MRO BUSINESS TODAY

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Rolls Royce Ultrafan power gearbox sets a new world record with 87,000 horsepower

UltraFan, which is scalable for narrowbody or widebody aircraft, is a key element of Rolls-Royce's commitment to making travel more sustainable.

Rolls Royce's UltraFan power gearbox has set a new world record at their Germany facility. The gearbox has reached 87,000 horsepower or 64 megawatts – enough to power a city the size of Bath, United Kingdom – on test at Dahlewitz, near Berlin. The power milestone was achieved as build continues on the power gearbox that will be delivered for the actual UltraFan demonstrator engine, UF001, later this year.

UltraFan, which is scalable for narrowbody or widebody aircraft, is a key element of Rolls-Royce's commitment to making travel more sustainable. Gas turbines will continue to be the bedrock of long-haul aviation for many years, and UltraFan's efficiency will help improve the economics of an industry transition to more sustainable fuels, which are likely to be more expensive in the short-term than traditional jet fuel. The first test run of the engine will be conducted on 100 per cent Sustainable Aviation Fuel.

Dr Holger Klinger, Sub-System Executive Power Gearbox, Rolls-Royce, said, "Reaching this record is another great achievement that showcases the performance and durability of this key component for our UltraFan programme. The power gearbox technology is central to the success of the next generation of Rolls-Royce jet engines and I'm proud to see us pushing the engineering boundaries again."

The PGB is playing a central role for the UltraFan engine, helping to deliver excellent efficiency levels over a wide range of thrusts. It has a planetary design, with each 'planet' capable of holding the force of a Trent XWB engine at full throttle. It is designed to allow the turbine at the rear of the engine to run at a very high speed while the fan at the front runs at a lower speed. This makes the engine very efficient, making the UltraFan engine 25 per cent more fuel efficient than the first generation of Rolls-Royce Trent engines.

Development testing of the first prototype gearbox, focused on validation, endurance and reliability, began in 2017 at the dedicated PGB test facility in Dahlewitz. During a rigorous test regime, the power gearbox has since accumulated more than 650 testing hours and proven its capability of managing the equivalent power of an entire grid of Formula 1 cars.

As well as high power testing, the PGB has been undergoing tests on the facility's Attitude Rig, which simulates the effect of the gearbox being on the wing of an aircraft in flight, through phases such as take-off, climb, banking and descent.

Deutsche Aircraft finds perfect partner in HAGGEMANN for D238ecoTM wing production

The aerodynamically optimized wing design of the D328ecoTM will be manufactured in a state-of-the-art automatized manufacturing process flow.

Deutsche Aircraft has selected HEGGEMANN AG for the D328ecoTM wing industrialization and production. As per the agreement HEGGEMANN will undertake the manufacturing of the D328ecoTM wing box and engine support. This partnership is a key milestone in the development of the D328eco programme. Deutsche Aircraft is the German aircraft Original Equipment Manufacturer.

The aerodynamically optimized wing design of the D328ecoTM will be manufactured in a state-of-the-art automatized manufacturing process flow. Hereby, progressive quality assurance and digitalized end-to-end processes in terms of "Industry 4.0" will be implemented.

Nico Neumann, Vice President of Operation and Programme at Deutsche Aircraft GmbH said, "Combining the advantage of Dornier wing structure, forward-looking SAF compatibility and HEGGEMANN's production expertise, this partnership will create great synergy for the D328ecoTM programme. We found HEGGEMANN to be the perfect partner for the D328ecoTM wing serial production. Our vision and mission align when it comes to sustainable production roadmap. Furthermore, we are both proud of our German heritage of unmet engineering excellence and quality."

Dr. Christian Howe, CEO of HEGGEMANN AG said, "We are very pleased to be an essential part of the development of the D328ecoTM programme. Realizing the wing in addition to the landing gear gives us the unique chance to further strengthen our partnership with Deutsche Aircraft. We will use our engineering competence and innovation strength to implement state-of-the-art digital manufacturing strategies and be an efficient manufacturing partner for Deutsche Aircraft."

The manufactured wing and its sub-components will be fully sustainable aviation fuel (SAF) compatible, with new sealants, surface protection measures and materials that fits with all mainstream sustainable aviation fuels.

HEGGEMANN has over 55 years industrial experience, mastering high-volume, industrialized production, which will support the growth of the aviation sector. They have fully implemented the APQP principle, a digital end-to-end process and product lifecycle tracking system. These attributes are mandatory for Deutsche Aircraft's deployment of Industry 4.0 manufacturing principles. Aside of digitalization, HEGGEMANN also offers REACH roadmap that aligns with Deutsche Aircraft's efforts to minimize environmental impact.

EME Aero on the way to become the largest and most modern GTF Engine shop maintenance service

PW1500G leads to more than 35 shop visits this and next year and extends EME Aero's capability.

EME Aero recently obtained the EASA 145 certification as a maintenance organization for Pratt & Whitney PW1500G engine series. They also received customer approval by aircraft operator Swiss and have just inducted the first PW1500G engine at the shop in Jasionka, Poland. EME Aero is the engine services joint venture between Lufthansa Technik AG and MTU Aero Engines AG.

Derrick Siebert, CEO and Managing Director of Business said, "We started our operation in December 2019 and performed an extremely ambitious ramp up for the PW1100G-JM with more than 50 engines inductions in 2020, on the way of becoming the largest and most modern GTF Engine shop in the world. On top of that we launched the next step – the preparation for PW1500G engines capability and the engine's induction targeted for mid-2021. Despite obstacles resulting from COVID-19 restrictions, our team along with the support from our shareholders as well as Pratt & Whitney, managed to stay right on track with the first induction and with our ramp according to plan."

Robert Ma lach, COO, Managing Director of Operations said, "The introduction of the PW1500G series at our shop marks a major milestone in the company's short history, since the technical requirements of this engine technology are demanding. PW1500G leads to more than 35 shop visits this and next year and extends EME Aero's capability. Despite of difficult pandemic situation and necessity to work remotely with special processes approvals, EME Aero has successfully completed the project and is going to strengthen the repair services within the Pratt & Whitey network. This results from the great collaboration of the EME Aero team, the support of our shareholders and Pratt & Whitney trainers' team."

EME Aero has been focused on implementing innovative and advanced solutions. The shop was given three years to implement a high-tech assembly concept that would ensure top-class maintenance for the GTF engines family. Having in mind the challenge of joining three GTF engine types in one shop, together with MTU's Munich team EME Aero is a good way to implement the high- tech flow line system.

"This assembly system is unique on its own, offering a high level of process commonality to the entire GTF family. This means that a PW1500G doesn't have to be put through an assembly system custom-built for that engine type, but can also be overhauled on the same assembly line with PW1100G-JM. So, we are ready for the flexible and effective approach and performance," added Derrick Siebert.

"EME Aero flow line concept is not a typical stationary system such as those used in MRO operations. Instead, the engines are fitted to freely moving, floor-based carriers that can be pulled in and out of the production line without disturbing the overall flow. At the heart of the concept are two modern and technically brilliant systems: the mobile transport and overhaul system (MTOS) that handles the complete teardown of engines along the flow line, while partial disassembly is performed in the stationary docks of the fixed overhaul system (FOS). Thanks to this solution, the assembly line can be fully adapted to different GTF family engines supporting high volume demand for upcoming years," added Robert Ma lach.

EME Aero stands by its strategic goals of 450 service visits per year and employment of 1,000 people by 2026.

Lessor Griffin Global Asset Management eye 737MAX as a strategic opportunity for market recovery post pandemic

The Los Angeles- and Dublin-based aircraft leasing company places its first direct order with Boeing.

Global Asset Management is expanding its commercial aircraft portfolio with five new Boeing 737-8 jets. This is Griffin's first direct order with Boeing as it sees strategic opportunities to place the airplanes during market recovery. The 737 MAX family is designed and built in Renton, Washington to deliver superior efficiency, flexibility and reliability while reducing fuel use and carbon emissions by at least 14 per cent compared to the airplanes they replace. The 737-8 seats up to 189 passengers and can fly 3,550 nautical miles – about 600 miles farther than its predecessor – allowing airlines to offer new and more direct routes for passengers.

Ryan McKenna, founder and CEO of Griffin said, "As market conditions rebound, we are finding opportunities to serve our airline customers in innovative ways. An important component of this strategy is providing balanced capacity that meets returning passenger demand. The 737-8 is well-positioned to support this objective, and this order lays a strong foundation for more to come with Boeing and Griffin on future opportunities."

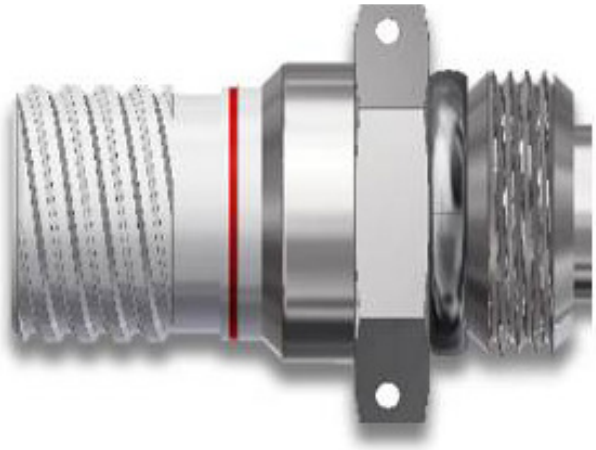
Ihssane Mounir, Boeing senior vice president of Commercial Sales and Marketing said, "Griffin Global Asset Management is building a first-class aircraft leasing business, and we are delighted that they have selected the 737-8 for their single-aisle portfolio. As Griffin places its first direct order with Boeing, we welcome them to the 737 family and look forward to working with the team in the future."

