wright is honored to be part of this milestone through the utilization of our critical surface treatment applications, building on our commercial and industrial capabilities to support the military's premier fighter jet program. We are excited to be part of the team that returned the first laser peened F-35B back to active service, and we look forward to a long and successful relationship with all of the stakeholders involved on other F-35 variants."

The Laser Peening process was developed by the Curtiss-Wright Surface Technologies Division. Laser Peening strengthens the aircraft's frame without adding any additional material or weight, which would reduce its capability by limiting its fuel or weapons carrying capacity. The technology has wide applications across the defense, commercial aerospace, commercial nuclear and industrial markets. The verification marks FRCE as the first facility in the world capable of conducting on-site laser peening modification on an F-35 aircraft. A second facility, Ogden Air Logistics Complex at Hill Air Force Base, Utah, is now also fully operational and the first F-35B will be processed at that facility starting in April of 2022, followed shortly thereafter by the F-35C.

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# Boeing and Airbus come together to work on H-47 Chinook for German forces

*It is the only heavy-lift helicopter capable of providing Germany immediate interoperability with allied nations and is significantly more powerful, versatile, and agile.*


Boeing and Airbus Helicopters signed a Memorandum of Understanding (MOU) to partner on the H-47 Chinook in support of Germany's Schwerer Transporthubschrauber (STH) heavy-lift helicopter requirements.

Mark Cherry, Boeing vice president, and general manager of Vertical Lift programs said, "We are pleased that Airbus Helicopters has joined our team of strategic partners on the H-47 Chinook program for Germany, and together we will provide the strongest offering to the Bundeswehr. The Chinook has been the preferred heavy-lift helicopter in Europe for decades and a cornerstone of all kinds of NATO operations. It is the only heavy-lift capable of providing Germany immediate interoperability with allied nations and is significantly more powerful, versatile and agile than any other aircraft in its class."

The new partnership between Boeing and Airbus aims at bolstering German defense readiness while supporting German industry and economic growth. The partnership will draw on the strengths and combined expertise of the world's leading aerospace companies to deliver advanced capability.

Wolfgang Schoder, General Manager of Airbus Helicopters in Germany said, "Building on decades of experience as a partner of the Bundeswehr, Airbus Helicopters is excited to join Boeing's Chinook Germany industry team and to partner with Boeing on delivering maximum operational availability to the Bundeswehr. The H-47 Chinook is a proven, mature program in service with many of our allies, and is the optimum solution for Germany with an excellent price-performance ratio."

Boeing is committed to working with the German industry on aircraft sustainment, including post-delivery modifications and installations, aircraft maintenance, supply chain services, training and logistical support, as well as the potential for sub-systems Maintenance Repair and Overhaul work.

Dr. Michael Haidinger, president of Boeing Germany said, "The partnership with Airbus Helicopters reaffirms our commitment to strengthen cooperation with German industry. With our Chinook offering and together with our German industry partners, we will create more than 500 highly skilled jobs in-country, all in direct support of the Bundeswehr's heavy-lift mission requirements."

The Chinook helicopter has proven its unique capabilities and mission readiness in several platforms and is chosen favorite of eight NATO nations. Chinook has delivered Air-to-Air refueling, Medevac, troop transport, search and rescue and humanitarian and disaster relief, and special operations.

# Lufthansa Technik executive board appoints Harald Gloy, member of the Executive Board

*Harald Gloy will have a responsibility as "Accountable Manager" in accordance with EASA Part 145 and will be the contact person for aviation authorities with regard to Lufthansa Technik AG's maintenance operations.*

Harald Gloy, was Chief Operations Officer at Lufthansa Cargo from January 2019, and in March 2021 he took on the additional role of Chief Human Resources Officer and Labor Director there.

The Supervisory Board of Lufthansa Technik has appointed Harald Gloy as a member of the Executive Board for five years, effective July 1, 2022. As Chief Operating Officer (COO), he will be responsible for Operations and Logistics. In addition, Harald Gloy will have a responsibility as "Accountable Manager" in accordance with EASA Part 145 and will be the contact person for aviation authorities with regard to Lufthansa Technik AG's maintenance operations. Gloy succeeds Soeren Stark in this position, who at the same time will become the new Chairman of the Executive Board of Lufthansa Technik.

As Chief Human Resources Officer (CHRO) and Labor Director, Harald Gloy will also take over the Executive Board department of Human Resources, which is currently still headed by Executive Board Chairman Dr. Johannes Bussmann, who will, however, leave the company at his own request at the end of June 2022.