Every 737 MAX features the new Boeing Sky Interior, highlighted by modern sculpted sidewalls and window reveals, LED lighting that enhances the sense of spaciousness and larger pivoting overhead storage bins.

Griffin provides commercial aircraft leasing and alternative asset management with offices in Dublin and Los Angeles.

AMERON gains CAAC approval for selling PMA parts in China

This approval is in addition to the 53 PMA parts that were previously approved by the CAAC in 2020 on a separate VSTC.



The high-quality PMA parts by AMERON improves the aircraft's ability to keep operating with short lead times.

AMERON has achieved an important milestone by gaining approval from the Civil Aviation Administration of China (CAAC)for selling 29 types of aircraft PMA pyrotechnic parts in Chinathrough a Validation of Supplemental Type Certificate (VSTC). This approval is in addition to the 53 PMA parts that were previously approved by the CAAC in 2020 on a separate VSTC.

Adam Brammer, Divisional Vice President and Business Unit Manager of AMERON said, "We are proud to be growing our ability to support Chinese airlines by offering cost saving aviation safety solutions that improve the aircraft industry's ability to keep operating with our high-quality parts and short lead times. We look forward to continued expansion into the Chinese market."

AMERON now offers a total of 82 PMA parts to the Chinese market that support the vast majority of aircraft flying today in China. The list is inclusive of all Airbus and Boeing aircraft and significantly opens up the Chinese market to AMERON sales.

FL Technics continued focus on excellence makes them a cut above the rest

The latest certification by FL technics defines their competencies and acknowledges its capabilities to deliver best-in-class services to a global pool of clients.

FL Technics recently added a milestone in their long list of certifications with receipt of the Certificate for Continuous Airworthiness and Technical Asset Management Services, awarded by the Bureau Veritas. This certification confirms that FL Technics Quality Management System meets the requirements of EN 9110:2018 and EN ISO 9001:2015 standards, and defines their capabilities to match the needs of the market; including those of major players such as Airbus, Boeing, and other leading stakeholders.

The certification was based on the significant support and guidance of the FL Technics Quality Department and aptly demonstrates the principle that continuous airworthiness and technical asset management services rank as priorities for FL Technics.

According to Zilvinas Lapinskas, CEO of FL Technics, "Success in the global MRO business is based on continuous improvement and the consistent provision of superior-quality services. The certificate awarded to our team once again illustrates our commitment to such principles and our continued focus on excellence at all levels of our business. Evaluated with adherence to internationally regulated standards, this milestone award acts as demonstrable proof that FL Technics is clearly on the right track for future development and growth, along with possessing the clear potential to provide premium services for a global client base."

This certification defines their competencies and acknowledges its capabilities to deliver best-in-class services to a global pool of clients across the aviation industry.

Lufthansa's innovative airspace cabin to redefine air travel and passenger experience

In addition to Lufthansa, the new cabin will also be used by Swiss, Brussels Airlines and Eurowings in new aircraft of the Airbus 320 family.

More seating comfort, 40 percent larger luggage compartments and modern lighting concept on board.

Lufthansa Airlines have introduced new and rather innovative cabins on their short and medium haul routes for a whole new flying experience for their passengers. The first flight with these modernised airspace cabins, the A321neo will take off soon from Frankfurt to Fuerteventura.

Heike Birlenbach, Head of Customer Experience, Lufthansa Group said, "Regardless of the crisis, we continue to focus emphatically on a premium offering for our guests. For us, premium means providing high-quality, individualized and relevant offers for all our passengers at all times. With the new Airspace Cabin, we are significantly improving the travel experience on short-haul routes."

In addition to Lufthansa, the new cabin will also be used by Swiss, Brussels Airlines and Eurowings in new aircraft of the Airbus 320 family. And it has a lot to offer: The huge new overhead bins have a forty percent larger volume and can even hold sixty percent more suitcases, as they can be stowed vertically in the bins.

The cabin design and the entrance area have been extensively redesigned and now appear brighter and friendlier. So-called Human Centric Lighting, a specially programmed, flexible lighting system, illuminates the cabin in warm red light, graduated intermediate tones to colder blue light. Depending on the time of day or night, the light in the aircraft cabin is thus geared to the passengers' biorhythms. Seating comfort has also been improved: the side walls of the Airspace Cabin will in future offer passengers more space in the shoulder area. In addition, the modern washrooms are even more usable for people with limited mobility.

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Embraer expands in Hungary to create administrative hub for Central and East European projects

The new office in Budapest will employ Hungarian personnel, administrative and engineering staff that will work in close cooperation with Embraer's teams in Brazil.

Embraer recently opened a new office in Budapest, the capital of Hungary as a part of their expansion policy to create an administrative hub for project developments in Central and Eastern Europe. The main objective of this expansion is to foster cooperation in Hungary, which could result in future developments under new partnerships. The office will employ Hungarian personnel, administrative and engineering staff that will work in close cooperation with Embraer's teams in Brazil.

Jackson Schneider, President and CEO of Embraer Defense & Security said, "Embraer is keen to increase its presence in Hungary and to expand our network with Hungarian high-technology representatives and other stakeholders, aiming to establish a deep and well-structured cooperation with some of the most qualified and innovative companies in the country."

Gáspár Maróth, Government Commissioner for Defense Development said, "Less than a year ago, we started to work together in building the tanker-transport capabilities of our air force. We look forward to expanding this cooperation with engineering and industrial activities between Embraer and the evolving Hungarian aerospace-defense sector."

Earlier this year, Embraer was eyeing expansion in Chinese markets despite still competition from Chinese operators. This initiative points sharply at Embraer's strategy to establish new partnerships in select markets which will aid the collaborative efforts of long-term projects and investment in reliable dual-use technology.

Beechcraft Denali's successful engine run paves way towards inaugural flight

GE Aviation's Catalyst engine has completed over 2,450 hours of testing and is prepping for a first flight on its Beechcraft King Air flying test bed.

Textron Aviation announced the successful completed initial ground engine runs on the prototype Beechcraft Denali single-engine turboprop powered by GE Aviation's new advanced Catalyst engine. The ground engine runs took place at Textron Aviation's west campus in Wichita, Kansas. This test run verified the functionality of the fuel system and engine, as well as the interface with the avionics and electrical systems.

Chris Hearne, senior vice president, Engineering said, "These successful engine runs are a significant step toward the upcoming inaugural flight for the Beechcraft Denali, and they are a testament to the determination and collaboration from both the Textron Aviation and GE Aviation teams. The Denali features a technologically advanced engine that burns less fuel. It has an intuitive avionics suite that eases pilot workload and boasts the most spacious cabin in its segment. We are excited to get this aircraft into the hands of our eager customers."

GE Aviation's Catalyst engine has completed over 2,450 hours of testing and is prepping for a first flight on its Beechcraft King Air flying test bed. The Catalyst engine is a more environmentally friendly engine that burns less fuel than older turboprop technologies. The engine can also use sustainable aviation fuel, which results in lower emissions. The 1,300 shaft horsepower (SHP)-rated turboprop engine eases pilot workload with its single-lever power and propeller control. The Full Authority Digital Engine Controlled (FADEC) engine provides trend monitoring, which allows for on-condition maintenance with no mid-life Hot Section Inspection required.

The Beechcraft Denali development program has achieved several important milestones in recent months. Earlier this summer, GE Aviation Catalyst engine was installed on the Beechcraft Denali prototype airframe and the aircraft was powered on for the first time. Two other Denali flight test articles are also in development. Three additional ground test articles will be used for the airframe static and fatigue tests, and for cabin interior development and testing. The company anticipates certification for the Denali in 2023.

The testing moves the clean-sheet design aircraft closer to its milestone first flight, which is anticipated by the end of the year. The Beechcraft Denali is designed and manufactured by Textron Aviation.

Aviation Concepts Technical Services expands capabilities with FAA approval

Aviation Concepts Technical Services is a business aviation Maintenance, Repair, and Overhaul Facility (MRO) and parking service provider based in Subic Bay, Philippines.

Aviation Concepts Technical Services recently received FAA approval to increase its Operation Specifications capabilities for the GIV-X (G350/G450) to include 192- Month Inspections. Aviation Concepts Technical Services is a business aviation Maintenance, Repair, and Overhaul Facility (MRO) and parking service provider based in Subic Bay, Philippines.

Stephen Klohr, Director of Quality for ACTSI said, "In anticipation of what we're seeing more in the Asian region, and worldwide for that matter, the GIV-X (G350/G450) aircraft are maturing and requiring the need to accomplish the larger inspection packages. We, at ACTSI, have poised ourselves to provide that service and those alternate options for inspections, not only to our regional customers but to customers that are transiting through."

Strategically-located within an 18,000 square-meter hangar, ACTSI is a premier Part 145 Repair Station holding FAA, Cayman, and Bermuda authorities, as well as providing parking and handling services for Gulfstream business jets within the region which can easily match OEM and client standards.

Embraer celebrates its 1500th business jet delivery milestone

Embraer achieved this impressive accomplishment in only two decades whereas the industry average to reach this mark is 34 years.

Embraer recently delivered its 1,500th business jet, a Phenom 300E to Haute Aviation. Embraer achieved this impressive accomplishment in only two decades whereas the industry average to reach this mark is 34 years. The Phenom 300E has taken the place of best-selling light jet for nine years.

Michael Amalfitano, President & CEO of Embraer Executive Jets said, "We are honoured to announce Embraer Executive Jet's 1,500th delivery. This landmark delivery to Haute Aviation reflects our commitment to delivering the ultimate experience in business aviation. With our industry-leading portfolio, we always seek to redefine the customer experience through technology, performance, and comfort. We are thrilled to deliver this experience to Haute Aviation and enthusiastically welcome them as a first-time Embraer customer."

Looking to diversify the company's portfolio, which includes a single-engine turboprop and ultra-long-range aircraft, Haute Aviation decided to expand operations with the Phenom 300E. The aircraft, with a non-stop range of 2,010 nautical miles (3,724 km), will allow customers from Switzerland to fly domestically, across Europe, and throughout the world.

Haute Aviation is based out of the Saanen-Gstaad airport, which is nestled in the mountainous region of the Swiss Alps and often considered a challenge to operators due to its location. However, with superb runway and climb capabilities, the Phenom 300E demonstrates unmatched performance throughout the area with technologies such as Synthetic Vision System (SVS) to provide enhanced situational awareness and runway overrun awareness and alerting system (ROAAS) the first technology of its kind to be developed and certified in business aviation.

Haute Aviation also cited speed as a deciding factor when it came to the aircraft, as the Phenom 300E is the fastest and longest-ranged light jet, capable of reaching Mach 0.80, allowing its customers to reach their destination quicker and with superior comfort. In fact, the Phenom 300E can reach all of Europe from Switzerland with all seats full, faster than any other aircraft in the segment.

"For Haute Aviation, the new Phenom 300E is the best product on the market to complete the range of our fleet," said Catherine Tamagni, Head of Marketing and Communication at Haute Aviation. "We believe the aircraft's two engines will suit our passengers who prefer not to fly in a single-engine aircraft, as this allows for uncompromised range and payload performance. However, we are most confident that our charter clients will be impressed by the fantastic cabin with its best-in-class altitude, low noise and extreme comfort. The Phenom 300E also has one of the best lavatories in its category as it's fully enclosed with two full-size windows and is certified for takeoff and landing. We are looking forward to introducing the Phenom 300E, as well as growing our partnership with Embraer."

With over 950 customers flying 1,500 aircraft in more than 80 countries, Embraer's executive aviation business has accumulated an annual growth rate of 22 per cent since 2002, when the first executive jet model was delivered. In 2020 alone, one in every 4 small and midsize cabin jets delivered was an Embraer Phenom or Praetor.

AJW's expands in Europe, opens latest MRO facility near Gatwick airport

AJW Technique Europe will deliver the same outstanding customer service and quality that customers of AJW Group's Montreal facility have enjoyed for almost 10 years.

AJW recently launched its latest European MRO facility called the AJW Technique Europe, near Gatwick Airport. It specialises in battery repair, including deep cycle, top charge, cleaning, re-blocking, regular service, overhaul, test and recertification for all commercial aircraft main, auxiliary, and emergency power supplies.

The battery capability is delivered via the acquisition of Avia Component

Technicians will continue to provide a seamless, full service immediately.

The MRO has been strategically positioned to meet the needs of AJW Group's flagship customers' needs. AJW Technique Europe will deliver the same outstanding customer service and quality that customers of AJW Group's state-of-the-art MRO facility, AJW Technique, in Montreal have enjoyed for almost 10 years.

Despite the pandemic, AJW Group has continued to transform, grow and deliver to get closer to its customers and to provide an unrivalled expertise and experience.

Jet Aviation's sets up new state-of-art 8000 square meter production centre in Basel

This centre consolidates all production activities, bringing cabinetry, interior finishing, and sheet metal under one roof.

Jet Aviation recently completed the extension and renovation of a new 8,000 square meter production centre at its maintenance and completion facility in Basel. The new space has 5,000 square meters of renovated space and additional 3,000 square meter extension. It brings the cabinet shop, interiors and finishing shops, and sheet metal shops together in one location.

Jeremie Caillet, Jet Aviation's vice president of VIP completions said, "This investment is a testament to our promise of being easy to do business with. Customers trust us with one of their most valuable assets, and we take pride in bringing their vision to life. This centre consolidates all production activities, bringing cabinetry, interior finishing, and sheet metal under one roof. It further creates significant efficiencies and makes it easier for our customers to visit and experience first-hand the craftsmanship that makes their aircraft so unique."

The architectural design and planning process started in mid-2019 while the actual construction started towards the end of 2019. Phase I was completed in November in which moving the sheet

metal, interior and finishing shops was completed. Phase II focused on moving the cabinet shop and completing the extension and renovation project.

Sylvain Von Hof, vice president real estate, facility management & logistics EMEA said, "The concept and development of such a large project adjacent to our existing hangars was a long and complex program, which took almost ten years from initial concept to opening. It is a fantastic achievement and we thank everyone who took part, from the teams here at Jet Aviation, to our local partners, including the Euro Airport, who played a significant role throughout the entire process."

Cyril Martiniere, vice president MRO Europe & general manager Basel, added, "After more than twenty years, we are delighted to see our production teams of some 150 employees together in one location. This new, spacious, and light-filled centre represents the latest innovations in infrastructure and equipment for a safe and enjoyable work environment and will allow the teams to collaborate even more efficiently and effectively with one another and with our customers."

In line with Jet Aviation's commitment to employee well-being and sustainability, the centre is designed with LED dimmable lighting, a high-pressure vacuum system, dust collector systems, 2 separate paint cabins, and ventilation units. The centre also features 600 square meters of levelled assembly and pre-assembly platforms to foster optimal performance.

For an aircraft – How old is too old?

What is an Ageing Aircraft?

Just as a human being starts ageing from the day he is born, similarly an aircraft starts ageing from the day it is manufactured. The dilemma however is, how old is too old? Some aviation experts feel that if an aircraft is properly maintained as per schedule the chronological age of an aircraft does not matter much in the final performance review. But is that really true? Let's find out more...

A lot of factors come into play while calculating the ageing process of an aircraft like the number of flight hours or the number of flight cycles that the aircraft has flown till date. Even if we do get a specific age, the different components of an aircraft age differently based on their functions, use and maintenance. Factors like these make the age calculation of an aircraft difficult. Apart from these other factors like maintenance on an aircraft, the type of aircraft operations, and the operational environment also matter while calculating the aircraft age.

Understanding aircraft aging is critical for the fleet management to decide when an aircraft needs to be replaced.

Common ageing problems faced by an aircraft and their causes

Fatigue is the most common sign that an aircraft has started ageing. It includes fatigue of the basic type design, widespread fatigue damage (WFD), corrosion, fatigue of changes and repairs, and continued operation with unsafe levels of fatigue cracking. Due to the repeated flight cycles and frequent use, the metal elements of planes weaken over time, and eventually require attention and repair. This weakness manifests in cracks in structures of panes, which are microscopic at first but later prove to be fatal. The maintenance issues which have particularly arisen with aging aircraft structural failure have generally been seen as arising from fatigue or corrosion, with corrosion sometimes initiating fatigue effects.

a. Metallic corrosion: Most of the older aircraft are made used two dissimilar metals making them an easy target for metallic corrosion due to chemical action thereby causing deterioration of the metal surface. As this effect mostly occurs at the microscopic grain boundaries within a metal alloy, there are chances that it might go undetected resulting in loss of integrity of metallic structure. Selection of better design and non-metallic

composite is the best solution to avoid the problem.

b. Pitting corrosion – It is a localized corrosion by which small cavities or holes are formed on the surface of metals. This is one of the more dangerous corrosions because of its limited detection and the persistence of pitting formations. These small holes and cavities can lead to a catastrophic failure of the engineering systems.

c.Maintenance -

- Better understanding of the detailed effects of corrosion
- Study of the ground environment where the aircraft is parked
- Improved inspections including the use of non-destructive testing or NDT
- Corrosion management by effective repair techniques, mapping technologies and recording
- Use of coating or inhibitor treatments
- Use of composite doublers as a cost-effective method to safely extend the life of aircraft. They are able to withstand extensive damage and non-optimum installations while improving fatigue life and ultimate strength.
- Use of drones for detecting cracks or structural deformities on the fuselage instead of manual inspection

Apart from the above, Degradation and failure of aircraft wiring insulation results in potentially flight safety critical system failure or in smoke and fire due to arcing. With two air accidents in recent years involving great loss of life caused by wiring failure, the integrity of aging aircraft wiring is a significant and growing concern for aviation regulators, aircraft operators and maintainers.