Dr. Detlef Kayser, Chairman of the Supervisory Board of Lufthansa Technik AG and member of the Executive Board of Deutsche Lufthansa AG, said after today's decision: "It is very good news for Lufthansa Technik that we have been able to win Harald Gloy for this task. He has already successfully demonstrated his great expertise and competence in various responsible positions at both Lufthansa Technik and Lufthansa Cargo. This makes him the ideal person to fill this important position."

Harald Gloy, who is currently on statutory parental leave, was Chief Operations Officer at Lufthansa Cargo from January 2019, and in March 2021 he took on the additional role of Chief Human Resources Officer and Labor Director there.

Harald Gloy started his professional career in the Lufthansa Group in 1999 at Lufthansa Technik Logistik in materials management, where he quickly assumed operational management responsibilities. In 2003 he joined Lufthansa Technik in Corporate Development and Strategy, and in 2006 took over as head of the Aircraft Overhaul and Modification production unit in Hamburg. After holding various management positions as head of Component Maintenance Services and head of Engine Services he was heading Lufthansa Technik's entire component business from 2014 before being appointed to the Executive Board of Lufthansa Cargo in Frankfurt.

In addition to his duties in the companies of the Lufthansa Group, Harald Gloy was also actively involved as a member of the Executive Board of the Aviation Cluster Hamburg Aviation and the Air Cargo Community Frankfurt, as a member of the Supervisory Board of the ZAL Center of Applied Aeronautical Research and as a member of the Innovation Commission at the Federal Ministry for Digital and Transport.

# Jordi Boto promoted as CEO of Elbe Flugzeugwerke GmbH

*Jordi Boto brings more than two decades of global experience in the aviation industry to EFW, including key positions at Airbus.*

Jordi Boto has taken over as the CEO of Elbe Flugzeugwerke GmbH effective from 1st April 2022. He replaced Dr. Andreas Sperl, who retired after almost 15 years of service. Prior to the appointment, Jordi was COO, responsible for driving the ramp-up of the conversion from passenger to cargo aircraft at EFW since November 2020.

Jeffrey Lam, President of Commercial Aerospace at ST Engineering said, "Dr. Sperl was the architect of the EFW joint venture, which was set up in 2016 between Airbus and ST Engineering. Since then, EFW has grown from strength to strength and has undertaken many challenges and new developments. With Jordi, who has over twenty years of experience in the aviation industry, taking over Dr. Sperl, we look forward to him driving the future growth of the company, and taking it to greater heights."

Jordi Boto brings more than two decades of global experience in the aviation industry to EFW, including key positions at Airbus. Under his leadership, key milestones have been achieved, both at Airbus as well as at subsidiaries and supplier companies.

From 2006, under the direction of Jordi Boto, ATR was able to increase the rate from just 6 to over 70 aircraft per year. He then led as SVP Head of the Power8 program for the Airbus group from 2009 onwards. The Power8 program was the largest and most successful restructuring and change program ever implemented in the aeronautical industry. The result of the program and the follow-up programs was a centralized managed company being able to achieve significant improvements in time, efficiency, costs and quality.

In 2012, Jordi Boto became CEO of PFW Aerospace Speyer, an Airbus supplier that was in a financially critical situation. He achieved in the following years a successful turnaround into a leading aviation supplier.

# Shawn Black takes over as the President of Defence at GKN Aerospace

*Shawn is an industry veteran with over two decades experience and background in US Marine Corps.*

GKN Aerospace has appointed Shawn Black as President of Defense, bringing significant aerospace and defense leadership experience to the business.

Shawn Black, President of Defense, said, "I am very excited to join GKN Aerospace, especially at a time when we are starting to see a positive turnaround across the industry. GKN Aerospace is an important partner on the world's leading Defense platforms, and I look forward to working closely with our customers to strengthen our partnerships for the long term."

Shawn started his career as the United States Marine Corps Officer before moving into the industry 22 years ago. During that time, he has achieved a consistent record of strong financial and operational performance growth in senior leadership and operational roles across military and commercial markets. His background includes senior roles with companies such as Leonardo DRS, Cobham plc, and Cobham's Advanced Electronic Solutions (CAES) where he served as COO then CEO.

# Beth O' Neill takes over as regional VP, Sales at Gulfstream

*Beth has over 20 years of experience in aircraft financing, recently as Bank of America Merrill Lynch's director of corporate aircraft finance-northeast.*

Beth O' Neill will succeed Michael Swift as regional vice president of Sales for New York at Gulfstream Aerospace Corp. Michael Swift recently took over the position of regional senior vice president of Sales for Europe, the Middle East, Africa, and the Indian Subcontinent.