Aircraft retirements & Teardowns in 2021

As per IATA about 16,000 commercial aircraft have been retired over 35 years and about 700 per year are reaching the end of their lives. This trend is steadily rising with around 11,000 aircraft are expected to retire over the next decade. The pandemic has definitely played a catalytic role in this process with many operators announcing earlier than expected fleet retirement programs. Older and inefficient aircraft are being retired and being replaced by more efficient next-generation Boeing 787 Dreamliner and Airbus A350 XWB. Virgin Atlantic Airways retired its Airbus A340-600 aircraft ahead of time while KLM Royal Dutch Airlines retired its Boeing 747-400 aircraft in March. Iconic quad-engine aircraft such as the Boeing 747 and Airbus A380 have disappeared from the global airline fleets only to be replaced with twin-engine aircraft. Aging twin-engine aircraft are also on retirement line-up, with airlines seeking newer types that provide their passengers with better experiences and relief for their bottom lines. American Airlines retired its entire fleet of Boeing 767-300ER wide-body aircraft. Newer wide-body aircraft including the Boeing 787 Dreamliner have taken the place of the 767. Lufthansa grounded its Airbus A380s due to reduction in demand.

Once the aircraft ages and retires, the next step is the teardown process. During teardown the completely aircraft is stripped down and reusable spare parts and components are removed. These parts hold a very high value in the market.

The future trend is in aircraft teardowns. Instead of bearing the brunt of maintenance of ageing aircraft, operators and lessors are opting for more value-driven and increasingly favourable teardown options. During teardown the spare parts removed from the retired aircraft can be repaired and re-certified before being released into the marketplace. Generally, aftermarket components are more affordable and readily available than OEM parts.

Naturally many aerospace companies across are expanding into aircraft modification and teardown facilities. Recently J&C Aero opened their first aircraft teardown site in Lithuania.

Commenting on the new site opening, Laurynas Skukauskas, the CEO at J&C Aero says, "The pandemics, despite all its challenges, also provided new opportunities as airlines and aircraft owners seek more flexibility with their fleets. That is why we decided to expand J&C Aero's existing DOA/POA and CAMO capabilities and launch our own MRO center. In addition, seeing a rising demand for used spare parts and supporting the industry's efforts to be more sustainable, we have also decided to launch the region's first aircraft teardown site with a capacity of several aircraft per month."

Conclusion

Until very recently the issues arising due to aircraft ageing were neither recognised nor addressed till fatal accidents occurred. It was then that system deterioration started receiving attention from maintenance and airworthiness officials. The United States, which has seen most examples of accidents attributed to aging aircraft problems, has a joint civil-military organisation called the Joint Council on Aging Aircraft (JCAA) to co-ordinate the development of risk management solutions for the various types of aging aircraft problem, especially structures.

C&L committed to invest in inventory to meet customer demands

Recently C&L purchased a multi-million-dollar ATR spare parts purchase which consists of many consumables and expendables.

C&L Aerospace is heavily investing in additional inventory to meet customer demands with the purchase and teardown of 15 aircraft. The aircraft included are 2 E170, 9 ERJ 145, 2 Saab 340B+, 1 ATR72, and 1 Challenger 604. Recently they purchased a multi-million-dollar ATR spare parts purchase which consists of many consumables and expendables.

Chris Kilgour, CEO of C&L Aviation Group, "Despite the market uncertainty over the past year we are committed to continuing investing in the regional and corporate aircraft we support. These inventories allow us to be preferred partners for our customers who rely on us to support their needs."

The E170 is a new aircraft type for C&L as they continue to diversify their offerings. C&L's strategy for the E170, like all other C&L-supported airframes, is a holistic approach to supplying operators and maintenance providers with a wide

variety of services including spare parts supply, power-by-the-hour, consignment, landing gear and APU exchange, and engine management programs.

As with all of C&L's inventory, these parts will be inspected and made ready for sale, which includes photographing and barcoding each part and corresponding documentation which is sent as viewable links on all customer quotes allowing more transparency for the customer during the buying process. Parts will be stored around the world in strategically located warehouses owned and operated by C&L in the United States, UK, and Australia.

Frontier Airlines accelerated fleet modernization by retiring A319

The A319 will be replaced by ultra-modern A320nep and A321neos for a greener and more sustainable aviation.

Frontier Airlines retired the last of its Airbus A319 aircraft, tail N949FR that was delivered to Frontier in 2006. The passengers, crew and executives celebrated this occasion during the last flight of A319 from Nashville to Denver. The phase-out process of this aircraft is a well- thought out process and a part of fleet modernization program by Frontier which includes a strong focus on operating newer and more fuel-efficient aircraft.

Daniel Shurz, senior vice president of commercial, Frontier Airlines said, "The retirement of Frontier's last Airbus A319 aircraft is a proud and symbolic moment for our team as we look ahead towards a greener future. Our ultra-modern fleet is already the most fuel-efficient in the US skies and, as we continue the transition

to A320neo (New Engine Option) and A321neo aircraft, our fuel savings and operational efficiencies continue to evolve."

The A319 model aircraft, which the company first began flying in 2001, played a vital role in Frontier's success for more than 20 years, providing efficient, safe and reliable service, including during the airline's transition to an ultra-low-cost carrier.

The aircraft's final flight was marked with a special onboard announcement and giveaway items for customers, including a frameable certificate commemorating the occasion. Denver-based crew were invited to greet the aircraft on its final arrival during a gate celebration, as well.

Frontier operates the youngest and most fuel-efficient US fleet of Airbus A320 and A321 aircraft with an average age of only 4.1 years, including the largest A320neo fleet in North America. Moreover, with approximately 140 aircraft currently on order, Frontier's modern fleet will continue to grow in the coming years, a testament to the company's overall commitment to more sustainable, reliable and affordable flying.

8Tree's 'dentCHECK'– Going beyond aircraft dents

Structural damages in an aircraft are a major cause of concern for operators and MROs worldwide. The inspection and repair of such structural dents have evolved over the years with latest technology and innovation. In a candid chat with **Mr. Arun Chabbra**, founder and CEO of 8Tree Aviation, he speaks about the phased approach of 8Tree for the use of drones for aircraft inspection, their collaboration with Donecle and the massive industry response for the innovative 'dentCHECK' tool. **Swati.k** finds more...

Q– What are the worst kinds of dents seen in an aircraft? Apart from accidents and maintenance activities are their other reasons for Aircraft denting?

A- During the past decade of working closely with our airline and MRO customers, we have found that three main reasons contribute to most of the dent-damage on any aircraft, whether in-service, or in storage/pre-delivery stages.

First – routine and repeated impact from ground support equipment (GSE). This includes things like the jet-bridge, luggage trolleys, F&B hosting services, cleaning crew vehicles, de-icing vehicles, etc.

Second – Foreign Object Debris (FOD) when an aircraft is undergoing routine maintenance.

Third, and most severe – extreme-weather events, such as lightning strikes, and most notably, hail-storms. Traditionally, hail damage can render an aircraft out- of-service for weeks if not months, while damage assessment is completed. This extended period of grounded aircraft results in a significant loss of revenues for the operators and owners, which directly affects their bottom-line. By applying some of 8tree's newest developments, airlines/MROs have begun slashing these out-of-service times by 30x.

Q– After the COVID19 pandemic manual aircraft checks took a backseat and use of drones for detecting cracks or structural deformities is gaining popularity. Your views.

A- 8tree has been exploring the feasibility of and developing drone-based damage- mapping solutions since 2016. Our objective has always been to develop a flying version of our popular handheld dentCHECK inspection tool, which is already widely used by global airlines and MROs, and approved by all major OEMs, for the efficiency, accuracy and TaT benefits that it delivers. We believe that the aviation market has a distinct need for both a handheld dent-mapping tool and a drone-mounted dent-inspection solution. This view continues to be validated by the growing demand and use of 8tree's handheld dentCHECK tool by airlines/MROs. The value of the drone-mounted dent-inspection solution is most significant on the upper surfaces of the aircraft, where common GSE options encounter accessibility and safety issues.

While there has been a lot of buzz about drones for the past several years, the majority of aviation-centric drone firms must prove themselves in a few critical areas, namely – safety of operation, technical feasibility and ultimately, regulatory approvals – before they can be considered for 'business-as-usual' in aviation maintenance. With this in mind, 8tree has taken a pragmatic phased- approach in developing its drone-mounted dent-inspection capabilities.

Having engaged with various drone firms over the past several years to realize our vision of a 'flying-dentCHECK', we recently achieved a very significant first- of-its-kind, industry milestone. Working in collaboration with Donecle, a leading aviation-centric drone firm, Dassault and the French Ministry of Defence, we just completed a exhaustive year-long field trial to inspect Rafale fighter jets.

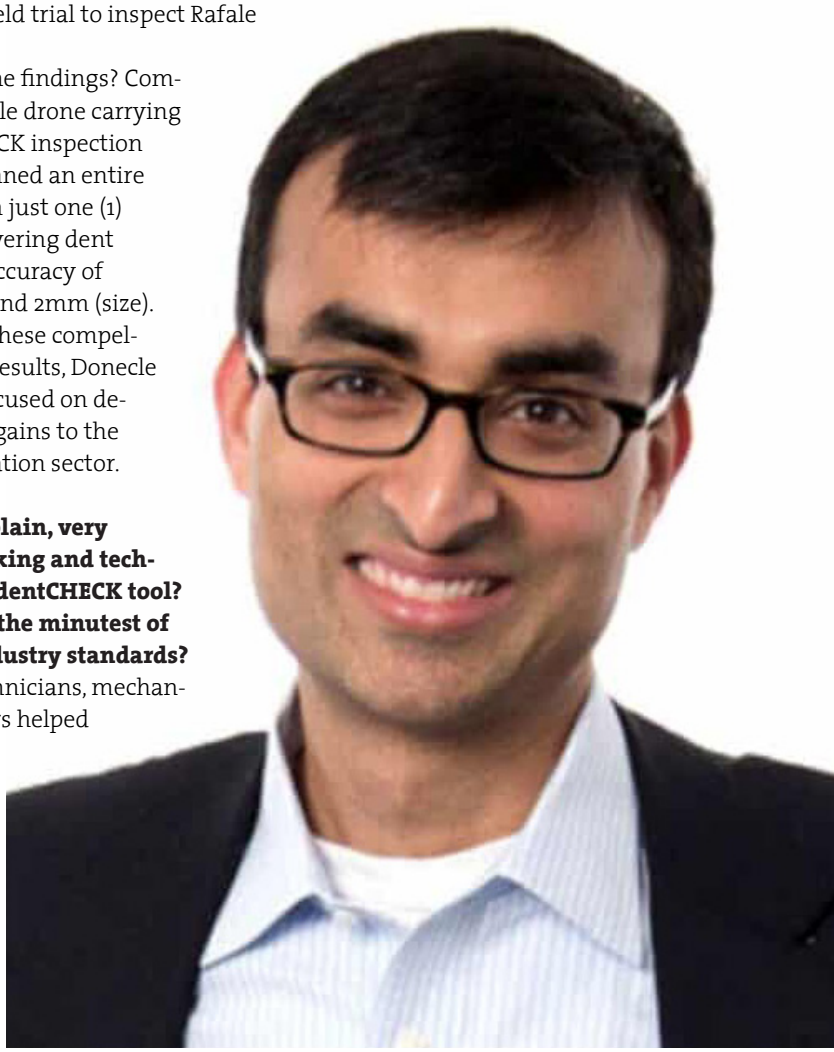
So, what were the findings? Compelling. A Donecle drone carrying 8tree's dentCHECK inspection capabilities scanned an entire Rafale aircraft in just one (1) hour, while delivering dent measurement accuracy of 0.1mm (depth) and 2mm (size). Equipped with these compelling real-world results, Donecle and 8tree are focused on delivering similar gains to the commercial aviation sector.

Q– Can you explain, very briefly the working and technology behind dentCHECK tool? Does it pick up the minutest of dents as per industry standards?

A- Aviation technicians, mechanics and engineers helped define every feature of the dentCHECK tool. Driven by such industry input, we developed a one-button operated 3D structured-light scanner with integrated augmented reality (AR) that is specifically designed and built to solve the chronic problem of aviation dent-mapping. While doing so, our goal was to address the core interests of the aviation maintenance community – complete tether-less handheld-portability that delivers instantly actionable SRM-compliant measurement answers, not just 3D data. As a result, all major aircraft OEMs have recognized and certified dentCHECK, thereby empowering airlines/MROs to achieve greater than 90% time-savings when mapping dents – all with the click of one-button. dentCHECK measures dents as small as 50-microns – that's about half the thickness of a human hair!

Q– How is the industry response for dentCHECK tool?

A- In the short few years since dentCHECK was certified by all major OEMs,



the aviation industry has embraced the tool with vigour. As of today, more than a 100 dentCHECK tools are used daily across the world, by more than 3-dozen airlines, MROs and OEMs worldwide.
We believe this rapid rate of adoption can be attributed to two main reasons. First, direct input from the aviation maintenance community has shaped every feature and capability of the dentCHECK tool. As such, operators tend to feel a natural affinity for and sense- of-ownership of the tool since it incorporates their input/feedback to solve their dent-mapping headaches. Second, dentCHECK empowers operators to make decisions confidently and quickly. This saves maintenance operations valuable time and money, that would otherwise be spent debating subjective, manual measurements, while allowing them to turn-around aircraft on a faster schedule.
We continue to solicit industry feedback to shape new dentCHECK features (such our new automatic large-area mapping capability) which we release every year. Our customers enjoy the fact that their dentCHECK tools – whether acquired a few years ago, or last week – can be easily updated 'in-the-field' to benefit from the latest damage-mapping capabilities. As a result of these reasons, dentCHECK is rapidly becoming the aviation industry's 'go-to' tool to expedite damage-mapping and reporting.

Q – What was your inspiration behind developing a technology of using portable 3D optical surface inspection tools?

A - The team at 8tree, has a decades-long pedigree in 3D optical scanning and a keen awareness of the customer experience. In our previous careers we built general purpose 3D scanners – versatile measurement equipment that requires users to develop a deep understanding of metrology so that they can make sense of the dense 3D point cloud data that is output by those traditional scanners. Putting ourselves in the shoes of the end-user, we knew there had to be a better way. We set out to combine our expertise in precision 3D optical scanning with our sensitivity of customer needs. The result has been our suite of application-specific 3D surface inspection tools. These tools, such as dentCHECK, empower users with instant-actionable measurement answers (not dense point cloud data) without requiring users to ever get involved with the underlying science of 3D scanning theory. There are trade-offs to our approach
– unlike general purpose 3D scanners, 8tree's tools cannot be re-programmed by the user to solve a completely different measurement problem. Instead, each of our products is optimized to solve for one, and only one chronic industry problem, and deliver instant answers. Given the market's overwhelming response to our portfolio of 3D surface inspection tools, we believe the trade-off is worth it.

Q – After dentCHECK tool what is next-in-line at 8tree?

A - Two broad themes guide 'what's next' at 8tree.
First – ensuring inter-operability of our existing suite of 3D surface inspection tools. We are enhancing aerospace robotic automation flows with dentCHECK and fastCHECK integration, to help improve manufacturing quality and efficiency. In addition, driven by interest from our aviation customers, we are working to ensure that dentCHECK reports interface seamlessly to most common dent-and- buckle tracking platforms currently used in the aviation maintenance sector.
Second – addressing new chronic problem statements in new industries. Following several years of R&D and field trials, last year, we formally launched our waveCHECK tool, specifically designed to improve quality and efficiency, while eliminating subjectivity in the wind-turbine rotor blade manufacturing process. As part of launching waveCHECK, we brought onboard a wind blade industry expert to help lead 8tree's business development in the industry.
Leading wind-blade manufacturers are starting to use waveCHECK to enhance quality inspection during their manufacturing cycle. Further down the value- chain, we see an opportunity for waveCHECK to contribute to the inspections of blades in operational wind-farms. This mirrors the journey of dentCHECK across the aerospace value-chain – from aerospace manufacturing to the aviation maintenance sector.

Q – 8tree believes in reshaping the working of traditional industries. How is the work culture at 8tree.

A - At 8tree, we believe in anticipating – not just responding to – customer needs. When creating our earliest products, we set out to achieve end-to-end digitalization for our customer workflows. This was done to drive greater efficiency for our customers, and in anticipation of today's industry embracing the paperless environment.
In order to effectively anticipate the market's needs, we foster an internal environment of heavy collaboration while also empowering each team member to make important decisions related to their sphere of expertise. For instance, our applications engineers are empowered to not only support their customers, but rather own the customer journey, keeping in mind the customer's best interest. An internal environment of mutual trust among our team is critical to achieving this level of empowerment and collaboration.
So, what's the result of these efforts so far? The 8tree team spans all major global time-zones – Americas, Europe and Asia – and is fluent in eight different languages. This enables us to delight our customers with novel, intuitive and effiency-enhancing solutions to their digital surface inspection needs.

Q – Any advice you would like to give today's young engineers planning to take up a career in 3D imaging and augmented reality?

A - 8tree hires for aptitude and initiative. A foundation of solid technical skills is, of course, a given. However, we don't require our new team-members to walk in with prior expertise in 3D scanners, or advanced understanding of our customer industry segments. We believe that a self-driven and curious engineer can quickly ramp-up and add value to most any topic. So our advice to today's young engineers – be curious, take initiative and don't underestimate the value of a strong work-ethic.

AerFin extends partnership with StandardAero for long term engine contract of CFM engines and C2500 materials

As the aviation sector recovers from the aftershocks of COVID-19 pandemic, such partnerships are important.

AerFin and StandardAero have agreed a new long-term engine support contract including the global repair of AerFin's CFM56-5C, 5B, 7B, CF34 and V2500 engine material.

James Bennett, Commercial Director, AerFin said, "As we recover from the COVID-19 pandemic and prepare for an upsurge in MRO and USM demand, partnerships such as these are more important than ever, not only for our continued growth but also to ensure we meet and exceed the requirements of our airline and MRO customers."

The deal reinforces the growing relationship between the two companies, who have collaborated for several years to deliver a range of comprehensive and flexible material agreements to regional and narrow-body operators. The partnership agreement now extends to coverage of AerFin's extensive and fast-growing holding of V2500 material.

Air Canada sign CAE for exclusive maintenance training for five years

This first of its kind training agreement between two Canadian companies will provide a training experience true to the aircraft platforms with high level of instruction, service, courseware and technology.

Air Canada has signed an exclusive maintenance training agreement with CAE. As a result, CAE is now Air Canada's embedded Transport Canada Approved Training Organization for Aircraft Maintenance and Engineering.