O'Neill comes to Gulfstream with more than 20 years of experience in aircraft financing, recently as Bank of America Merrill Lynch's director of corporate aircraft finance-northeast.

Scott Neal, senior vice president, Worldwide Sales, Gulfstream said, "Beth O'Neill has a wealth of aviation and financial industry knowledge, and I am pleased to welcome her to Gulfstream. Interest in Gulfstream aircraft continues to increase, and Beth's expertise and experience in the market combined with her knowledge of our products and customers will enable her to step right in as a member of our Sales team."

O'Neill will report to Peter Vasconcelos, regional senior vice president of Sales for the Eastern United States and Canada, and is based out of Gulfstream's Manhattan Sales and Design Center. Located in Midtown Manhattan, the Sales and Design Center features a dedicated Gulfstream interior designer, material selections and advanced virtual configuration tools.

# Ted Colbert succeeds Leanne Caret as the President and CEO of Boeing Defence, Space, and Security

*Colbert will oversee all aspects of Boeing's business unit that provides technology, products, and solutions for defense, government, space, intelligence, and security customers worldwide.*

Ted Colbert will succeed Leanne Caret as the President and CEO of Boeing Defence, Space, and Security business while Stephanie Pope will take Ted Colbert's place as the president and CEO of Boeing Global Services. As president and CEO of Boeing Defense, Space and Security (BDS), Colbert will oversee all aspects of Boeing's business unit that provides technology, products, and solutions for defense, government, space, intelligence, and security customers worldwide. BDS had a 2021 revenue of USD 26 billion.

Dave Calhoun, Boeing President, and CEO said, "We are grateful for Leanne's dedicated service and I'd like to thank her for her outstanding contributions to our industry, our customers, our company, and our employees over her extraordinary career at Boeing. Throughout his career, Ted Colbert has consistently brought technical excellence and strong and innovative leadership to every position he has held. Under his leadership, BGS has assembled an excellent leadership team focused on delivering safe and high-quality services for our defense and commercial customers. His leadership track record and current experience supporting the defense services portfolio ideally position Ted to lead BDS."

As president and CEO of Boeing Global Services, Pope, who is currently Boeing Commercial Airplanes' chief financial officer, will lead the company's business unit that provides aerospace services for commercial, government, and aviation industry customers worldwide focused on global supply chain and parts distribution, aircraft modifications and maintenance, digital solutions, aftermarket engineering, analytics, and training. BGS had a 2021 revenue of USD 16 billion. Prior to her assignment as BCA CFO, Pope was the chief financial officer of BGS and was part of the business when it was established in 2017.

"Stephanie brings decades of wide-ranging business and financial leadership to her new role. Given her significant experience in all aspects of BGS, Stephanie's deep understanding of the global services portfolio since its inception and the needs of BGS customers will help accelerate this meaningful business," Calhoun added.

Colbert and Pope's new assignments will be effective April 1. Until her retirement later this year, Caret will serve as executive vice president and senior advisor to the CEO, reporting to Calhoun, to support the leadership transition, business continuity and critical talent acquisition efforts.

# International CALENDAR 2022

# 2022

| Date | Event | Venue |
|---|---|---|
| 26-28 Apr | MRO America | Dallas, TX, USA |
| 03-05 May | NBAA Maintenance Conference | San Antonia, TX |
| 23-25 May | EBACE | Geneva, Switzerland |
| 24-25 May | Global Aerospace Summit | Abu Dhabi |
| 31 may-01 June | IATA Annual Ground Handling Conference | Paris, France |
| 07-08 Jun | Engine Leasing, Trading & Finance | London, UK |
| 09-11 June | France Air Expo | France |
| 15-16 June | MRO BEER | Istanbul, Turkey |
| 21-23 June | World ATM congress | Madrid , Spain. |
| 07-09 July | AERO South Africa | South Africa |
| 07-08 Sept | Aero-Engines Europe | Dublin, Ireland |
| 07-08 Sept | Helitech Expo | ExCeL London |
| 20-22 Sept | MRO ASIA-PACIFIC | Singapore |
| 06-08 Oct | Istanbul Airshow | Istanbul Atatürk Airport, Istanbul |
| 18-20 Oct | MRO EUROPE | London, UK |
| 01-03 Nov | Abu Dhabi Air Expo | Abu Dhabi |
| 06-09 Nov | ATCA | Washington, D.C. |
| 06-08 Dec | MEBAA | DWC, Dubai |


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