Nick Leontidis, CAE's Group President Civil Aviation Training Solutions said, "Throughout the years, several manufacturers have entrusted CAE with its excellent training and technology. This first of its kind training agreement between two Canadian companies will provide a training experience true to the aircraft platforms with high level of instruction, service, courseware and technology. I'm confident that this partnership will allow us to work closely by developing and fine-tuning specific training programs for Air Canada."

Richard Steer, Air Canada's Senior Vice President of Operations said, "This first of its kind, industry leading agreement will bring together Air Canada's technical aircraft maintenance excellence with CAE's focus and excellence in the training environment. I look forward to the implementation of Air Canada's Aircraft Maintenance Training Centre of Excellence, which will bring two world class, Canadian companies together."

The agreement includes the development, management and delivery of all of Air Canada's maintenance and engineering training, including all regulatory approved training. CAE will implement many of its state-of-the-art digital training technologies, including training and qualifications management, virtual 360 aircraft environments and a new digital solution that will enable Air Canada to explore modern training environments such as evidence-based training.

Digital aviation leading to newer and bolder partnerships between avionics companies

Collins Aerospace will acquire FlightAware to deliver newer innovations and capabilities across their businesses

Collins Aerospace has signed a definitive agreement to acquire privately held FlightAware. The acquisition will be finalised with the completion of customary conditions and regulatory approvals. FlightAware is a leading digital aviation company providing global flight tracking solutions, predictive technology, analytics and decision-making tools.

Dave Nieuwsma, Collins Aerospace's head of Avionics said, "Global connectivity now shapes and impacts every segment of aviation. FlightAware is the recognized leader in data collection, analytics and customer experience, which will help Collins unlock the full power of the connected ecosystem for our customers. FlightAware's flight tracking and data platform, the largest in the world, has the potential to deliver new capabilities and innovations across our entire business."

Daniel Baker, CEO of FlightAware said, "The world's aerospace companies and aircraft operators are looking to digital aviation to provide the next revolution in aviation efficiency and reliability. We are excited to join Collins Aerospace and Raytheon Technologies at this pivotal time to continue to lead that revolution at an even broader scale."

Following closing, FlightAware will join Collins' Information Management Services portfolio within their Avionics strategic business unit. Financial terms of the agreement were not disclosed.

Thai Aviation Services lease three AW139 helicopters for oil and gas mission in Malaysia

The delivery of the helicopters is expected by 2022 post which they will commence the mission shortly.

The three modified AW139's provide exceptional offshore service Thai Aviation customers in Thailand along with Helistar in Malaysia.

Milestone Aviation will provide three AW139 helicopters to Thai Aviation Services Ltd. These helicopters will be used to support a a multi-year contract recently awarded to TAS, together with its partner Helistar, an oil and gas company in Malaysia. The delivery of the helicopters is expected by 2022 post which they will commence the mission shortly.

Suwanawat Koeworakul, Managing Director at TAS, said, "We are delighted to expand the TAS fleet with the agreement to lease these three AW139 helicopters from Milestone. TAS' existing relationship with Milestone is strengthened by the addition of these aircraft. The three AW139's will help us meet our obligations in providing exceptional offshore service for our customers in Thailand, with our partner Helistar in Malaysia."

Michael York, Head of Emerging Markets at Milestone, said, "The Milestone team's high level of skill, experience and commitment ensured that we were able to rapidly modify and provide these three AW139 helicopters to TAS. This certainty of execution is a key differentiator for Milestone and we are pleased to continue Milestone's deep commitment to TAS, and support their oil and gas missions in Malaysia."

TAS is a privately-owned helicopter operator based in Thailand. For over three decades, TAS has been playing a significant role as an air operator providing helicopter service for the offshore operations of oil and gas companies throughout the Southeast Asia region. The Milestone AW139 fleet is deployed globally across a variety of missions, including oil and gas, EMS (Emergency Medical Services), Law enforcement, and Search and Rescue (SAR).

'ITP Aero' enroute to changing the classic approach

Exclusive Interview with Pablo Fuentes Moruno- Head of Sales, In Service Support at ITP Aero

Right from acquiring the Rolls Royce facility at Hucknall in spite of pandemic challenges, ITP Aero has steadily grown to be the ninth largest aircraft engine and component companies of the world. ITP aero plans to strategically focus on their Core 21 recovery plans by taking advantage of digital technologies and enhancing their capabilities. In a candid chat with our Assistant Editor, **Swati.k, Pablo Fuentes Moruno- Head of Sales, In Service Support at ITP Aero speaks** about the challenges faced during pandemic and how he overcame them, the efforts at achieving carbon neutral aviation by 2050 and much more... Read ON!

Q- First of all, congratulations on signing the latest contract to provide engine MRO for Gulf Helicopters. Can you tell us something more about the latest Engine Condition Trend Monitoring technology or ECTM for predictive engine maintenance that you will be applying for the Gulf Heli fleet?

A- Certainly, the agreement we have reached with Gulf Helicopters for their CT7-8A (Sikorsky S92) and CT7-2E1 (Leonardo AW189) engines is great news. We are very proud to contribute to supporting the fleet of one of the leading helicopter operators in the Gulf region. Our contract includes our ECTM service which provides valuable information to the operator about the condition of the engines and the main parameter trends. This data allows the operator to make decisions about preventive maintenance actions in advance and when needed, a much more focused corrective action to reduce maintenance costs. It also gives the opportunity to choose the best time to execute theses maintenance sessions and have the least impact in fleet operations. All this makes the ECTM a highly appreciated tool by different aviation companies.

Q- What are operators requesting the most from MRO suppliers?

A- The operators are very focused on their business. The operator only calls the MRO shop when they have a problem. We at ITP Aero are changing that classic approach. We prefer to create the environment to work with the operator in advance, before that problem shows up. That is why ITP Aero has significantly grown on Engine Condition Trend Monitoring (ECTM) service for the AW189 and S92 engine operators, and in the case of the NH90 helicopter, the version with CT7-8F5 engine also. To have the ability to predict when an engine is going to fail entails more time for the operators to define actions, mitigate that risk, reschedule their operations and manage cash flow.

Q- Recently you acquired Rolls-Royce's former site at Hucknall, enhancing ITP's position as a major global aerospace company. It is one of the major milestones for ITP. Can you elaborate on the deal?

A- Hucknall enhances ITP Aero's position as a major global aeronautic company. The products manufactured in Hucknall, which include fabrications, combustors and fan outlet guide vanes (OGVs), are complementary to those manufactured in other ITP Aero facilities and will add to the company's product portfolio. As a consequence, Hucknall's integration will bring the enlarged business potential new opportunities.

Q- You signed this milestone deal during the COVID-19 pandemic times. What were the challenges that you faced and how did you overcome them?

A- Covid-19 has generated the worst crisis we have ever faced as an industry and as a company. We know that recovery will be very slow. While the news on vaccination is encouraging, and while air traffic is expected to begin its gradual recovery in the coming months, we do not expect our programme volumes to reach the 2019 level until at least 2024-2025.

In response to the impact of the pandemic on ITP Aero's core markets, the company launched in July a recovery plan, CORE 21, aimed at initiating a necessary transformation process to increase competitiveness and accelerate, as much as possible, recovery. It is worth mentioning, that during 2020, ITP Aero has made important efforts towards laying the grounds for a profound digital transformation of the company that will continue in 2021.

Q- You are one of the ninth largest aircraft engine and component companies of the world with production centres in Spain, United Kingdom, Mexico, Malta and India. Going ahead what are your expansion plans

A- At the time being, we have no expansion plans. As mentioned before, we are currently focusing on our Core 21 recovery plan, including taking advantage of digital technologies as a strategic driver to achieve a differential leap in efficiency and competitiveness after the crisis caused by Covid-19 in the aeronautical sector.

Q- ITP Aero is the first Spanish aeronautics company to commit to net zero emissions by 2050, as per the UN's initiative to become carbon neutral by 2050. Hybrid engines, electric engines, fuel-efficient aircraft are a part of experimental Next-Gen technology for sustainable aviation. How challenging do you think it is for aviation industry to achieve this goal? What steps is ITP taking towards a sustainable future

A- ITP Aero focuses on the development of proprietary technology as a competitive advantage in the global aeronautic market. We are proud to be able to say that half of the aircraft we see flying have ITP Aero technology, we make it possible for aircraft to fly all over the world.

At ITP Aero we are aware of the need for aviation to become a sustainable sector, we are committed to play an active role towards a carbon free aeronautic industry. Having said that, ITP Aero is the first aeronautic company in Spain to sign up to the UN's Race to Zero programme. What this means is that we are committed to making all our operations carbon neutral by 2030.

This is already a major challenge but our commitment goes even further: to make all our activities as a company carbon neutral by 2050. This includes our operations and also the products we produce.

As far as technology development is concerned, we are working on a two-term strategy:

- First, in the short and medium term, the future lies in new engines to reduce the environmental impact of air transport and in the use of sustainable fuels to replace traditional fuels. We are already working in these areas. In particular, we are involved in the development of the new Rolls-Royce UltraFan engine, a new engine that will be a breakthrough in efficiency, reducing fuel consumption by up to 20% compared to some of the engines flying today. In addition, we are also currently focusing on manufacturing technology excellence, including, for example, additive manufacturing, i.e. 3D printing.
- In the medium to long term, with the challenge of minimising the impact of air transport, we are investing in the development of technology that will lay the foundations for hybrid and hydrogen propulsion. Both electrification and hydrogen propulsion will be the major revolutions expected in the world of aviation.

Q- ITP has undertaken digitalization as a part of its work culture and has developed a design criterion to manufacture certain components using additive manufacturing. Can you tell our readers more about the practical application of this technology in ITP and its scope in future?

A- We have developed our own additive manufacturing (3D printing) design criteria that has enabled the manufacture of aeronautical components now certified and currently operational in flight. Thanks to this technology, we estimate significant cost savings and a reduction of up to 40% in the weight of the components, which translates into fuel consumption savings in the engines. It is also worth noting that at ITP Aero we have applied our own standards and specifications for the application of this technology, which gives us a significant competitive advantage.

GE's revolutionary innovation on XA100 adaptive engine transition program, testing initiated

The testing on second XA100 adaptive cycle initiated on the last week of August at the GE's Ohio facility.

GE has initiated testing on its second XA100 adaptive cycle engine as part of the US Air Force's Adaptive Engine Transition Program (AETP). The engine testing began in the last week of August at the Evendale, Ohio altitude test facility. This is GE's final planned prototype engine as part of AETP.

GE in partnership with the US Air Force has started full-scale prototype engine testing in the AETP program. This is the capstone of a multi-year technology maturation and risk reduction effort to bring an adaptive cycle engine to full maturity. GE's first XA100 engine tests began in December 2020, marking the world's first ever run of a flight-weight three-stream adaptive cycle engine. Tests successfully validated the engine's ability to deliver transformational propulsion capability to current and future fighter aircraft. Engine prototypes assembled as part of AETP are designed to fit and integrate directly into the F-35.

The XA100-GE-100 engine combines three key innovations to deliver a generational change in combat propulsion performance:

- An adaptive engine cycle that provides both a high-thrust mode for maximum power and a high-efficiency mode for optimum fuel savings and loiter time.
- A third-stream architecture that provides a step-change in thermal management capability, enabling future mission systems for increased combat effectiveness.
- Extensive use of advanced component technologies, including ceramic matrix composites (CMC), polymer matrix composites (PMC), and additive manufacturing.

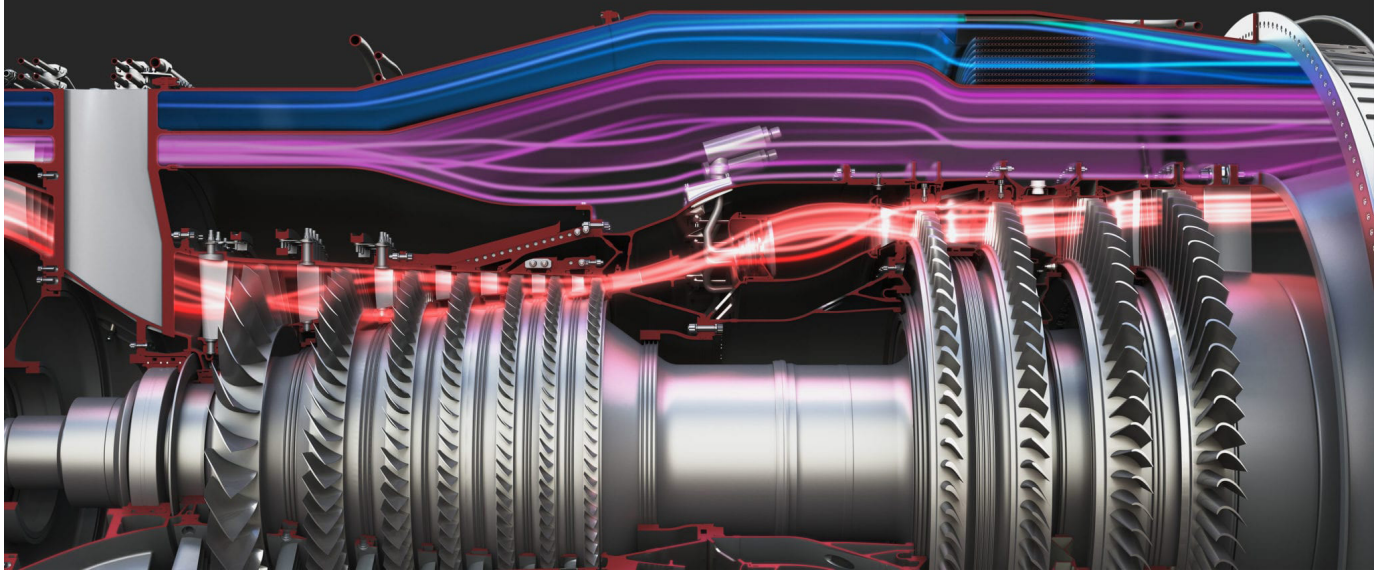
These revolutionary innovations increase thrust 10 per cent, improve fuel efficiency by 25 per cent, and provide significantly more aircraft heat dissipation capacity, all within the same physical envelope as current propulsion systems. The XA100's improved fuel efficiency provides significant reduction in carbon emissions. The engine will also operate on any US Air Force-approved biofuels.

David Tweedie, GE Edison Works' General Manager for Advanced Combat Engines said, "The US Air Force and Congress have invested more than USD 4 billion in adaptive cycle engine development over the past 14 years to mature its associated technologies. We're confident this phase of the program will significantly reduce risk and prepare GE for a low-risk engineering and manufacturing development program, consistent with Air Force objectives. Getting our second prototype engine into the test cell means we're one step closer to getting this transformational technology into the hands of the warfighter."

Testing on the second XA100 will allow GE to continue gathering high-quality test data and further mature the engine's advanced componentry and revolutionary three-stream design. Once first phase testing is complete in Evendale, GE plans to test the engine at the US Air Force's Arnold Engineering Development Complex (AEDC) to finish out all planned AETP testing activities.

The XA100 is a product of GE Edison Works, a business unit dedicated to the research, development, and production of advanced military solutions. This business unit has full responsibility for strategy, innovation, and execution of advanced programs.

A third-stream architecture that provides a step-change in thermal management capability, enabling future mission systems for increased combat effectiveness.



Mahindra Aerostructures to manufacture and supply parts and sub-assemblies for 737 to Boeing

The manufacturing of 737 inlet outer barrel components and sub-assemblies will take place at the Mahindra facility in Bengaluru, India in 2023.

Mahindra Aerostructures (MASPL) has been awarded a contract for manufacturing and supply of the Boeing 737 inlet outer barrel components and sub-assemblies. The production for the legendary single-aisle family of airplanes will take place at the state-of-the-art MASPL facility in Narsapura, near Bengaluru, India. Production begins in 2023.

Commenting on the new contract, Mr. S P Shukla, Member of the Group Executive Board of Mahindra Group, and Group President, Defence, Aero & Agri sector said, "We are privileged to be awarded this prestigious contract for the 737, which is another step in our journey with Boeing to support the Atmanirbhar Bharat initiative of the Indian Government."

Mr. Arvind Mehra, Managing Director & CEO of Mahindra Aerostructures said, "Boeing demands the best, and this contract award is a testament to our delivery and quality performance which was sustained even during the pandemic. We thank Boeing for this recognition of our performance and look forward to creating even more opportunities to add value to Boeing."

Under the new contract, MASPL will supply these parts and sub-assemblies for the 737, directly to Boeing facilities in the United States. Deliveries will ramp-up in synchronisation with Boeing's planned increase in 737 productions.

US Army enhances capabilities with the addition of Airbus' latest UH-72B Lakota Helicopter

Airbus delivered the first UH-72B Lakota helicopter to US Army National Guard for critical missions.

Airbus Helicopters recently delivered the first UH-72B, the latest variant of its Lakota helicopter, to the US Army National Guard from its production facility in Columbus, Mississippi. This delivery is the first of 18 UH-72B Lakota helicopters currently in order to support the National Guard's critical missions.

Col. Calvin Lane, US Army Project Manager for Utility Helicopters said, "With the addition of the UH-72B Lakota to our fleet, the US Army increases our capability to save lives, protect communities, and provide disaster relief when it's needed most. The Lakota helicopter has been a staple of the Army for more than 15 years now, and we look forward to benefiting from the latest technologies and performances that the newest 72B variant will provide, at no additional research & development costs for the Army."

The UH-72B is the latest iteration of the proven commercial, off-the-shelf aircraft that has been the Army's Light Utility Helicopter since the first Lakota contract award in 2006. The Army is leveraging the benefits of a commercial off-the-shelf (COTS) program by receiving product improvements and enhancements through the evolution of the aircraft, without investing any government money into the development of those capabilities.

Based on the widely successful H145, the UH-72B incorporates technologies that increase both safety and flight performance, including the five-bladed main rotor, the Fenestron shrouded tail rotor, Safran Arriel 2E engines, and the Airbus-designed Helionix avionics suite. The Helionix suite includes an advanced dual-duplex, four-axis autopilot to provide flight envelope and over-limit protection, automated takeoff, and fully-coupled approaches to hover.

"Our teams in Mississippi, many of whom are U.S. Army and National Guard veterans themselves, are proud to build and deliver the first of this newest Lakota variant in support of the Army's essential missions protecting and serving our country," said Scott Tumpak, vice president responsible for Airbus military helicopter programs in the US "We thank the Army for the trust they've placed in Airbus for more than 15 years and counting, as we continue to build on the Lakota legacy for the women and men in uniform that depend on it."

With nearly 10 different configurations available, the Lakota delivers proven performance, outstanding operational reliability, and unmatched versatility for a broad spectrum of military missions.

Collins Aerospace to support US Air Force fleet of U-2 electro optical sensors

The USAF also awarded Collins a USD 66.2 million Task Order for the first year of support.

The contract is valued at USD 493 million to support the USAF's fleet of U-2 electro-optical/infrared sensors.

US Air Force awarded anIndefinite Delivery/Indefinite Quantity (IDIQ) sustainment contract to Collins Aerospace for the U-2 program. The contract is valued at USD 493 million to support the USAF's fleet of U-2 electro-optical/infrared sensors. The USAF also awarded Collins a USD 66.2 million Task Order for the first year of support, and fully-negotiated options for the second and third years of services and support valued at USD 114.6 million.

Dave McClure, vice president and general manager of ISR & Space Solutions for Collins Aerospace said, "Collins is proud to ensure the U-2 platform's ongoing mission readiness with reliable and mature ISR assets that support USAF technology insertions, modernization and information dominance initiatives. These awards continue our 60+ years of unparalleled end-to-end sustainment support for the U-2 and our team's commitment to the warfighter."

Collins Aerospace has a long, successful history of delivering the highest level of operational availability and performance for ISR missions. High altitude imaging is foundational to Collins Aerospace, and the Senior Year Electro Optical Reconnaissance System (SYERS)-2C sensor has continued to outperform other systems for decades.

Rotable repairs bags 5-year Boeing contract for tyre change and overhaul on Poseidon MRA1

The Poseidon aircraft supports anti-submarine warfare, anti-surface unit warfare, surveillance and long-range search and rescue for the UK.

Rotable Repairs was awarded five-year contract with Boeing to carry out the tyre change, heat pack replacement and overhaul on the Safran equipped Boeing 737-800 wheels and brakes fitted to the Royal Air Force's (RAF) fleet of Poseidon MRA1 maritime patrol aircraft.

The Poseidon aircraft supports anti-submarine warfare, anti-surface unit warfare, surveillance and long-range search and rescue for the UK. Leigh-on-Sea based Rotable Repairs are the UK's only approved Safran Wheel and Brake workshop and retrofit storage centre with staff trained and supported by the OEM.

"Working with our sister company, tyre supplier Watts Aviation, Rotable Repairs are pleased to support Boeing Defence UK with the maintenance of wheels, brakes, and tyres for the RAF's Poseidon fleet" said Bryan Croft Commercial Director.

Rotable Repairs, formed in March 2002 is dedicated to aviation wheel and brake services and committed to delivering high-quality, cost-effective products and services to commercial, regional and freighter operators, business jet, general and light aviation aircraft.

Lockheed Martin expands Johnstown facility to manufacture F-16 parts

The work will generate 80 new jobs and Lockheed Martin plans to lease a new building to accommodate it.

Lockheed Martin is all set to bring a new F-16 manufacturing work to its facility in Johnstown, Pennsylvania. The work will generate 80 new jobs and they plan to lease a new building to accommodate it.

Wayne Davis, Director, Lockheed Martin's Johnstown site said, "Lockheed Martin continues to see demand for new F-16s around the world, requiring development of additional parts manufacturing sites to ensure it can keep up with demand. Johnstown's selection for this new work reflects the highly skilled workforce in the area, a record of quality production and the space available to expand. We are proud to grow our presence in Johnstown and to contribute to the acceleration of jobs."

F-16 parts to be produced in Johnstown include the aft engine access covers, engine access doors, F-1 fuel tank, and inlet. Upon completion in Johnstown, the parts will be shipped to Greenville, South Carolina, for final assembly and integration into the F-16s on the production line. This is in addition to F-16 component and sub-assembly work already performed at the site today.

Early work in Johnstown will kick off this year, with the bulk of hiring and other significant efforts beginning in 2022. In addition to the F-16 work, the Johnstown facility also provides parts and services for the F-35 and F-22 fighter jets, and the C-130 military transport aircraft.

In addition to the nearly 400 jobs already in place at the site today, Lockheed Martin maintains a strong presence in the Johnstown community, giving more than USD 42,000 to local organizations and efforts last year.

Airbus A400M all set to become cornerstone of Kazakhstan's tactical and strategic airlifting ops

This new export contract brings the total number of A400M orders to 176 aircraft for the Republic of Kazakhstan.

The Republic of Kazakhstan has placed an order for two Airbus A400M aircraft and becomes the ninth operator together with Germany, France, United Kingdom, Spain, Turkey, Belgium, Malaysia and Luxembourg.

With delivery of the first aircraft scheduled in 2024, the contract includes a complete suite of maintenance and training support. Together with the agreement a Memorandum of Understanding has also been signed to collaborate on Maintenance and Overhaul services and with a first step of creating a local C295 maintenance centre.

"The A400M will become the cornerstone of Kazakhstan's tactical and strategic airlifting operations," said Michael Schoellhorn, CEO of Airbus Defence and Space. "This new export contract brings the total number of A400M orders to 176 aircraft, a figure that we expect to increase in the near future. With more than 100 aircraft delivered and 100,000 flight hours in operation, the A400M has proven its capabilities, reaching a state of maturity that many potential customers were waiting for."

With the capacity to accommodate the country's inventory and conduct military, civil and humanitarian missions, the A400M will enable Kazakhstan to quickly respond to any mission by rapidly deploying game-changing capabilities over long distances and enabling effective access to remote areas.

Pierre Teboul to take charge as Senior VP, Commercial at AFI KLM E&M

Pierre Teboul has more than 30 years of professional experience in the aviation industry within Air France and Air France-KLM Group, from airline business to engineering & maintenance.

Pierre Teboul will take over from Fabrice Defrance as the Senior Vice President, Commercial at AFI KLM E&M. Till now Teboul was in charge of components Customer Support and Product Performance. In the new role, Teboul will continue to develop the commercial presence of AFI KLM E&M and its network with operators and all our customers and partners around the world. Building on the many years of success of his predecessor, such as the support of the GE90, the 787 and the A350 on the five continents, Pierre Teboul will have to write new pages of AFI KLM E&M's commercial history. He will promote new generation products such as the A220 support or the GEnx and the LEAP engine solutions and will lead the sales team in the upcoming transformation and challenges of the MRO business.

Anne Brachet, EVP Air France-KLM Engineering & Maintenance said, "On behalf of Air France-KLM Engineering & Maintenance, it is with great emotion that I thank Fabrice Defrance for his great dedication during these many years. Under his leadership, our services have been greatly developed through careful listening of our customers. In the current context, it is more important than ever to work in a mindset of partnership and listening. I know that Pierre Teboul will give his best to continue the work already accomplished and endeavour to build ever stronger relationships with our clients and partners."

On taking the new responsibility, Pierre Teboul, AFI KLM E&M Senior Vice President Commercial said, "I will put my knowledge at the service of AFI KLM E&M's customers by measuring the work already accomplished, the humility that the period imposes on us and, above all, the greatest enthusiasm. On behalf of AFI KLM E&M: Listening, developing and proposing the best solutions for the aviation business, this is what will guide me in the coming years alongside our customers."

Pierre Teboul has more than 30 years of professional experience in the aviation industry within Air France and Air France-KLM Group, from airline business to engineering & maintenance. Since 2007, Pierre has been successively Regional Sales Director North & Eastern Europe AFI KLM E&M and VP Customer Support & Product Performance for the components business.

International CALENDAR

2021

Date	Event	Venue
14- 16 Sept	Aircraft Interiors Expo	Virtual
11-14 Sept	ACPC Conference	Atlanta, GA
15-16 Sept	MRO Russia	Moscow
20-24 Sept	MRO Asia pacific	Virtual
22-23Sept	17th Maintenance Cost Conference (MCC)	Montreal, Canada
03- 05 Oct	ISTAT EMEA 2021	Edinburgh, Scotland
05-06 Oct	Helitech World Expo	London
12-14 Oct	NBAA Business Aviation Convention & Exhibition	Las Vegas, NV
19-21 Oct	MRO Europe	RAI Amsterdam, The Netherlands
01-04 Nov	Aerospace Incubator	Miami, FL
14-16 Nov	ISTAT Americas 2021	Austin, TX
14-18 Nov	Dubai Air Show	DBC, Dubai

2022

Date	Event	Venue
27-28 Jan	Aero-Engines Americas	Miami, FL
09-10 Feb	MRO Latin America	Cancun, Mexico
15-20 Feb	Singapore Airshow	Singapore
22-23 Feb	AIME 2022	Dubai, UAE
22-23 Feb	MRO Middle East	Dubai, UAE
03-04 Mar	PBExpo	Miami, FL
06-09 Mar	World Defense show	Riyadh, Saudi Arabia
07-10 Mar	HAI Heli Expo	Dallas, TX
28-31 Mar	AEA International Convention & Trade Show	New Orleans, USA
26-28 Apr	MRO America	Dallas, TX, USA
03-05 May	NBAA Maintenance Conference	San Antonia, TX
23-25 May	EBACE	Geneva, Switzerland
07-08 Jun	Engine Leasing, Trading & Finance	London, UK
09-11 June	France Air Expo	France
22 Jul	AERO South Africa	South Africa
06-08 Oct	Istanbul Airshow	Istanbul Atatürk Airport, Istanbul

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